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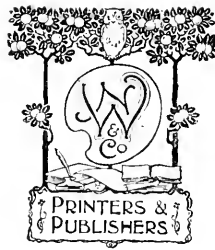
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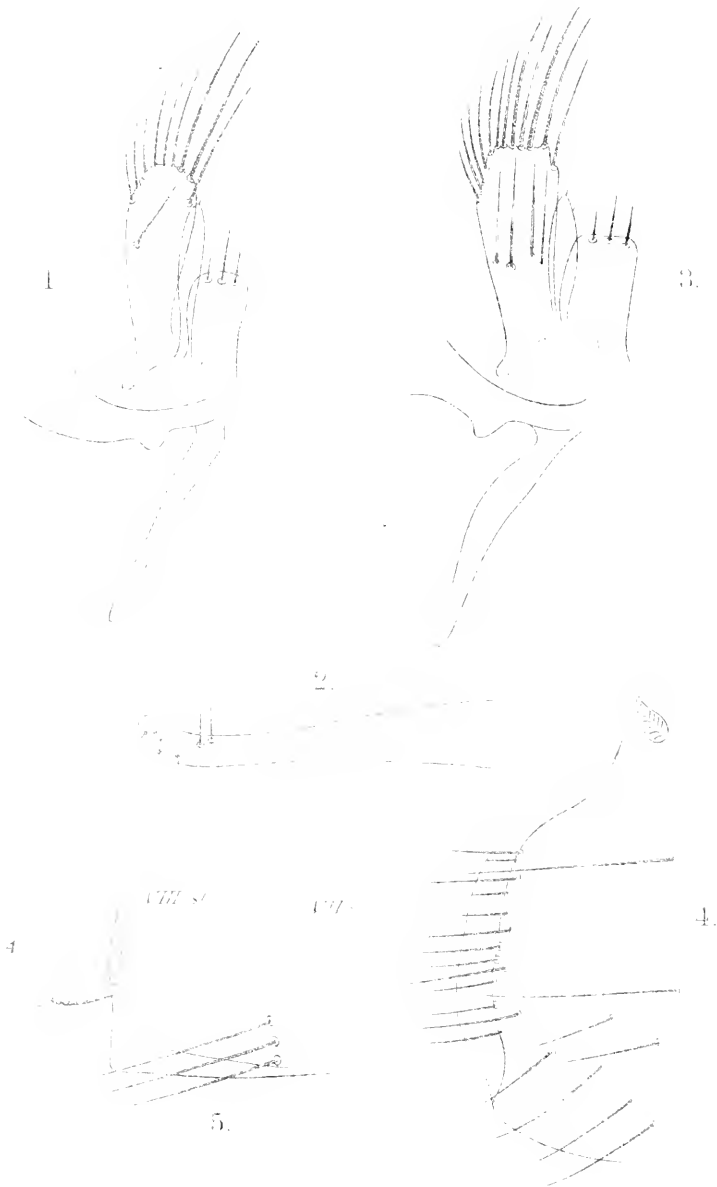
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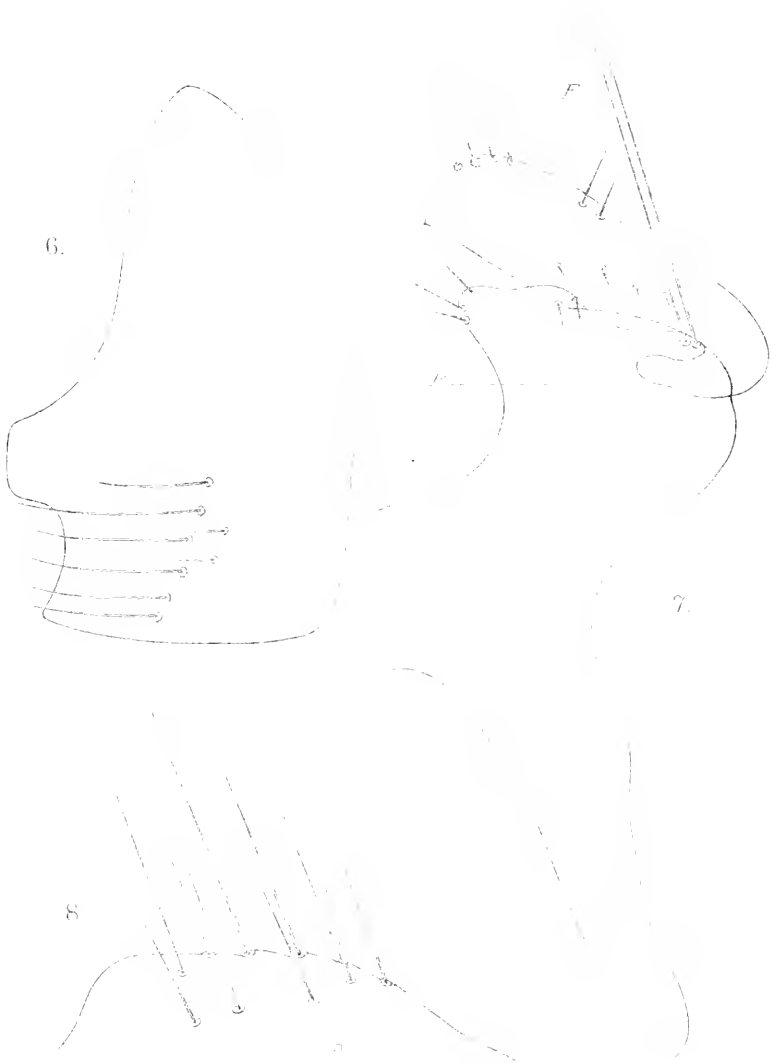
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New Siphonaptera from Egypt.

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New Siphonaptera from Egypt.

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NEW SPECIES OF SIPHONAPTERA FROM EGYPT.

BY THE HON. N. C. ROTHSCHILD, M.A., F.L.S.

(PLATES I. & II.).

THE four new species described in the present article were collected by the Hon. Francis R. Henley and myself on our joint expedition to the Natron Valley.*

1. PULEX MYCERINI, n. sp. (Plate I., figs. 1, 3, 4.)

The head is similar in shape to that of *P. cheopis*, and bears on its hinder portion a row of short hairs along the antennal groove. Above this row, situated in the middle, there is one long bristle. The row of bristles standing before the apical edge of the head is incomplete, the lowest bristle, which is very long, being separated from the one above it by a large interspace. Between this long bristle and the row of short hairs there is one short bristle. The mesothoracic epimerum bears three bristles, one below the middle near the suture which separates the epimerum from the episternum, the second near the upper hinder corner, and the third close to the stigma. The metathoracic epimerum bears one bristle beneath the stigma, and in addition a proximal row of three or four, and an apical row of three bristles. The three thoracical tergites and the second to seventh abdominal ones bear each a single row of bristles, while the first abdominal tergite bears a few hairs in the middle, as is the case in the allied species. In the male the first abdominal sternite bears one hair on each side, the second to the sixth two, and the seventh two or three. In the female the first abdominal sternite bears one hair on each side, the second to sixth three, and the seventh four. The hind coxa bears two bristles at the hinder edge near the apex. The hind femur is not angulate beneath; it bears on the inner side a row of from five to seven bristles, and on the outer side ventrally near the apex two bristles. In one of

* For further reference to this Expedition, and the hosts from which these specimens were collected, cf. *Nov. Zool.* vol. x, pp. 279-285 (1903).

the females there are two bristles on one and three on the other femur. The hind tibia bears, besides the apical and dorsal paired bristles, only one row of hairs on the outer side, there being no hairs on the inner and ventral surfaces. The long apical bristles of the fore tibia reaches to the apex of the second tarsal segment, or a little beyond it. The fourth segment of the fore tarsus is nearly twice as broad as it is long. The fourth segment of the hind tarsus is short, being only a little longer than it is apically broad. The first hind tarsal segment bears externally on the ventral surface a row of two, three, or four long hairs. The second hind tarsal segment bears at the apex on the outer side (hinder side on slide) two long bristles, of which the longer one reaches to the claw, while the second extends beyond the middle of the fifth segment. The fifth segment of all the tarsi bears on the ventral surface at the apex only two bristles instead of three, the external one being absent, as is the case in several species of this group of *Pulex*. The eighth sternite of the male bears on each side a single bristle beyond the middle, and another close to the apex. The clasper bears (fig. 1) three processes, as shown in the figure. The uppermost is the largest, being widest near the rounded apex. The process bears at the apical edge a number of bristles, of which the second, counted from the ventral side, is the longest. The second process is very slender, while the third is short and broad, being nearly square. The manubrium is very slender. The ninth sternite is elongate (fig. 2), finger-shaped, bearing subdorsally before the apex two hairs placed close together, and several shorter hairs ventrally at and near the apex. The internal plate of the penis is similar to that of *P. nubicus*,* being ventrally at the apex more evenly curved than in the specimen of *P. nubicus*, from which the figure was taken. The penis bears apically a conical structure which is clothed with short hairs. The ninth tergite of the male bears internally above the manubrium a short projection, which is more distinct than in the allied species (*P. nubicus*, *P. pallidus*, &c.). The eighth abdominal tergite of the female does not bear any hairs above the stigma (fig. 4). The apical margin is broad, rounded, and ventrally sinuate. There is a series of seven or eight bristles near the edge, the uppermost standing ventrally of the first apical bristle. This row is continued ventrally by three or four more long bristles, as shown in the figure. On the lateral surface there is one long solitary bristle on a level with the first apical one, and two more bristles further down, the second of these being a little more ventral than the last apical one. The so-called pygidium is a little longer than broad in side view. Length: ♂, 1.5 mm.; ♀, 2.4 mm.

Three males and five females were secured in March, 1903, at Bir Victoria, from *Gerbillus tarabuli*, and one male, at the same locality and at the same time, from *Pachyuromys dupresi natronensis*.

2. PULEX RAMESIS, n. sp. (Plate I., fig. 2.)

This species is very closely allied to *P. mycerini*, but differs in the sexual apparatus of the male, and in the legs of both the male and

* Ent. Mo. Mag. (2) xiv. p. 84, t. 2, f. 10, 16 (1903).

female. The hind tibia of the present species bears one, two, or three pairs of hairs at the ventral (anterior) edge, besides the ordinary sub-apical pair of bristles. The fourth segment of the fore tarsus is not as broad as in *mycerini*, being only one-third broader than it is long. The fourth segment of the hind tarsus is decidedly longer than in *mycerini*, being nearly twice as long as it is broad. The second hind tarsal segment is in the present species longer than in *mycerini*, the proportions between the first and second segments being in *mycerini* 29:20, while in the present species they are 28:23. The longest dorsal apical bristle of the first hind tarsal segment does not reach the third segment, and the two long apical dorsal bristles of the second segment are also somewhat shorter than in *mycerini*. In the male the clasper (fig. 3) has three processes as in *mycerini*, but the upper process is larger, being truncate, and bearing a number of rather stout bristles at the apical margin, and a belt of bristles in the middle, as shown in the figure. The conical hairy structure at the end of the penis is much longer than in *mycerini*. The eighth tergite of the female resembles that of *mycerini*. In the type (male) the eighth abdominal sternite bears on each side in the middle several hairs instead of one only. Length: ♂, 1.5 mm.; ♀, 2-2.2 mm.

Four males and four females were secured in March, 1903, at Bir Victoria, from *Pachyuromys dupresi natronensis*, and five females from *Gerbillus tarabuli*.

3. PULEX PYRAMIDIS, n. sp.

This species is very closely allied to *P. cleopatæ*. In size it is much larger, and the comb on the hind coxa consists of fourteen spines. The abdominal sternites of the female bear five hairs only, and the long apical bristle of the second segment of the hind tarsus reaches only a little beyond the middle of the fifth segment.

A single female specimen was secured at Bir Victoria on the 9th March, 1903, from *Jaculus jaculus*.

4. CERATOPHYLLUS HENLEYI,* n. sp. (Plate I., fig. 5; Plate II., figs. 6, 7, 8.)

The head is similar in shape to that of *C. fasciatus*. There is a row of three long bristles in front of the eye, but no long bristles further forward. On the hinder part of the head there are three round pale spots, which are similar to the pale spots situated along the frontal edge of the head, the first being subdorsal, and the other two post-median and lateral. Below the lower spot there is one single long hair, there being no other long hairs on the side on the posterior part of the head, apart from some along the hinder edge. The pronotal comb consists of nineteen or twenty teeth. The mesonotum bears on each side five to seven long thin hair-like spines, which are situated between the row of long bristles and the apex. The epimerum of the mesonotum is provided with a bristle near the anterior ventral corner, another further upwards before the middle, a third on a level

* This species is named in honour of the Hon. Francis R. Henley.

with this near the apex, and two more near the stigma. The metanotum bears two heavy obtuse apical spines on each side. The epimerum of the metathorax bears a vertical row of from two to four hairs near the base, three hairs from the stigma downwards, and one at the apex. The first and second abdominal tergites have one or two, and the third one short stout apical spine. The abdominal tergites bear two rows of hairs, the anterior one being restricted in the male to the dorsal side of the segment. The stigma of the middle segments is somewhat anterior to the first row of hairs. The seventh tergite of the male bears one very long apical bristle. Below this there is a very short but rather stout hair, and above the bristle there is another stout hair, which is not quite so long as the sensory plate (pygidium). In the female the seventh tergite bears two long bristles, and above them a short one. Abdominal sternites two to seven bear on each side in the male two to four hairs, in the female three to five, besides a few very short ones. The hind femur bears on the inner side six or seven hairs. There are also several hairs on the mid femur. The hind tibia is on the outer side furnished with a row of hairs situated near the dorsal bristles, and with a row of four further towards the ventral side. On the ventral edge (anterior in the slide) there are two or three pairs of thin bristles. The longest apical dorsal bristle of the fore tibia reaches nearly to the apex of the second tarsal segment, and the longest ventral spine to the base of the same segment. Both the ventral and dorsal long apical bristle of the second hind tarsal segment reach to the base of the fifth. The fourth segment of the fore tarsus is very short and broad. The eighth abdominal tergite of the male bears between the stigma and the hinder vertical edge a number of long bristles, which are placed as shown in the figure (fig. 8). The eighth sternite of the male (fig. 5) is very small, and has at the apex on each side an elongate process (A), which bears a bristle at the end. The process (P) of the clasper bears three hairs at the top. The finger (F) is (on the anterior side) straight from the apex to near the middle. On the hinder (ventral) side there are four hairs at the apex and two small ones above the middle. The ninth sternite of the male is shaped as in *londiniensis* and *fasciatus*, being ventrally deeply sinuate. Proximally of the sinus there are two rather stout spine-like bristles besides two hairs. The distal portion of the ninth sternite is covered with very short spine-like hairs. The seventh sternite of the female (fig. 6) is ventrally sinuate on each side, the lobe above the sinus being truncate. The eighth tergite of the female bears two long bristles below the stigma, and the process articulated with the anal segment is almost conical in shape, and nearly three times as long as it is broad. Length: ♂, 3.2 mm.; ♀, 2.4 mm.

One male and four females were secured at Bir Victoria in March, 1903, from *Gerbillus tarabuli* and *Pachyuromys dupresi natronensis*.

SOME BEES FROM SAN MIGUEL COUNTY, NEW MEXICO.

By T. D. A. COCKERELL.

Sphecodes veganus, n. sp.

♀. Length about $9\frac{1}{2}$ mm.; head, thorax, legs, and antennæ black, the flagellum very faintly brownish apically, spurs rather light ferruginous; abdomen of ordinary form, bright ferruginous or chestnut-red, shining, the fifth segment hairy, black, slightly reddish basally. Mandibles stout, black stained with dark red, with a blunt inner tooth; labrum with a broad low transverse punctate ridge, not at all emarginate; antennæ with fourth joint short, broader than long; flagellum stout; face broad, covered with white hair; clypeus with very large strong punctures, averaging closer together than the diameter of one; front with close strong punctures; mesothorax shining, with strong and rather close punctures (closer than in *S. arvensis*), median and parapsidal grooves distinct; metathorax with the enclosure large, semilunar, distinct, with very strong vermiform longitudinal rugæ, partly connected by small transverse ones; sides of metathorax coarsely rugose; tegulæ large, pale testaceous with a dark spot; wings faintly dusky, stigma and nervures black or almost so; second submarginal cell very narrow; first longer than in *arvensis*; first abdominal segment with very sparse punctures on a shining ground; second and following segments with minute close punctures, except on the apical margins.

Hab. Las Vegas, New Mexico, September. This and the next species are superficially like *S. arvensis*, but are distinguished by many characters. The fine close punctures of the abdomen of *S. veganus* are very distinctive.

Sphecodes pecosensis, n. sp.

♀. Length slightly over 8 mm.; head, thorax, legs, and antennæ black, the flagellum longer than in *S. veganus*; spurs rufo-fuscous; abdomen of ordinary form, shining, bright chestnut-red, the fifth segment only slightly dusky at apex. Mandibles reddish only at tips, with a divergent inner tooth; labrum with a strong transverse ridge, not emarginate; antennæ with the fourth joint somewhat longer than broad, much longer than the third; face broad, rather thinly pubescent; clypeus with extremely large, almost confluent punctures; a raised vertical line between antennæ; front extremely densely punctured; a small transverse ridge behind ocelli; mesothorax with large confluent punctures all over, giving it a very rough (though not dull) appearance; median groove scarcely indicated; scutellum with sparse punctures on a shining ground; enclosure of metathorax semilunar but ill-defined, with very strong straight longitudinal rugæ, as Sichel describes for *S. metathoracicus*, only in our species the metathorax outside of the enclosure is coarsely cancellate; tegulæ with the anterior border hyaline, then a large black spot, and behind that ferruginous; wings dusky; stigma and nervures black or almost; second submarginal cell narrowed above; first and second abdominal segments

with very sparse punctures on a shining ground (closer at sides of second); third and fourth with closer, but by no means dense, punctures. The eyes are narrower than in *S. viganus*.

Hab. Pecos, New Mexico, June 25th, 1903 (*W. P. Cockerell*). The altitude of Pecos is about 6700 ft.

Colletes gilensis, Ckll.

Pecos, Aug. 7th, a female at flowers of *Melilotus alba* (*W. P. Cockerell*). In Europe the same plant is visited by *Colletes fodiens*, as is recorded by Loew.

Halictus ruidosensis, Ckll.

Pecos; two females at flowers of *Castilleia integra*, June 26th (*M. Grabham*). The usual visitor of this plant is *H. ovaliceps*.

Halictus clematisellus, Ckll.

Pecos; both sexes common on *Petalostemon oligophyllus*, Aug. 12th (*W. P. Cockerell*). Previously taken only on *Clematis*.

Andrena mellea, Cresson.

Pecos, rather common; taken in June at flowers of *Fallugia acuminata* (*Fallugia paradoxa* var. *acuminata*, Wootton, Bull. Torrey Bot. Club, 1898, p. 306). At Glorieta (Sta. Fé County) a female was taken in a flower of *Argemone intermedia*, August 23rd.

Andrena prunorum, Ckll.

Pecos; at flowers of *Fallugia*, June 24th (*W. P. Cockerell*).

Perdita affinis, Cresson.

Pecos; both sexes at flowers of *Grindelia inornata*, Aug. 24th (*W. P. Cockerell*). At Glorieta my wife took it on *Chrysopsis villosa*.

Perdita stottleri, Ckll.

♂. About 5 mm. long; similar to *P. townsendi*, but smaller, with the fifth black band on abdomen wanting, or represented by a mere shaded line.

The species was described from a single female taken on *Bigelovia*. It proves to be really a species of *Gutierrezia sarothræ*, which it visits in great numbers at Pecos, New Mexico, during the last half of August. Its rediscovery is due to my wife.

Perdita chrysophila, Ckll.

A male was taken at Pecos, New Mexico, at flowers of *Picradenia floribunda*, Aug. 21st, 1903 (*W. P. Cockerell*). It is a little smaller than the only specimen previously known, and the metallic tints of the head and thorax are dark blue, not at all green.

Melecta interrupta, Cresson.

Pecos; at flowers of *Fallugia*, June 27th (*M. Grabham*).

Anthidium porterae, Ckll., var. *amabile*, n. var.

♂. Abdomen with the ground colour red instead of black; the yellow markings rather more developed, the abdominal bands very little, some not, interrupted in the middle line. A very beautiful variation, but in no sense a subspecies.

Hab. Pecos, New Mexico, Aug. 29th, 1903.

Megachile emoryi, n. sp.

♀. Length 18 mm.; black, with the pubescence arranged as in *M. latimanus*, but entirely orange; the dorsum of thorax, except at sides, bare, and as closely punctured as is possible throughout. This looks like a gigantic *M. latimanus*, but in addition to its large size it offers the following differences: pubescence more highly coloured; mandibles with the broad cutting edge presenting low crenulations in place of distinct teeth; sides of vertex more closely punctured; eyes in life black, with a broad green central band; tegulae dark brown, with extremely close but shallow punctures; wings yellowish grey. From *M. sapellonis*, which resembles it in size, *M. emoryi* is easily known by the straight and simple anterior edge of clypeus, orange abdominal hair-bands, and extremely broad basal joint of hind tarsi.

Hab. Pecos, New Mexico, on Kinkale Ranch, Aug. 31st, 1903. It visits the flowers of the larger yellow-rayed Compositae. Named after Lieut. Emory, who published an early account of the region it inhabits.

Megachile sapellonis, Ckll.

Pecos, Aug. 31st; female. Eyes in life entirely black.

Megachile wootoni, Ckll.

Pecos, Aug. 31st; female. Eyes in life entirely black. The specimen has black hair on vertex and mesothorax, breaking down the distinction between *wootoni* and *calogaster*.

Megachile monardarum, Ckll.

Pecos; male at flowers of *Thelesperma gracile*, Aug. 7th (*W. P. Cockerell*); both sexes, Aug. 31st. This is the American representative of *M. willughbiella*, and in the male I cannot distinguish it from that species (*cf.* 'Psyche,' 1901, p. 283). Mr. Viereck (*Tr. Am. Ent. Soc.* 1902, p. 48) has declared this species to be identical with *M. vidua*, Smith. This is quite erroneous; *M. vidua* is the American representative of *M. maritima*. *M. monardarum* has the eyes in life entirely black in the female; but sea-green, with the anterior margin broadly, the posterior margin narrowly, and the upper third or fourth, black, in the male.

Megachile latimanus, Say.

Pecos; female at flowers of *Thelesperma gracile*, Aug. 7th (*W. P. Cockerell*). Eyes in life black, with a rather obscure greyish median band.

Megachile sayi, Cresson.

Pecos, Aug. 31st; male. Eyes in life black, the lower half strongly shaded with green.

Megachile cleomis, Ckll.

Pecos, Aug. 31st; three males. Eyes in life green in middle, black at sides. The length of the last antennal joint and of the second submarginal cell are variable, and sometimes the disc of thorax shows much black hair; it is possible that two or three species are included in my present conception of *cleomis*, but at present I cannot satisfactorily separate them.

Melissodes sphaeralcea, Ckll.

Pecos, August; common. Visits flowers of *Sphaeralcea fendleri*. My wife has found it nesting in the ground; the entrance of the nest is without any structure such as is built by *Anthophora* and *Diadasia*. In life the eyes of the female are a beautiful grey-blue.

Melissodes obliqua, Say.

Pecos, Aug. 31st; female. Eyes in life very dark purplish, nearly black.

Melissodes pallidicincta, Ckll.

Pecos, June 12th. Dr. M. Grabham took a female of this and one of *Dianthidium parvum* asleep in *Pentstemon* flowers, in rainy weather.

Anthophora cleomis, Ckll.

Pecos, Aug. 31st; female. Eyes in life sea-green, blackish in front and on hind border.

Anthophora montana, Cresson.

Pecos, Aug. 31st; female at flowers of *Salvia lanceolata*. Eyes in life grey-blue, faintly purplish in front and on hind margin.

Bombus iridis, Ckll. and Porter.

Pecos; at flowers of *Fallugia*, June 24th (*W. P. Cockerell*).

Bombus sonorus, Say.

Pecos, Aug. 31st. The specimen has the bright yellow pubescence of *sonorus*, but differs in having the hair on the pleura partly yellow and partly black.

It seems advisable here to make some statement regarding the species of *Oxæa*, *Nomia*, &c., which Mr. Cameron has de-

scribed (Trans. Am. Ent. Soc.), purporting to come from the region about Santa Fé, New Mexico. The character of the species is Mexican, and I am quite confident that the locality assigned is entirely wrong. I wrote Mr. Cameron about it, and he kindly informed me that the material was collected years ago by a person who was known to have visited the Santa Fé region, but who might very well have obtained the insects elsewhere. The collection included some species of *Bombus* which might have come from near Santa Fé.

Colorado Springs, Colorado.

SOME ABERRATIONS OF COMMON MOTHS.

BY FRANCIS E. WOODBRIDGE.

1.



2.



3.



4.

1. *Hepialus hectus*.—Male taken at Dunkeld in June, 1900. The markings on the fore wings are rather broader than usual, and there is a row of golden yellow spots along the hind margin between the nervules, increasing in size towards the hinder angle. The hind wings are beautifully dashed with golden yellow along the hind margin between the nervules, with a golden yellow blotch near the apex, and a similarly coloured dot near the costa. The photo shows the markings exactly.

2. *Melanippe rivata*.—Female taken at Uxbridge some years ago. The central band on the fore wings is reduced to a blotch on the costa, and towards the hinder angle there is a dusky cloud extending from the band on the hind marginal area across the usual white stripe towards where the central band should have been. Hind wings normal.

3. *Melanippe fluctuata*.—Female taken at Uxbridge in May, 1903. The blotch near the apex rather more flattened than

usual and somewhat suffused at the edges. The central blotch narrowed to a thin neck on the costa, then widening into a kidney-shaped blotch narrowed in the middle and flattened at the end, somewhat suffused. The wavy lines are somewhat thicker and more distinct than usual. Hind wings rather dark.

4. *Coremia ferrugata*.—Female taken at Throwleigh (Dartmoor) in August, 1901. This specimen, taken at a height of nearly 1,000 feet, shows distinct traces of melanism. The central band of the forewings is blackish, with distinct black edges on either side, rather suffused. The hind wings blackish from the middle to the base, with very few wavy lines. The photo shows the black marking on the hind wings fairly well, and also the black edgings to the central band on the fore wings.

CURRENT NOTES.

By G. W. KIRKALDY.

(Continued from vol. xxxvi. p. 315.)

THESE notes are intended, not only to afford references to recently published monographs, revisions, &c., but to call attention to stray notices which might otherwise be long overlooked.

RUDOLPH. I. GEARE, 1902: "A list of the Publications of the United States National Museum" (Bul. U.S. Nat. Mus. 51, pp. 1-168 & i-vii). This useful annotated catalogue enumerates 21 annual reports, containing 122 papers, 23 volumes of proceedings (embracing 1240 papers, 50 bulletins, 4 special bulletins), and 50 circulars, the whole comprising (on a rough calculation) 52,000 pages, 3800 plates, and 5700 text-figures, a magnificent result for a quarter of a century.

T. D. A. COCKERELL, 1903: "Two Orchids from New Mexico" (Torreya iii., pp. 139-140). The Aphid *Macrosiphum corallorhizae*, Cockerell, is mentioned as occurring on *Corallorhiza vreelandii*, Rydberg.

T. D. A. COCKERELL, 1903: "New Bees from Southern California and other records" (Bul. South. Calif. Ac. Sci. ii., pp. 84-5). Two new species of the bee-genus *Halictus*, and a new, almost black var. of the Cimicid *Murgantia histrionica* are described, with locality notes on some Diptera, Rhynchota, and Crustacea.

E. G. LODEMAN, 1902: "The Spraying of Plants" (The Macmillan Co., New York, pp. i-xvii & 1-399, text-figs. 1-92, and frontispiece (portrait of Millardet)). This little work, now reprinted four times, is invaluable to the horticulturist and to everyone interested in economic entomology. The first chapter

deals with the early history of liquid applications; the second to spraying in "foreign countries"; the third to spraying in America; the fourth to materials and formulas; the fifth to machinery, &c.; the sixth to the action of insecticides and fungicides. Part 2 contains specific directions for spraying cultivated plants, and there is an appendix dealing with laws regarding spraying and the metric system.

P. BONAME, 1902: "Les Borers de la Canne à Sucre. Insecticides et Fungicides" (Bul. Sta. Agron., Colony of Mauritius, no. 7, pp. 1-28). [Lepidoptera.] A consideration of *Diatraea striatalis* and *D. saccharalis*, their parasites, and remedies against their depredations.

W. E. BRITTON, 1903: "Second Rep. State Entom." (Rep. Connecticut Agr. Exper. Sta. for 1902, pp. 99-178 & i-x, pls. 1-15, text-figs. 1-19). The greater part of the report is concerned with the San Jose Scale (*Aspidiotus perniciosus*), pp. 114-38; the Apple-tree Tent Caterpillar (*Climacampa americana*), pp. 139-48; and the Whitefly (*Aleyrodes vaporariorum?*), pp. 148-63, the notices of the latter being especially useful.

VERNON L. KELLOGG, 1903: "The Net-winged Midges (Blepharoceridæ) of North America" (Proc. Calif. Acad. Sci. (3) iii. Zool., pp. 187-232, pls. 18-22). [Diptera.] A valuable contribution to our knowledge of this interesting family, especially in the notices of the immature stages. The author points out that the life-history of no Blepharocerid is fully known, the first eggs of any species being yet to be found; the food-habits of the male are also unknown.

G. COMPERE, 1903: "In search for Parasites" (Journ. Dept. Agric. Western Australia, viii, pp. 132-45). Report of a tour round the world in search of a parasite of the Fruit-fly (*Ceratitis capitata*) and other insects, and discussion of parasitic insects *v.* spraying.

J. M. STEDMAN, 1903: "Hessian Fly in Missouri (*Cecidomyia destructor*, Say)" (Bul. Coll. Agric. Univ. Missouri, no. 62, pp. 129-49). [Diptera.]

S. SAWAMURA, 1902: Investigations on the digestive enzymes of some Lepidoptera (Bul. Coll. Agric. Tokyo Imp. Univ. Japan, iv, pp. 337-47). Though the expanded part of the intestine in Lepidoptera is commonly called the stomach, its physiological function resembles rather that of the intestines of Vertebrata. There is no part of the intestines in Lepidoptera comparable with the stomach of Vertebrata, since no genuine acid gastric juice exists in them.

ARTHUR M. LEA, 1903: Remedies for Insect and Fungus Pests of the Orchard and Farm (2nd edition). (Dep. Agriculture, Tasmania, pp. 1-54; text-figs.) A popular account of the Orchard and Farm Pests of Tasmania.

W. S. BLATCHLEY, 1903: "The Orthoptera of Indiana" (27th

Ann. Rep. Dept. Geology, Indiana, for 1902, pp. 123-471; one coloured plate and many text-figs.). A somewhat popular account of the Orthoptera of Indiana, treated in a very full and clear manner, accompanied by notices of their natural enemies, a bibliography, and analytical keys; the accounts of habits and geographical distribution are very interesting, especially the consideration of the life-zones of the State as exemplified by the distribution of the present order. There is a fine coloured plate of the remarkable pink variety of *Amblycorypha oblongifolia*.

ED. J. KYLE & EDWARD C. GREEN, 1903: "The Tomato" (Bul. Texas Agric. Exp. Sta. 65, pp. 1-31). The Rhynchoton *Dicyphus saporatus*, Uhler, is noted as a new tomato insect causing serious injury in Texas.

(To be continued.)

NEW CULICIDÆ FROM THE FEDERATED MALAY STATES.

BY FRED. V. THEOBALD, M.A.

A COLLECTION of twenty-three specimens of Culicidæ recently sent to me by Dr. Leicester, taken and bred by him in and near Kuala Lumpur, contains ten new species and six new genera. Two other species were sent, namely, *Stegomyia nivea*, Ludlow, and *Myzomyia albirostris*, Theobald, previously known, the former from the Philippine Islands, the latter from Malay.

The descriptions of most of these species have been sent me, drawn up by Dr. Leicester, from fresh specimens, with great care. These descriptions are reproduced here in inverted commas, showing that Dr. Leicester is the describer of the species and not myself, but I have added a few notes on each species. I have proposed six new genera, one named after Dr. Leicester. Most are jungle-living species, and this probably accounts for the novelties in the collection, as the majority of collections so far made have been in and around human habitations. Besides the six new genera, there is a new *Melanoconion*, Theob., three new *Toxorhynchites*, Theob., and a new *Catageomyia*, Theob. I believe Dr. Leicester has notes on the larvæ of these species to be described elsewhere. I wish it clearly to be understood that the new species, except *Toxorhynchites leicesteri*, *Scutomyia albolineata*, and *Leicesteria longipalpis*, are on the authority of Dr. Leicester. The types are deposited in the British Museum (Nat. Hist.).

ANOPHELINA.

Genus LOPHOSCELOMYIA, nov. gen.

Head with upright forked scales, and some narrow-curved ones; palpi densely scaled in both sexes, most so in the male; thorax with

very long curved hair-like scales. Prothoracic lobes large, with a tuft of black spatulate scales on the anterior face, and with black bristles. Abdomen with hairs only, except the last two segments, which have lanceolate scales. Hind legs with a dense tuft of outstanding scales on the apex of the femora. Wings clothed with broadish blunt lanceolate scales.

This genus approaches *Nyssorhynchus*, Theob., but differs in having long, curved hair-like scales on the thorax instead of narrow-curved and spindle-shaped ones. The dense apical tufts on the hind femora are very marked in both sexes.

So far I have seen no Anopheline approaching it in general appearance. Possibly others will be found in jungle growth.

A single species only is known, and is here described by Dr. Leicester.

The female type is, unfortunately, broken in transit.

LOPHOSCELOMYIA ASIATICA, Leicester, sp. n.

“Hind legs with the femora with a dense apical tuft of long black and white scales. Wings with two yellow costal spots. Tarsi unbanded.

“♀. Head black, frosted, when dry dark brown; the scales are arranged in tufts, and bare places are left between; it is rather lighter along the orbital margins, giving the appearance, under a hand lens, of a narrow white margin to the eyes; on the vertex is a tuft of long, silky hair-like scales, with a double curve on them which project well forwards; behind these are a few white narrow-curved scales placed on either side of a bare black line and extending but a small way back and laterally for a short distance down the orbital margins; behind these are some flat-topped white upright scales which merge behind into a dense mass of black (when dry, brown) upright scales extending laterally over the occiput to just short of the eyes, from which they are separated by a bare space. I can perceive no flat scales anywhere. There are a few black narrow-curved scales succeeding the white along the orbital margin. The eyes are a metallic bronzy-green. Antennæ with the basal joint dusky, its depression brown, some rather broadly spindle-shaped white scales on its inner face; the second joint light brown, some black spindle-shaped scales on its inner face, succeeding joints similar but without scales; all the joints except the basal one covered with short white hair; verticillate hairs pale brown. Palpi equal in length to proboscis; pallid, covered with long black scales, a few pale ones at the junction of the third and fourth joints, and some pallid hairs at the tip (best seen with a hand lens). Proboscis covered with black short scales; labellæ fawn-coloured. Mesonotum with the greater part of the upper surface of a pale fawn colour (in some lights it has a greenish tinge) with a dark brown line in the centre in front; on either side there are two dark brown patches separated by a narrow pale line. Looked at sideways these patches look lighter except for a small round dark spot at the upper part of pale line separating the two patches. In front is a rosette of fairly broad curved scales, white in colour; the rest of the mesonotum is covered with scattered pale golden hair-like curved scales (white in

some lights) and pale golden bristles. Prothoracic lobes elongated forwards but not mamillated; a tuft of black spatulate scales placed on their anterior superior face, and there are also some black bristles. Scutellum with the central part dark brown, black under a hand lens; lateral portions same colour as mesonotum; a few pallid curved hair-like scales are scattered irregularly over it, and the bristles are brown in colour. Metanotum the same colour as the mesothorax, with a dark brown central stripe. Wings with the costa black scaled, except for two yellow scaled spots involving the first longitudinal, and the second spot involves the upper branch of second longitudinal. The first spot is placed rather more than half way from base of the costa, the second just before the apex of the wing. There are two patches of black scales, one at base of second long vein, and the other at base of third and at base of the fourth. There is a light scaled area on the lower branch of second longitudinal. The first sub-marginal cell longer and narrower than the second-posterior cell with its base nearer the base of the wing (cross-veins cannot be made out). All the rest of the veins clothed with black scales. Fringe black except opposite the yellow apical spot, where it is golden yellow. Pleuræ dark brown, marked with pallid lines. Legs with coxæ pallid; fore-legs clothed with black spindle-shaped scales with a purplish hue in some lights; knee-spot pale, and a few pale scales at junction of tibia and metatarsus. Mid-legs the same as the front, except for a conspicuous patch of white scales on the dorsum of the femora just before the apex. Hind-legs have a little before the apex of femora a dense tuft of lanceolate scales which stand out on either sides conspicuously; where this ends the femora become snowy white, and similar long scales, snowy white in colour, project from either side. There is no banding of the tarsi. Fore and mid ungues equal and simple. Abdomen has the dorsum greenish-yellow except segment four, which is dark brown; there are numerous pale golden hairs; on the last two segments there are numerous golden brown and dark brown lanceolate scales. The apices of the segments are slightly darker than the bases.

“♂. Head muddy brown when fresh (dark brown when dry); between the eyes is a triangular space bordered on either margin by white narrow-curved and more to the front by long silky white hair-like scales, which cross and project forwards over the face; behind this space are a number of white spatulate scales standing upright like palisades; the ends are not forked; passing backwards towards the nape and also laterally is a dense tuft of upright scales which become darker and darker the further back they are placed. Antennæ with the basal joint dark brown, succeeding joints dirty white at the base, yellowish at the apex, plumes pale tawny brown. Palpi long, black scales at the base on their outer sides; dark brown scales over the whole of the apparent first joint, except for a ring of pale scales about its middle; a ring of yellowish scales at the junction of the penultimate and antepenultimate joints; upper surface of apical half of penultimate joint scaled with yellowish scales and all the terminal joint except for a patch of black scales near its base. Proboscis uniform. Thorax pale fawn brown; a median dark line and lateral dark brown patches; on the anterior margin is a rosette of long narrow-curved white scales; hair-like golden bristles arranged in

lines are distributed over it; there is a dark spot in front of scutellum. Wings with the costal spots much paler yellow than in the female; the first spot is very long, and commences fully two-thirds from the base of the costa; the second spot is small, and near the apex both involve the costa to first longitudinal, the second involving also the upper branch of second long vein. At the base of the second long vein is a distinct patch of black scales, and a few are scattered along the course of this vein. There is another patch at the base of the third vein, and another near the base of fourth, and a very few along the course of the vein. Besides these and the scaling on the costa and subcosta and first long vein there are no other dark scales on the wing. In the feathering of the hind legs and the markings of the legs generally it resembles the female. Abdomen as in the female."—(Leicester). Length 4 mm., male; 4.3 mm., female.

Observations—This species was taken in Ambang Jungle, six miles from Kuala Lumpur, on the 27th of June. It is a very distinct small Anopheline, the hind femoral tuft alone distinguishing it, and the wings have five noticeable black spots, four prominent and true distinct yellow costal spots. The specimen sent by Dr. Leicester is in the British Museum (Nat. Hist.) Collection (deposited).—F. V. T.

(To be continued.)

NOTES AND OBSERVATIONS.

IN a letter from our colleague, Mr. W. G. Kirkaldy—who holds an appointment in the Department of Agriculture and Forestry at Honolulu—he mentions having seen ten species of butterflies, among them being *Pieris rapæ*, *Pyrameis cardui*, *P. atalanta*, *Lampides boeticus*, and *Anosia archippus*. *P. rapæ* has probably been accidentally imported, and two species of *Lycænida* have been introduced for experimental purposes.

Although the insect fauna of the Hawaiian islands has been pretty closely investigated, there still remains considerable scope for further research, especially as regards the important matters of life-histories, distribution, &c.

CROSS-PAIRING OF *ZYGÆNA TRIFOLII* AND *Z. FILIPENDULÆ*.—At the end of July last, while investigating the lepidopterous fauna of the Weybridge district, I came upon a colony of *Z. filipendulæ* on some marshy ground. Among the specimens were several fine examples of a form exactly identical with *hippocrepidis*, Steph., which occurs in May and June in meadows at Northwood, and to which reference has previously been made (Entom. xxx. 181). Flying with the *filipendulæ* were a few males of *A. trifolii*; but still more interesting was the discovery of no less than four crossed pairs of *trifolii* and *filipendulæ*, the males in each case being referable to the first named. Some little

distance farther on the breeding-ground of *trifolii* was found, but no *filipendulæ* were there.

All the available specimens on the *filipendulæ* ground were carefully examined, with the result that a very instructive series was obtained. Besides the *hippocrepidis* there were several examples so very like *trifolii* that one could readily suppose them to be six-spotted specimens of that species; indeed, if they had occurred on the *trifolii* ground such a conclusion would have been very natural; as, however, they were only found in the *filipendulæ* camp, the probability seems to be that they, and perhaps also *hippocrepidis*, are the progeny of cross-pairings.

In the Middlesex locality, where the two species occurred in close proximity in May and June, I often looked for cross pairs on the *trifolii* ground, but without success. The *filipendulæ* colony there was in a less favourable situation for observation, and therefore was not so closely examined; if this could have been done, some instances of crossing might have been detected.

I may mention that only two of the cross-pairs were taken, and one of these was given to Mr. Carr. Each of the females deposited ova, and the larvæ hatched in due course. I believe that every egg in my batch hatched, but, unfortunately, there has been great mortality among the larvæ, so that at the present time there are less than a score remaining. It is to be hoped that Mr. Carr may be able to get his larvæ through to the perfect state, as the result ought to help us to clear up some of the doubt concerning the status of *hippocrepidis*, Steph. So far as one can see at present there does not appear to be any sufficient reason to consider it a species, or even a subspecies.—RICHARD SOUTH.

XYLOPHASIA ZOLLIKOFERI, Frey., IN BRITAIN.—Mr. T. Ashton Loft-house (Ent. Mo. Mag. (2) xiv. 290, and 'The Naturalist,' no. 563, p. 456) records the capture of a specimen of this species at Linthorpe, Middlesbrough. It was taken at sugar on Sept. 26th last. So far as we know, only two specimens of *X. zollikoferi* have previously been observed in Britain. One of these was taken in October, 1867, by Mr. Harding, of Deal, and the other by Mr. Tait, at Inverurie, in Scotland. The former is in the Doubleday Collection in the Bethual Green Museum. The species seems to be exceedingly rare in Europe, the occurrence of a third specimen in Britain is therefore of great interest.

COINCIDENCE OF PYRAMEIS CARDUI AND PLUSIA GAMMA.—The following extracts from my note-book for 1888, will, I think, be interesting to Mr. H. Rowland-Brown (*ante*, p. 316) and, possibly, to the readers of the 'Entomologist' generally:—

P. cardui. In profusion in the Chester district during the first half of June (Entom. xxi. p. 315). The butterflies were in fine condition. There was a second appearance about the middle of September. Larvæ were abundant on thistles, Heysham Moss (North Lancashire), July 27th (Entom. xxi. p. 317). From these I reared a fine dark series.

P. gamma. "The moth swarmed with us—a curious coincidence to the season's abundance of *P. cardui*" (Entom. xxi. p. 318). Seen

also at Chattenden, Cuxton, Farnborough (Kent) and Westcombe Park (Entom. xxi. p. 187); at Sheffield (Entom. xxi. p. 212); and at Sunnyside, Groombridge, Sussex (Entom. xxi. p. 233). The season was a notoriously wet and dull one, and the temperature low, on the whole—anything but favourable for insect immigration; yet it was not only a *cardui* and *gamma* year, but a *galii* year as well (Entom. xxi. p. 256).

Curiously enough, the season for 1888 was the only one in which I ever remember seeing larvæ and pupæ of *P. gamma*. On rough hilly wastes I found larvæ (many of them) feeding on burdock, and the pupæ spun up, chiefly on thistles, in July and August.—J. ARKLE; Dec. 3rd, 1903.

MELITÆA DIDYMA AB.—Since writing my note to an illustration of an aberrant *M. didyma* (Entom. xxxvi. 153) I have come across, in the 'Bulletin de la Société Entomologique de France,' for 1900, a plate of aberrations of the same species, one of which is almost identical with that figured by me. These, with a note furnished by M. Charles Oberthür, are exceptionally interesting, inasmuch as he takes the view that such "aberrations are always analogous according to the prevailing scheme of each species, and even of each genus." "The aberrations," he continues, "are not isolated examples, occurring once not to re-occur in like form; they are rather regular variations appearing in certain places where the necessary conditions exist for their development. What these conditions may be appears to be little known. Heat, cold, light, and electricity seem, however, to be the principal causes of aberration in Lepidoptera." And he goes on to cite the curious case of a lilac-winged aberration of *Lycena bellargus*, taken after a thunderstorm in some numbers, where none of that species differing from the normal colour form had been observed before or after the electrical disturbances of the atmosphere. Incidentally also to the occurrence of *M. didyma* at Bourg-des-Compts in the neighbourhood of Rennes, M. Oberthür says that this without doubt is the furthest western locality for the species in France, and therefore Europe.—H. ROWLAND-BROWN; Oxhey Grove, Harrow Weald, Nov. 25th.

GEOMETRA VERNARIA.—My experience with regard to the emergence of this species was very similar to that of Mr. Clarke (Entom. xxxvi. 291). The first insects to emerge were all males, the females remaining till last. There was, however, some overlapping, one or two of the latest males emerging about the same time as the first of the females. G. M. RUSSELL; Portchester, Nov. 12th, 1903.

CONTRIBUTION TO THE NATIONAL COLLECTION OF BRITISH LEPIDOPTERA.—Twelve specimens of *Eupithecia consignata*, by Mrs. Hutchinson, of Leominster, Herefordshire. Ten of the specimens were reared last April, and are the direct descendants of a female example captured in April, 1874.

CAPTURES AND FIELD REPORTS.

SIREX GIGAS IN WILTSHIRE.—In October last an example of this species was captured at Coulston, near Westbury, Wilts. It was a female, in excellent condition.—J. B. TEEND; 1, Grosvenor Square, Southampton, Dec. 13th, 1903.

AUTUMNAL LEPIDOPTERA IN SURREY.—This autumn seems to have been particularly favourable for collecting at gas-lamps, and among a host of other things taken by this means since Sept. 1st I may mention:—*Neuronia popularis*, *Luperina cespitis*, *Xanthia citrigo*, *X. gilvago*, *Cirrhædia xerampelina*, *Calocampa vetusta*, *Ennomos alniaria*, *E. fuscantaria*, *Himera pennaria*, *Eupithecia subfulvata*, *Triphosa dubitata*, *Eubolia cervinata*. Sugaring has also produced its insects, though of only the commoner order, the following being taken since Sept. 29th:—*Xylophasia monoglypha* (one on Oct. 13th), *Agrotis suffusa* (two), *Noctua c-nigrum*, *Mania maura* (one on Sept. 30th), *Orthosia lota*, *O. pistacina* (abundant), *O. litura*, *Orrhodia ligula*, *Scopelosoma satellitia*, *Xanthia gilvago*, *X. circellaris* (common), *Miselia oxyacanthæ*, *Phlogophora meticulosa* (in swarms), *Catocala nupta* (slightly worn), *Hypena rostralis*, and *Pyralis costalis*.—LESLIE H. MOSSE-ROBINSON; Wandle Bank, Wallington, Surrey, Oct. 20th, 1903.

COLLECTING IN DEVON, TORQUAY, AND NEIGHBOURHOOD, 1903.—The first three months of 1903 were very mild, which caused the willows to come into leaf before the catkins had a chance to open. Therefore we did not get many insects at willow. Larvæ were fairly plentiful during the first quarter of the year. I append a list of the principal captures for the year, taken from my note-book. In January and February larvæ of *Heliophobus hispidus* were fairly plentiful; also a few each of *Leucania putrescens* (full-grown in January), *Rusina tenebrosa*, *Triphæna ianthina*, *T. fimbria*, *Epunda lichenea*. The following moths were taken at willow, light, &c.:—*Hybernia rupicaprararia* (males and females at rest on blackthorn bushes), *H. leucophaæaria*, *H. progemmaria* (males only). In March, imagos of *Selenia illunaria* (first specimen taken March 19th). *Xylocampa lithoriza* and *Tæniocampa gothica* were the only fresh things noticed out.

In April the following moths were noticed, principally at willow:—*Tæniocampa munda*, *T. cruda*, *T. miniosa*, *T. gracilis*, *T. stabilis*, *T. instabilis*, *T. rubricosa*, *Hoporina croceago* (one), *Scopelosoma satellitia*, *Xylina petrificata*, and a few *Trachea piniperda*. In the same month the larvæ of *Arctia fuliginosa*, *Chelonia villica*, *Nudaria mundana*, *Callimorpha dominula*, were noticed among others.

In May, larvæ of *Lithosia caniola*, *L. complanula*, *Epunda nigra*, and on heather larvæ of *Agrotis agathina*, *A. porphyrea*, *Noctua neglecta*, &c. The moths for the month, noticed, were *Anarta myrtilli* (one) on May 8th, at rest on heather (is not this early for this species?), *Heliodes arbuti*, *Gonoptera libatrix*, *Tephrosia crepuscularia*, *Nemoria viridata*, *Asthenes candidata*, *Corycia temerata*, *Fidonia piniaria*, *Melanippe procelata*, *Anticlea badiata*, *Cidaria russata*, and *Anaitis plagiata*.

June: the following imagos:—*Zygana lonicera*, *Euthemonia russula* (males only), *Chelonia villica*, *Orygia pudibunda*, *Acronycta ligustri*, *A.*

rumicis, *Axylia putris*, *Dianthæcia carpophaga*, *D. conspersa*, *Manestra anceps*, *Grammesia trilinea*, *Rusina tenebrosa*, *Euplexia lucipara*, *Hadena thalassina*, *Larentia olivata*, *Emmelesia affinitata*, *Cidaria ribesiaris*, *Phibalapteryx tersata*, *Anticlea rubidata*, among others, were noticed.

July was the best month during the season: *Agrotis lucerneæ*, *Leucania putrescens*, *Agrotis corticæ*, *Thyatira batis*, *Gonophora derasa*, *Agrotis lunigera*, *Dysthymia luctuosa*, *Plusia festuæ*, *Apamea gemina*, *Caradrina blanda* occurred, among other commoner things.

August produced *Lithosia caniola*; only five were taken this year. Five journeys were made to Dawlish for *Callimorpha hera*; this month only nine specimens were taken; this species also appears to be getting scarce. At sugar, a few such things as *Luperina testacea*, *Agrotis saucia*, and a few *Triphena interjecta* were the best insects taken.

September and October produced a few each of *Epunda nigra*, *Heliophobus hispidus*, *Hadena protea*, *Xylinu petrificata*, *Polia flavicincta*, *Anchocelis rufina*, *Noctua glareosa*, *Anchocelis lunosa*, *Cerastis raccinii*, *C. ligula (spadicea)*, *Scopelosoma satellitia*, *Xanthia citrigo*, *X. cerago*, *X. silago*, *X. aurago*, *X. ferruginea*, and *Stilbia anomala*; among Geometers, *Scotosia dubitata* and *Cidaria miata*.

November, up to the second week, produced nothing fresh in the way of moths; a few larvæ of *Heliophobus hispidus*, *Leucania putrescens*, and *Xylophasia hepatica* were the principal species.

The season, as a whole, has been a very poor one; we have had very little sunshine, so have not done much with the butterflies. One example of *Colias edusa* was taken at Dawlish, and one at Torquay in August; these were the only specimens seen by us during the season. We had one *Sphinx convolvuli* brought to us; it had been found at rest on a stable door on Sept. 1st, and one *Acherontia atropos*, which was picked up on the road, dead, on Oct. 15th; these latter were very fair specimens.—S. & J. WALKER; Torquay, S. Devon.

THE DRAGONFLIES OF EPPING FOREST IN 1903.—Our season began on the 1st June with the taking of *Pyrrosoma nymphula* and *Agrion puella*; then followed *Ischnura elegans* on 21st June. No fresh species fell to our net until 9th August, when we took *Sympetrum striolatum*, immature, and a single specimen of *S. sanguineum*. We did not again meet with the last-named dragonfly during the season, and we commented upon its apparent absence in 1902 in our report for that year ('Entomologist,' Feb., 1903). On Aug. 16th we took, near Chingford, for the first time in Epping Forest, a specimen (female) of *Calopteryx splendens*; the late period of this capture will be noticed. On the same date we collected *Æschna cyanea* and *Æ. grandis* for the first time this season. Both species became unusually abundant; in a single morning (Sept. 1st) we took *Æ. cyanea* no fewer than seven times (six males, one female). Upon several occasions, early in September, we were much interested in watching *Æ. grandis* ovipositing in a pond near Chingford. The females of this species receive no assistance from the males in the important function of oviposition; they rest upon rushes and other plants growing in a suitable situation, and thrust the abdomen deep into the water. On Sept. 13th we took a specimen while thus employed, when we found that the last five segments (numbers 6 to 10) were wet from immersion in the water. In

the beginning of September we made several visits to some ponds near Loughton, and on the 3rd of that month we took there a series of *Lestes sponsa*. At the same ponds, on the same day, we found *Enallagma cyathigerum* plentiful; in our report for 1902 we remarked upon the apparent scarcity of this species in the forest, but perhaps it would be more correct to describe the insect as being very local rather than scarce. We continued to collect the undermentioned species until the date noted against each:—*A. puella*, Sept. 1st; *I. elegans*, Sept. 4th; *E. cyathigerum*, Sept. 4th; *Æ. grandis*, Sept. 13th; *Æ. cyanea*, Sept. 20th; *S. striolatum*, Sept. 20th.—F. W. & H. CAMPION; Walthamstow, Essex, Nov. 6th, 1903.

NOTES ON SOME LEPIDOPTERA REARED DURING 1903.—I was much interested with Mr. F. A. Oldaker's notes on Lepidoptera bred during the past season, and can sympathize with him in the ill-luck which he experienced with some of the species. I thought that a few remarks with regard to those which I attempted to breed might not be without interest.

In February and March I obtained a number of common species, such as *Triphana pronuba* and *Phlogophora meticulosa*, together with a few *Triphana fimbria*, by searching in the garden after dark with a lantern. To save trouble, I kept these under glass in the kitchen, to induce them to feed up quickly and pupate before the usual time. This plan was very successful, and nearly all produced fine imagines in due course. Later on, by beating birch, crab-apple, &c., in this district, I took numbers of larvæ of *Hybernia defoliaria* *H. aurantiaria*, and *Nola cucullatella*, all of which I was successful in bringing through to the perfect state. The *H. defoliaria* are nearly all of a very dark form. From aspen I obtained a few larvæ of *Tethea subtusa*, a species which I had not previously found here. Unfortunately only one pupated successfully, but this produced a lovely specimen, which emerged on the 9th July. I completely failed with *Smerinthus ocellatus*, of which I had about one hundred ova from a New Forest female (laid May 29th, 30th, and 31st). The larvæ began hatching on June 11th, but nearly all died when quite young; a few only grew to about half size, when they also died off.

Of *Nyssia hispidaria* I had about twenty ova sent me, which began hatching April 14th. The larvæ did very well till full grown, when they died off in the most disappointing way, one by one. I was more successful with *Demas coryli*, and have now some pupæ resulting from about fifty ova laid at the beginning of June. These hatched between June 6th and 15th, and fed up well on oak.

Another species with which I was unsuccessful was *Endromis versicolor*. The larvæ hatched from May 2nd onwards, and although I provided them with fresh birch I could not induce them to even commence feeding, and all died in a few days.

When in the New Forest, at Whitsuntide, I obtained a very worn female of *Tephrosia consortaria*, which on June 1st and 2nd laid a number of ova in a chip-box, placing them quite out of sight between two layers of the wood. The egg is bright green when laid, oblong in shape, with rounded ends, and the surface minutely pitted. These hatched in due course, but in my subsequent absence from home were

overlooked and consequently perished. During the same visit to the New Forest I found about fifty larvæ of *Taniocampa miniosa*, about half an inch long. These fed up remarkably well, and I have now about four dozen healthy pupæ.

In April, when at Wimborne, Dorset, I found larvæ of *Xylopada fabriciana*, commonly in rolled-up nettle leaves. This little larva spins a whitish opaque tough cocoon in the rolled-up leaf. The pupa is light brown at first, turning darker before emergence, about 6 mm. long, and very active. The first moth emerged on May 8th.

With regard to Mr. Oldaker's remarks on *Euchelia jacobæ* I may mention that I found larvæ very commonly on ragwort near Orford, Suffolk, at the end of July and beginning of August. Those which I took pupated about Aug. 8th, but there were many small ones left which could not have gone down until a fortnight or so later.

Having a few pupæ of *Dasychira pudibunda* in the spring, and wishing to breed the species, I attempted to obtain eggs, but for some unaccountable reason I was unable to obtain a single pairing. The females laid a number of ova, but these were, of course, all infertile. The dates of emergence of the specimens are somewhat interesting, all the females emerging before any of the males, *viz.*:—May 1st, one female; 2nd, one female; 4th, one female; 10th, two females; 11th, one female; 12th, one male; 15th one male.—PHILIP J. BARRAUD; Bushey Heath, Herts, Dec. 5th, 1903.

FIELD-WORK IN 1903.—A record of my work with the net during the past season may not prove uninteresting. On the whole, the weather has been peculiarly depressing, and many of the days on which I had hoped to get plenty of insects were totally unsuited; for, even if there was no rain actually falling, the wind was blowing, and the temperature was too low to tempt any insects out into the open. My collecting times were, with a few exceptions, Wednesday and Saturday afternoons. On Feb. 8th I noticed *Vanessa urtica* out, and at intervals during March it appeared in my garden on days warmer than usual. It was not till April 20th that I observed *Gonepteryx rhamni*, and one of the features of this season, as far as my observation goes, has been the rarity of this species. *Pieris brassicæ* and *P. rapæ* were first seen on May 4th, but no *P. napi* till May 30th. *Euchloë cardamines* was as abundant as ever near Ranmore Common from May 21st onwards; and on the same date *Pararge aegeria* was observed in a copse in fair numbers, and the first specimens of *Nemeobius lucina* were noticed. This species was very abundant later on, and the searching for ova on the cowslip leaves yielded good results on several days when little else was to be done. *Bapta temerata* and *Abraxas adustata* were beaten from the bushes on May 21st, and a beautifully marked specimen of *Lomaspilis marginata* on May 23rd. *Hesperia malvæ* and *Callophrys rubi* were first observed on the same date, as well as *Enpithecia satyrata*, which I obtained then for the first time, near Ranmore. *H. malvæ* was one of the species particularly plentiful this year. *Argynnis euphrosyne* appeared on May 27th, as well as *Euclidia glyphica* and *E. mi*, and on May 30th *Phytometra anea* and *Panagra petraria* turned up, as well as *Thanaos tages*. On June 1st, which I spent on Ranmore and the neighbourhood, we got *Bupalus piniaria*, *Cidaria*

suffumata, *Strenia clathrata*, *Zonosoma linearia*, as well as a number of larvæ of *Zephyrus quercus* from the oaks. On June 3rd *Lycæna adonis* was first seen, but this species was difficult to get in good condition, owing to the rain and wind. *L. alexis* was first noticed on the same day also, as well as *Acontia luctuosa*, which was taken in some numbers during the next ten days. On June 4th *Acidalia ornata* was taken, but few of this species were observed. June 12th was a blank, except for a few *Asthena candidata*, and on June 17th nothing new turned up except *Melanippe unangulata*. On June 22nd we took *Lycæna alsus* for the first and only time this year, and then only three or four specimens. But *Augiades sylvanus*, seen first on the same day, was more plentiful than usual, and an interesting variety of *Camptogramma birineata*, with dark bands, was taken. On June 24th *Melanthia ocellata* and *Larentia viridaria* were beaten out, and a female *Lycæna agestis* deposited about fifty ova in a pill-box. These duly hatched on June 29th, but all died off before the first moult. On July 4th *Cidaria fulvata* was plentiful and in fine condition, and on July 8th a good number of *Aphantopus hyperanthus* were netted, only to be released again, when it had been found that they were normal. On July 11th very little was about, but diligent work among long grass produced a good series of *Endrosa irrorella*, and a fair number of pupæ of *Zygæna jilipendulæ* were noticed at the same time. July 22nd saw the advent of *Adopæa thaumas* in fair numbers, and a few males of *Augiades comma* were taken, the first female being seen on July 25th, on which date *Eubolia bipunctaria* was noticed. The above notes refer almost exclusively to work on and near Ranmore, but on July 30th I migrated to the neighbourhood of Bognor, which I found singularly unproductive in the daytime, of course owing to the atrocious weather. A walk from Bognor to Arundel on Aug. 7th produced one *Argynnis adippe*, but nothing else except *Pieris brassicae*, *P. rapæ*, *P. napi*, *Epinephele jurina*, *E. tithonus*, *Lycæna alexis*, *Adopæa thaumas*, and *Plusia gamma*. On Aug. 10th *Vanessa atalanta* was observed, and *V. io* on the 12th, as well as *Acidalia marginipunctata*. *Polyommatus phlæas* was the only insect to be seen on Aug. 18th, but on the 19th *Timandra amataria*, *Hypsipetes sordidata*, and other geometers were obtained by beating the hedges by the roadside. On Aug. 29th *Cillix glaucata* was taken in the same manner. On Sept. 1st a fine female variety of *Epinephele jurina*, with white patches on the two upper wings, was netted; and on Sept. 5th, when I had returned to Dorking, two belated females of *Lycæna corydon* were seen. Single specimens of *Vanessa atalanta* were noticed at different times during this month, and several worn specimens of *V. cardui*.

Such is my record for the year, and I think the most noteworthy feature is the entire absence of *Cyaniris argioltus*, which is usually plentiful here. No specimens of *Vanessa polychloros*, *Colias edusa*, or *C. hyale* were seen, and very few *Gonepteryx rhamni*.

A curious circumstance that happened is perhaps worthy of note. One of my boys put a setting-board, containing four specimens of *Vanessa atalanta*, into a cupboard, and on looking at it the next morning he found that the insects had entirely disappeared. Subsequent events, in which a penny trap figured successfully, revealed the fact that mice were the culprits. We found a few fragments of wings

scattered about the cupboard, but the mice had eaten or removed every vestige besides, leaving nothing whatever but the pins and paper on the setting-board. — F. A. OLDAKER; Parsonage House, Dorking, Nov. 26th, 1903.

NOTES FROM THE NORTH-WEST. — The season for 1903 will probably be remembered for some time, and all over the country, for its climatic eccentricities—eccentricities even for British weather. Generally speaking, the summer may be described as one of the coldest and wettest, if not the coldest and wettest, on record. Nothing unusual, here in Cheshire, marked the weather of January, except that it was often springlike; and February was so genial, that I do not remember ever seeing such a fine display of spring flowers. Hawthorns, lilacs, and laburnums were green with foliage. April 10th (Good Friday) was generally voted a perfect day; white and pink lilacs were in bloom; there was even a rhododendron; and I gathered a bit of white hawthorn-blossom from a hedge. Then came a frost—"a killing frost"—and all these too-innocent flowers were covered with snow on Easter Monday. April continued cold and wet, with frequent frosts, almost to its close. May came in upon us with sharp thunderstorms, but redeemed its character somewhat after the middle of the month, so that Whit Monday (the 31st) was positively warm, sunny, and cloudless. Everybody expects fine weather in "the flowery month of June," and, I should say, on the whole, it is the pleasantest British month of the year. But people took to overcoats on the 14th, and there was such a frost on Midsummer-day that most of the brackens and birches in Delamere Forest became as brown as in December. There were some warm, sunny days at the end of the month, as usual; but there was, altogether, more rainfall than we liked. July was a cold, wet, windy month, taken on the whole. The following is from my notebook for the 6th:—"I do not remember such a low July temperature as to-day's; and I certainly never set *ashworthii*, *davus*, *myrtilli*, and *nebulosa* in such a low temperature. The wind whistles as in stormy October." The same cold, wet, and windy character applied to August, and was continued, more or less, through September, with the addition of two degrees of frost on Sept. 14th. October was a month of almost constant rain. November assumed its accustomed character—plenty of moisture, either in a state of fog or rain—together with the usual mild few days about the middle of the month, when *Himera pennaria*, *Hybernia defoliaria* (with an occasional *H. aurantiaria*), *Cheimatobia brumata*, *Asteroscopus sphinx* (*cassinea*), and *Pecilocampa populi* faithfully and annually make their appearance at the street-lamps.

Under such unfavourable weather conditions it is not surprising that insects have either been scarce or have come and gone unobserved. The following are some of the species which, in my experience, seem to deserve special mention. I saw few butterflies. There were some of the three commonest "whites," a few *Vanessa urtica*, but, apparently, no *V. io* or *V. atalanta*. *Thecla rubi* was a common butterfly among heath and birch in Delamere Forest, June 6th. *Cenonympha typhon* (*davus*) had not appeared in its accustomed haunts by June 27th, but was in plenty on July 4th. Unfortunately, on that date, the specimens were nearly all badly chipped, although fresh, owing to the boisterous

weather. On July 11th the butterfly was not so numerous, but it was in good condition. *Lycæna ægon* and *Epinephele ianira* were numerous and fresh on that date in the Forest district; and I should not forget to say I had glimpses of *E. tithonus* in the Shotwick neighbourhood on July 31st. On the Crosby sandhills, near Liverpool, August 4th, *Satyrus semele* was common. The coloration of the specimens struck me as being unusually rich, but perhaps this was owing to their undoubted freshness. Another thing I could not help noticing about these Crosby *S. semele* was the fact that they were not nearly so skittish and difficult to capture as are specimens of the same species on the rock-faces of North Wales and North Lancashire. I found *Leucoma salicis* on these sandhills as well, on the same date.

Among moths I saw *Lobophora carpinata* (*lobulata*) in Delamere Forest from April 15th to April 25th, at rest on palings and tree-trunks, where it posed in flat contradiction to the doctrine of protective resemblance. *Tephrosia biundularia* I first saw on April 25th, and the species continued out until June 6th, when the specimens were getting decidedly shabby; I got a fine ashy-grey female with blackish wing-suffusions and bands on May 16th. From this interesting female I have now a large progeny lying over the winter in the pupal state. *Panagra petraría* seems to be a local moth in Delamere Forest; it was plentiful, though worn, on one particular bracken-covered spot, June 6th. *Eubolia plumbaria* (*palumbaria*) was fresh and abundant on Hatchmere Heath on the same day, and I took a fine series of both sexes to renew. Among the birches in the Forest *Acidalia remutaria* and *Cidaria corylata* were also fresh, and plentiful enough. A nice *A. straminata* var. *circellata* has already been recorded for July 11th (Entom. xxxvi. 317), and, all being well, I mean to look out for this little prize next season. *Aspilates strigillaria* was just appearing on June 27th, but was represented throughout by smaller numbers than I have observed in former years. I met with *Anarta myrtilli* on July 4th to July 11th; on the latter date both males and females, in fine condition, were swept off the tops of the heather. I recommended the spot to my friend Mr. J. Thompson in September, and he went there and obtained a considerable number of larvæ off the heather; these larvæ a few days afterwards pupated. All the above are Delamere Forest Lepidoptera, and the list was extended from October 3rd to October 10th by *Peronea ferrugana* (beaten from birches), *Ephippiphora similana* = *bimaculana*, *P. caledoniana* (dark forms), *Dictyopteryx contaminana*, and *Plutella cruciferarum*.

I tried "assembling" with a fresh female *Bombyx quercus* on the Delamere heaths, July 11th, but the experiment was a total failure; a few males were seen on the wing.

Electric lamps were almost useless for attracting insects; this is not to be wondered at, for the latter are always most active in high temperatures. A male *Cossus ligniperda* was taken, June 23rd. I had only two favourable nights—June 29th and July 10th. On the first date *Amphidasys betularia* var. *doubledayaria*, *Dicranura vinula*, *Plusia pulchrina*, and *Habrostola triplasia* were my best captures; and on July 10th, the heat being almost tropical, *Uropteryx sambucaria*, *Pyralis glaucinalis*, *A. betularia* var. *doubledayaria*, *Nola cucullatella*, *Caradrina alsines*, *Mamestra sordida* (*anceps*), *Miana arcuosa*, *Acronycta rumicis*, *Bryophila*

perla, *Plusia pulchrina*, *P. iota*, *P. chrysitis*, and *H. triplasia*. A fine *Acherontia atropos* was taken from a lamp, October 24th.

Abnormal appearances were represented by a fresh *Xylophasia monoglypha* (*polyodon*), taken at an electric lamp, September 24th. A specimen of *Caradrina quadripunctata* (*cubicularis*) was bred on November 10th.

Among insects reared from the chrysalis, the following, with dates, may be of interest:—*Eupithecia centaureata* (eggs from a female taken September 4th, 1892, at an electric lamp), May 18th, May 24th, and May 31st; *Macaria liturata*, all var. *nigrofulvata* (Collins), May 24th to May 30th; these were from Delamere Forest larvæ, and I netted a worn example of the variety in the Forest, June 27th; *Cerura furcula* emerged June 10th to June 25th, the larvæ were collected in the district. Ova obtained from these moths were all infertile. *Notodonta dictæa* appeared June 24th; *Noctua brunnea* (from Delamere larvæ), June 27th and June 28th; *Aplecta nebulosa* (Delamere larvæ), with the almost black form *robsoni* (Collins), June 8th to June 29th; *Agrotis ashworthii*, July 1st to July 6th; *Gonoptera libatrix* (pupæ spun up in the tops of low sallows in August), September 4th; *Cheimatobia boreata* and *C. brumata* (Delamere larvæ), November 9th to end of the month. A few eggs of *Epione apiciaria*, from a female taken at an electric lamp, August 28th, 1902, hatched June 11th to June 21st. I could only count seven larvæ; but they all turned up as perfect insects between August 10th and August 16th.

What prompted Mr. J. Thompson and myself to join our forces of *Smerinthus ocellatus* and *S. populi* with the view of obtaining a cross, it is, after this lapse of time, difficult to say. It was certainly no desire to assist Nature in the evolution of species, so it had best be put down to a morbid interest or idle curiosity. Anyhow, we brought about, in captivity, four pairings, with eight moths, of the two species; and the resultant eggs were all infertile, although the weather conditions were most favourable. A fifth pairing between a male *ocellatus* and a female *populi* (fresh moths, of course) resulted in fifty more infertile eggs; but a second pairing of these two moths brought twenty-seven fertile eggs. These began to hatch, July 8th. My share was thirteen eggs, Mr. Thompson's, fourteen; and mine were the last laid—in fact, they were taken in a cluster from off the outside of the terminal segment. All Mr. Thompson's larvæ died in the course of the various stages; but luck favoured me, and I have now eight pupæ. The larvæ partook of the characters of both species. I did, relatively, better than with ninety-six eggs of *S. tilie* I had sent me. The larvæ from the latter died off fast in their early stages, and I have only fifteen pupæ. These pupæ, I believe, I owe to removing the remaining larvæ to a warm kitchen-shelf.

Out in the open country, larvæ seemed to be, comparatively, scarce throughout the season, and I frequently came upon dead caterpillars. In Delamere Forest, also, dead larvæ were sometimes met with, but, to those who know the runs, even good things were to be had in that sheltered locality in satisfactory numbers. The rich, coffee-coloured caterpillar of *H. defoliaria*, with its interrupted side stripe of yellow dashes, was well in evidence, July 28th, and before that date. So were

N. dromedarius, *A. betularia* (the latter species to be had right into October), and *Cymatophora duplaris*. These were found to repeat themselves, August 3rd, with the addition of one *A. leporina* and some *Panolis piniperda*, the last-mentioned being sometimes mistaken for *M. liturata*. All these could have been beaten from birch (with the exception of *P. piniperda*, from Scotch firs) until well into October. In addition, I got five *N. dictæoides* (deep purplish shiny brown, with a broad yellow side stripe, and very geometer-looking), a good many *N. camelina*, and three *A. nebulosa* (the last caught napping, as they are night-feeders), all in October, off birch. Perhaps the most curious experience of the season in the way of larvæ was finding a colony of *Orgyia antiqua*, August 12th, feeding on meadowsweet, mace-reed, and water-dock.

It was a bad season for dragonflies. The only record worth showing is the abnormal capture of a solitary male *Sympetrum scoticum* on Hatchmere Heath (Delamere Forest), October 10th.—J. ARKLE; Chester.

EARLY APPEARANCE OF *CIDARIA PICATA*.—On May 16th, 1903, when cycling near Hadleigh, Suffolk, I saw a good-sized geometer on the wing, and on capturing it was surprised to find it was a fine female *Cidaria picata*. Some years ago I took a specimen on June 1st, which I then thought was a very early date, so that this capture may be worthy of record.—P. HARWOOD; "Marlborough," Chesterfield Road, Newbury.

SOCIETIES.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—October 22nd, 1903.—Mr. E. Step, F.L.S., President, in the chair.—Mr. C. W. Simmons, of Tufnell Park, N., and Mr. J. Ovenden, of Frindsbury, Rochester, were elected members.—Mr. South exhibited very interesting series of *Anthrocera* (*Zygæna*) *trifoliæ* and *A. filipendulæ* from localities in Middlesex and Surrey, together with aberrations and supposed hybrids, and read a short paper on the exhibit.—Mr. McArthur, a short series of *Hepialus humuli* var. *hethlandica*, taken in Unst in 1882. Mr. Dodds, specimens of the Coleopteron, *Corynetes rufipes*, found alive in a box of cigars.—Mr. Edwards, a wedding-cake which had been over twenty years under a glass shade in a city confectioner's; the interior was thoroughly demolished by beetles, and the sugar was burrowed in an extraordinary way by them. The species was recognized as *Anobium paniceum*.—Mr. Carr, series of bred and captured males of *Orgyia antiqua*, of which the former were very considerably the larger.—Mr. Tonge, very fine photographs of the larvæ of *Sesia* (*Macroglossa*) *stellatarum*, *Eumorpha* (*Chærocampa*) *elpenor*, *Theretra* (*Chærocampa*) *porcellus*, and *Asphalia flavicornis*.—Mr. West, short series of two species of Hemiptera, *Microphysa elegantula* from Darenth, and *Cardiastethus fasciventris* from Box Hill.—Dr. Chapman, an album of photographs, showing the embryonic development of *Botys hyalinialis*, taken by Mr. Hammond and Mr. Jeffreys of Canterbury. It consisted of a

unique series taken at short intervals, from the time of the laying of the egg until the exclusion of the young larva.—Mr. Kaye, bred specimens of *Theope endocia*, *T. foliorum*, and *Nymphidium lysimon*, with figures of the larvæ and pupæ from Trinidad. The larvæ were found to live on friendly terms with species of ants, who milked them from papillæ above the anal segment.—Mr. R. Adkin read the reports of the field-meetings at Limpsfield and St. Paul's Cray.

November 12th.—The President in the chair.—Mr. Jäger exhibited a specimen of *Ophiusa stolidia*, a Noctuid new to Britain, taken at sugar near Dartmouth, on Sept. 23rd, 1903.—Mr. Kaye, two remarkable aberrations of *Taniocampa stabilis* (1), a female, with shiny pale hind wings, the fore wings brick-red, and the transverse line and lunule distinct; (2), a female with grey fore wings, the lines strongly black, and a broad blackish fascia passing through the reniform stigma.—Mr. McArthur, a specimen of *Hippotion (Cherocampa) celerio*, captured at Brighton on Oct. 24th by Mr. Clayton.—Mr. Cothrup, a large number of the various species and forms of British Anthrocerids (*Zygænid*s), including *A. hippocrepidis*.—Mr. Fremlin, an example of *Hemaris bombylifformis*, from the New Forest.—Mr. Tonge, very finely executed photographs of the ova of *Numeria pulveraria*, *Oporabia autumnaria*, and *Hemerophila abruptaria*.—Mr. West (Greenwich), a short series of *Sitones griseus* from Oxshott, where it was common on broom. At Yarmouth he had usually met with it at the roots of grass.—Messrs. Dennis, Goulton, Main, Tonge and West (Streatham) then showed a large number of lantern-slides, comprising studies of flowers, ova, larvæ and pupæ of Lepidoptera, resting habits of imagines, diatoms, and geological formations in North Wales.—HY. J. TURNER (*Hon. Rep. Sec.*).

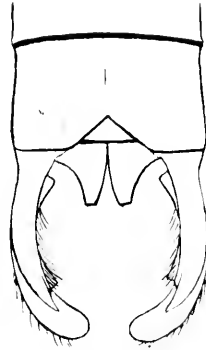
LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY. — The Fifth Ordinary Meeting was held in the Royal Institution, Liverpool, on Monday, November 16th, Mr. Wm. Webster, M.R.S.A.I. (St. Helen's) presiding over a large attendance of members. Messrs. A. H. Garstang, F.R.S.L., of Southport; H. A. Sweeting, M.A., of Liverpool; and Carrington B. Williams, of New Brighton, were balloted for and duly elected members of the Society. On the motion of Mr. P. N. Pierce, seconded by Mr. J. R. le B. Tomlin, a vote of condolence was unanimously accorded the President, Mr. Samuel J. Capper, F.E.S., on his recent bereavement, and the Secretary was desired to write a letter conveying the same to him. Details in connection with the next (St. Helen's) meeting having been discussed, Mr. E. J. B. Sopp, F.R.Met.S., F.E.S., communicated an interesting paper "On the Birth and Infancy of *Dytiscus punctulatus*, F." After explaining the manner of ovipositing, and describing the varying effect of temperature on the length of time required for the development of the ova in spring and winter, he gave particulars of diseases to which the eggs were liable both in their earlier and later stages. The birth of the larva, process of change of skin at the various ecdyses, &c., were described from notes in his diary written at the time of observation. The paper was illustrated by eggs, cast skins, larvæ in various stages of growth, and perfect insects. Amongst the large number of exhibits on view were the following:—A drawer of

Xanthias, including *Dasycaampa rubiginea* and *Xanthia aurago* var. *fuscata*, by Mr. F. N. Pierce, F.E.S.; a fine collection of Lepidoptera from Cumberland and Westmoreland (1903), including the Alpine species *Erebia epiphron*, *E. cassiope*, *E. medon*, &c.; an exotic Orthopteron—*Acridium* (? sp.)—captured on a vessel in the Liverpool Docks, and a fine specimen of the oleander hawk-moth (*C. nerii*), captured on the steamship 'Achilles,' Liverpool, by Mr. H. B. Prince. Long series of *Melanargia galatea* and *Cidaria picata*, a curiously bleached form of *Epinephele ianira*, and specimens of *Anticlea sinuata* and *Cidaria unangulata* from Devonshire, by Mr. W. A. Tyerman. Mr. J. Roxburgh distributed a series of *Erebia medon*. Mr. J. W. Dutton exhibited Coleoptera collected at Stromness by Mr. George Ellison, of Liverpool, including *Amara spinipes*, *Donacia discolor*, *Chrysomela sanguinolenta*, and *Otiorrhynchus blandus*. Mr. Guy A. Dunlop's local Coleoptera contained *Bembidium saxatile*, *Melanotus rufipes*, *Leiopus nebulosus*, and *Metæcus paradorus*; whilst Dr. J. W. Ellis's Easter captures on Slieve Donard and in the neighbourhood of Newcastle, Co. Down, included *Leistus montanus*, *Nebria glylleuhali*, *Pterostichus vitreus*, *Silpha atrata* var. *subrotundata*, and *Otiorrhynchus maurus*. Mr. J. R. le B. Tomlin, F.E.S., showed recent additions to the list of British Coleoptera, including *Gynandrophthalma affinis*, *Aphanisticus emarginatus*, *Lathridius bergrothi*, and *Hydroporus bilineatus*. Mr. Richard Wilding exhibited the British Donaciæ. Mr. C. B. Williams, collections of Japanese Lepidoptera and Coleoptera; a small collection of local Coleoptera; and a living lepidopterous larva from a barrel of Canadian apples. Mr. E. J. B. Sopp exhibited *Anisotoma furva* from Leasowe, and the large locust, *Acridium cristatum*, from British Guiana; and Mr. W. H. Jennings, a fine specimen of *Sphodrus leucophthalmus*, found under a kitchen floor at Hoylake. Amongst miscellaneous exhibits also made were two excellent photographs of the larvæ of *Euchelia jacobææ* feeding on ragwort, taken from nature by Mr. Henry Ball, M.P.S.—E. J. B. Sopp, F.R.Met.S., and FRED. BIRCH, *Hon. Secretaries*.

MANCHESTER ENTOMOLOGICAL SOCIETY.—November 4th, 1903.—Dr. W. E. Hoyle, M.A., F.R.C.S., the President, in the chair.—Mr. G. Kearey read a paper on Coleoptera, in which he described the requirements necessary for collecting, and the most suitable places for obtaining insects. He then briefly explained their structure, food and habits, commenting on several species from personal observation, and concluded his remarks by an urgent appeal, showing the advisability of members of societies recording their captures. The following exhibits were made:—Mr. R. Brauer, insects belonging to the Mantidæ, and including species of *Deroplatys arida* from Borneo, *Mantis religiosa* and others.—Mr. L. W. Atkinson, a scorpion found in Manchester, taken out of wood from Jamaica.—Mr. L. W. Hewett, *Sphinx convolvuli* captured at Blackpool in October, 1903.—Henry S. Slade, Lepidoptera taken at Ashton-on-Mersey, Cheshire.—Mr. W. Warren Kinsey gave a demonstration on larvæ preserving.—Mr. C. F. Johnson, Lepidoptera from Deal, North Wales, and Staffordshire.—R. J. WIGELSWORTH, *Hon. Sec.*



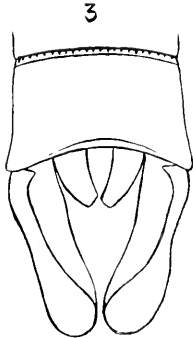
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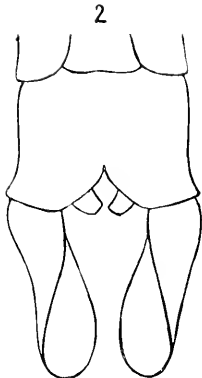
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DRAGONFLIES IN 1902 AND 1903.

BY W. J. LUCAS, B.A., F.E.S.

(PLATE III.).

BOTH seasons were ushered in by a late, ungenial spring, and, though casual emergences took place fairly early, the season proper was late in commencing in each case. With most species the bad weather seemed to make no great difference as regards numbers later—a result which might be expected with insects that pass their early stages in the water. Consequently the scarcity so marked in the case of Lepidoptera was not so very noticeable amongst the Odonata, at any rate in Surrey and the New Forest.

In 1902 Mr. F. M. B. Carr met with *Pyrrosoma nymphula* as early as April 24th in the New Forest, and with a freshly emerged *Libellula depressa* on April 28th; but the first dragonflies observed by myself were *Libellula quadrimaculata* and *Cordulia aenea* at the Black Pond, Esher, on May 19th. In fact, dragonflies were shy in emerging in Surrey till after the beginning of June.

Though the weather promised better in the earlier part of the spring of 1903, ungenial weather later again kept the insects from emerging. My first sight of a dragonfly was on May 4th in the New Forest, and the species was probably *P. nymphula*. The first *L. quadrimaculata* was seen at the Black Pond on May 24th. The warm weather of the last day or two of May put a new complexion on things, and on the glorious summer day that ushered in the month of June dragonflies were very numerous at the Black Pond.

Curiously, on February 24th, 1903, a fine female specimen of *Hemianax ephippiger* was taken flying in a street in Devonport. The species somewhat resembles, and is nearly as large as,

Anax imperator. It is, of course, in no sense a British insect, nor was it even a migrant; it was the merest casual, like the specimen of *Gomphus flavipes* taken in 1818, of *Leucorrhinia pectoralis* in 1860, and of *Lindenia foreipata*, all three of which have often been quite unjustifiably placed on the British list. *H. ephippiger* is a native of Africa, and Mr. M'Lachlan, into whose possession the insect passed, suggests that it "may have come on board a passing vessel off the African coast, and then have fallen into a lethargic condition, waking up during the high temperature that prevailed in the English Channel towards the end of February." The figure (Pl. III., fig. 1) is reproduced from a photograph of the insect, taken natural size.

As regards the termination of the seasons, the various species disappeared about the usual time. In 1902 one or two male specimens of *Enallagma cyathigerum* were seen on Esher Common on September 17th; one *Sympetrum scoticum* was noticed at the Black Pond as late as November 2nd, and a few *Sympetrum striolatum* at the same place on November 9th. In 1903 the early species, *Agrion puella* and *P. nymphula*, were both seen in the New Forest, connected *per collum*, on August 12th, this being rather late for the second species, though perhaps not so much so for the former; a female *Pyrrhosoma tenellum* was found at the Black Pond on September 20th.

Having thus glanced at the two seasons as a whole, those British species which have afforded points of interest to myself will be noticed in order. Unfortunately in most cases there is little new to record.

It is always interesting to note the time of the day (or night) at which dragonflies emerge; it is therefore worth recording that a specimen of *Sympetrum striolatum* from Richmond Park that emerged in captivity on July 10th, 1903, was found hanging expanded, but quite yellow in colour, about 10.30 p.m., having no doubt come out in the evening. By the next morning, about 7 a.m., it had flown to the window. Though perhaps dragonflies more often emerge in the night or early morning, one not seldom meets with them in nature emerging during the day. A male of this species emerged in captivity in the early morning of July 28th, 1902, when it was noticed that the abdomen before it extended resembled much in appearance that of a *Libellula*, thus shewing its affinities at that stage.

Sympetrum flaveolum was not seen in either year at the ponds on Ockham Common, so we may conclude that there was no migration. *S. sanguineum*, however, was found there both seasons, and on September 6th, 1903, at least one male was taken (H. J. Turner) at the Black Pond, Esher, making yet another new record for that locality.

Nymphs sometimes travel some distance from the water before disclosing the imago. On May 25th, 1902, I saw a

L. quadrimaculata clinging to the empty nymph-skin two or three yards from the brink of the Black Pond.

Libellula fulva has occurred more plentifully than used to be the case, probably because it is better known than it was, and is more sought for. Major Robertson has taken several during the last season or two near Pokesdown. Mr. Edelsten took the species in the Norfolk Broads in 1902, from June 26th-30th; in 1903, June 18th-22nd. Mr. Porritt also took twelve in the Norfolk Broads from June 29th to July 1st, 1903. It is possible that this dragonfly breeds in rivers rather than in ponds, judging from some of the localities in which it has been taken. In this connection it should be noted that M. René Martin gives as the habitat of the nymph in France—"étangs, rivières, et surtout ruisseaux lents."

As regards *Orthetrum cancellatum*, one male was taken at Wisley Pond, Surrey, on July 5th, 1902, and Mr. Edelsten took it in the Norfolk Broads from June 26th-30th, 1902, and from June 18th-22nd, 1903. Apparently this still remains a rather uncommon species.

In 1902 Major Robertson found *Oxygastra curtisii* in fair numbers in its one locality. He took his first on June 27th, and the last on July 24th. The species was also found in 1903.

Early in the morning of June 7th, 1902, or during the previous night, a fine female *Cordulegaster annulatus* emerged from a New Forest nymph secured about the last day of April. From the beginning of May, when it was put into a fish-globe in Kingston-on-Thames, it was remarkably sluggish, as a rule scarcely moving a limb even if touched. A day or so before emergence it kept its head and the upper part of the thorax out of the water. It was given no food after capture. On August 10th one or two half-grown nymphs were found in the New Forest, shewing that the insect passes two seasons at least in that stage. On July 13th in the same year a male was taken (A. Lane) by the side of the Byfleet Canal, near the station. It was a good specimen, and adds another to the meagre list of Surrey localities for this grand insect.

On August 5th, 1903, a very blue female *Anax imperator* was taken in the New Forest. The next day a male and a female were taken at Pokesdown, and again the female was bluish.

Of *Æschna mixta*, I have only two captures to record, both being in 1902—a female on Esher Common (F. Carter) on Sept. 4th, and a male (R. South) two days later in the same district. The species seems to have become scarce again. Is this due to the late inclement seasons? *Æ. juncea* seems to have quite disappeared from the Black Pond; in fact, I have but one record—a female near Pokesdown, August 2nd, 1902. *Æ. cyanea* has been common enough. On August 6th, 1902, I came across a male flying at Hurst Hill in the New Forest a few minutes before

7 o'clock p.m. Though the sun had not set, the light was poor amongst the trees there. On September 2nd of the same year I watched an *Æ. grandis* near Oxshott hawking about in the rain amongst the fir-trees, where a number of small insects were in the air. On June 26th, 1903, a number of *Æschnid* nymphs were dredged from a small pond in Richmond Park. I suspected them to be *Æ. grandis*. One that had recently changed its skin on the evening of July 2nd was seen to be of a brilliant green colour except the eyes, which were dark. The markings shewed a little on the dorsal surface of the abdomen. It was one of these that Mr. H. T. Dobson reared, establishing its identity, and whose emergence he so minutely described in the 'Entomologist,' xxxvi. p. 253.

One of the most interesting points I have to record is the placing of *Æschna isosceles* on a sure footing in the British fauna. For many years scarcely a specimen had been taken. In 1902 (on July 27th) Mr. Edelsten saw one in the Broads, but did not secure it. In 1903 Mr. Porritt determined to make a strict search for the insect, with the result that, as described in the Ent. Mo. Mag., he saw a considerable number, and captured a few. Mr. Edelsten also captured two the same season, on July 26th. Mr. Edelsten's dates are rather late for what is looked upon as one of the early *Æschnas*. The last four or five years have seen all the dragonflies (except *Lestes barbara*, *L. virens*, and *L. viridis*), whose position on the British list was precarious, safely established there. These species are *Leucorrhinia dubia*, *Libellula fulva*, *Orthetrum cancellatum*, *Somatochlora metallica*, *S. arctica*, *Oxygastra curtisii*, *Æ. mixta*, *Æ. cærulea*, *Æ. isosceles*, *Lestes dryas*, *Ischnura pumilio*, and *Agrion mercuriale*. Messrs. Briggs, King, Morton, and Porritt have been especially assiduous in working up many of these species, particularly in remote districts, and students of the British Odonata owe them a debt of gratitude for the trouble they have taken, though probably the success they attained was sufficient reward.

On August 11th, 1902, a large number of nymphs of *Calopteryx virgo* were dredged in the New Forest. Some were of a fair size, and others quite small. None of these could emerge till 1903: would the small ones not arrive at the perfect condition till 1904?

In this country we do not often obtain evidence of dragonflies falling a prey to other animals, but on June 24th, 1903, upon the footpath of the canal near Byfleet, I came across scattered wings of *C. splendens*—in one case about a dozen together. Something, I presume, had been catching them, and feeding on the bodies. On August 4th, 1902, a male of this species was found near Rinefield in the New Forest, and Major Robertson had previously shewn me specimens from Holmsley. *Virgo* is the common *Calopteryx* of the New Forest.

Mr. Edelsten took a single specimen of *Lestes dryas* in South Kent on August 1st, 1903. He did not identify his specimen till he returned home, and so hopes for a better "bag" next season. This adds another to the few localities for the species. Some months back Mr. E. R. Speyer sent me for examination a male *Lestes*, which he took on August 11th, 1899, flying swiftly over an alder-bush on the side of a large lake at Shenley, Herts. It arrived in fragments, but the appendages (fig. 6) left no doubt as to its being *Lestes viridis*; but I should rather hesitate to add it to the British list till more specimens are captured. Perhaps this note will cause others to search for it next season. It is already reputed to be British, but the evidence is not sufficient.

Platynemis pennipes, which does not seem a common insect in Surrey, was noticed in July, 1902, more plentifully than usual at the canal between Byfleet and Weybridge, more especially towards the latter.

Pyrrhosoma tenellum was on the wing as early as June 1st in 1903 at the Black Pond. The varieties *æneatum* and *rubratum* were taken as usual in the New Forest.

At the end of June, 1902, *Ischnura pumilio* was common in the locality discovered a year or two since in the New Forest, and the variety *aurantiaca* was plentiful. It again seemed to be over there by the beginning of August. But in 1903, on August 1st, 2nd, and 9th, I was delighted to find this species about a mile from the former locality, but on similar ground. On the 2nd and 9th both sexes were found, and in fair numbers, but no var. *aurantiaca* were taken or noticed on either day. This discovery is interesting as extending the range of the species in the New Forest, and also the latest date at which it has been observed there upon the wing. Further, a single male was discovered (A. L. Walker) on August 3rd, some distance from either locality, and quite near to Brockenhurst village.

On July 5th, 1902, Mr. South caught, at Wisley Pond, an *Ischnura elegans*, flying off with a small moth, *Crambus pascuellus*.

Mr. Edelsten records *Agrion pulchellum* for both seasons from the Norfolk Broads in June.

Another extension of the range of a scarce species has to be recorded. On August 11th, 1902, both sexes of *Agrion mercuriale* were taken at a bog some miles away from the other known localities in the New Forest, and in a different drainage-basin. It was plentiful in the better known locality, and was seen in 1903 as late as August 23rd.

In 1903 an *Agrion*, new to Britain, was taken (one of each sex) in the Norfolk Broads by Mr. Balfour Browne. *Agrion armatum* is a small but rather stout insect, which appears to be scarce everywhere. It will be a welcome addition to our somewhat meagre list, and the male should be easily identified, if

anyone is lucky enough to meet with it, by the very highly developed appendages, and (except from *Agrion hastulatum*) by the spots on the dorsal surface of the second segment (figs. 2, 3, 4, 5). It is strange that Mr. Edelsten should have taken one in 1902. He placed it in spirit to preserve its colour, intending to send it to me; but it came to grief on his journey home, and it was not till after seeing Mr. Browne's specimens that he recognized the identity of his capture.

A female *Sympetrum fonscolombii* was taken by Mr. W. C. Boyd in June, 1903, near Trewoofe in W. Cornwall.

Mr. J. J. F. X. King has taken again *A. hastulatum* in 1903 in Aviemore.

EXPLANATION OF PLATE III.

FIG.

1. *Hemianax ephippiger* (nat. size).
 2. Anal appendage of *Agrion armatum*, ♂ (ventral). Figs. 2-6 all much
 3. " " " " " " (dorsal). [magnified.
 4. " " " " " " (lateral).
 5. Segments 1 and 2 of " " (dorsal view).
 6. Anal appendage of *Lestes viridis*, ♂ (dorsal).
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DESCRIPTIONS OF TWO NEW SPECIES OF ACULEATE HYMENOPTERA FROM JAPAN.

BY P. CAMERON.

DIELIS TESTACEIPES, sp. nov.

Black; the clypeus, labrum, mandibles, except at the apex, the apex of the pronotum (the line dilated laterally), the apices of the basal four abdominal segments above, and of the second to fourth laterally below, yellow; the legs testaceous; the apical half of the fifth and the whole of the sixth and seventh abdominal segments rufous. Antennæ black, the scape rufous beneath. Wings fuscous-hyaline, darker along the radius, the nervures dark testaceous. ♂. Length, 14 mm.

Hab. Japan (*George Lewis*).

Vertex almost smooth, the front deeply furrowed in the centre, the lower part deeply punctured, bordered above by an indistinct curved furrow. Clypeus smooth, sparsely covered with long rufous hair; the occiput thickly, the front sparsely, covered with long testaceous hair. Thorax thickly covered with rufo-testaceous hair; the mesonotum and scutellum sparsely punctured; the metanotum more closely and finely punctured. There is a small mark on the sides of the scutellum at the base. Abdomen shining, the basal segments with blue and violet tints; the segments fringed with long testaceous hair, the apical more

thickly haired than the basal. The front coxæ are yellowish, the four hinder black; the legs are thickly covered with long pale hair.

The males of the recorded Japanese species of *Dielis* are known, and the female of the present species is probably undescribed. Characteristic are the rufo-testaceous legs and the rufous apical segments of the abdomen.

EUMENES MICADO, sp. nov.

Black; the antennal tubercle, a large irregular mark, about three times longer than wide, on either side of the base of the clypeus, a small line on the upper side of the outer eye-orbits, the base of the pronotum narrowly, the base of the propleuræ broadly—the mark extending to near the centre above and half-way below—the greater part of the tegulæ, two large marks, broader than long, on the base of the scutellum, the post-scutellum, a large irregular mark, broader than long and with irregular edges, on the sides of the metanotum. Two slightly smaller ones below them, these having the outer side straight, the inner rounded and irregular; the apex of the first abdominal segment narrowly, and of the second more broadly—the band narrowed in the centre—yellow. Legs black, the knees, the anterior tibiæ in front, the basal half of the four posterior and the spurs testaceous. Wings hyaline, tinted with fuscous-violaceous, the nervures and stigma dark fuscous. ♀. Length, 18 mm.

Hab. Sharo-Kowa, Japan (*George Lewis*).

Antennæ brownish at the apex, Front and vertex closely and distinctly punctured, sparsely covered with short fuscous pubescence. Clypeus sparsely punctured, the apical part less strongly, more depressed, and with a curved broad incision on the apex. Mandibles brownish at the apex. Thorax above coarsely and closely punctured, the metanotum more coarsely than the rest. Pleuræ less strongly and closely punctured, the apex of the meso- and the base of the meta-pleuræ more broadly smooth. Petiole longer than the second segment, the dilated part strongly and closely punctured, the punctuation closer and stronger at the apex; the second segment closely and much more finely punctured.

This species is closely related to *E. punctata*, but that species is smaller (13 mm.), has the head and thorax densely pilose, the clypeus shorter compared with its width, the antennal tubercle more distinctly dilated above, the apex of the metanotum more distinctly roundly dilated, its petiole is more distinctly longer compared with the second segment; the abdomen is more and the thorax much less largely marked with yellow, the metanotum is less rugosely punctured, and more clearly furrowed; and the scutellum has a more oblique slope, and is less rounded.

NEW CULICIDÆ FROM THE FEDERATED MALAY STATES.

By FRED. V. THEOBALD, M.A.

(Continued from p. 15.)

MEGARININA.

Genus *Toxorhynchites*, Theob. (Mono. Culicid. i. p. 244, 1901).

Toxorhynchites leicesteri, n. sp.

Thorax with metallic green scales, an azure spot over the wings. Abdomen purple, banded with pale blue. Legs unbanded in the male, banded with white in the female; last two tarsi white.

♀. Head black, covered with broad flat scales; along the orbital margin is a narrow band of scales broadening out laterally, which are peacock-blue, in some lights they show purple; the rest of the upper surface of the head is clothed with metallic golden scales. Immediately around the nape are a few upright forked scales, dark golden in colour; on the vertex are four golden-brown bristles. Eyes black. Antennæ with basal joints black, frosted, naked; remaining joints black at the nodes, brown at the internodes; verticillate hairs black. Palpi three-jointed, very short, not more than one-sixth the length of the proboscis; first joint swollen at the base and constricted, the last joint small and nipple-like; scales broad, spatulate, under a hand lens dark brown, in stronger light rich blue, except at the tip, where the scales vary from rose-purple to a mauve according to the angle at which the light strikes them. Proboscis broad at the base, long and bent, covered with purple or rose-purple broad scales; at the angle the scales are golden green and some peacock blue mixed among them. Prothoracic lobes small, oval, rather prominent; thickly clad with scales which are purple-blue or rose-purple as the position to light is varied. Mesonotum black, densely covered with broadly spindle-shaped metallic green scales; over the bases of the wings the scales are larger, longer and spatulate-shaped. (In a fresh specimen the colouring is said to be like a green bottle-fly.) If the thorax is examined through a lens, the central part looks dark coppery brown to purple, while the sides, where the light strikes at an angle, show metallic green—in other lights the scales appear bluish green or dark coppery red; at the anterior margin of the mesonotum is a band of scales which appear violet, rose-purple or purple according to the light, and below this a triangular patch of silvery scales immediately behind the prothoracic lobes, and over the roots of the wings a patch of peacock-blue scales and a row of short stout black bristles. Scutellum densely clothed with broad, long flat scales, which on the lateral lobes are of peacock blue or metallic green according to the light, and on the central lobe of a dark green fringed with lighter green posteriorly. Scutella bristles short, dark brown. Metanotum dark brown. Wings brown in colour; the costa and first longitudinal vein clad with broad, flat scales, which are peacock blue, golden green, and purple according to the light; the position of the cross-veins, the

size of the fork-cells and the scaling of the other veins is that of a typical *Toxorhynchites*. Legs with the coxæ yellowish, mid and hind clad with creamy scales on their outer face; fore legs with the upper surface of the femora clad with rose-purple scales; at the extreme apex is a tuft of long spindle-shaped scales which are white or peacock blue; just behind these are black spines placed in a semicircle; the whole of the under surface is covered with bright golden scales; tibiæ entirely covered with purple scales; a short distance from the base on the metatarsus is a ring of creamy yellow scales; third and fourth tarsals mostly covered with creamy scales, the rest of the tarsus and metatarsus with purple scales; mid legs, femora and tibia as in the fore legs; the basal half of metatarsus with creamy scales, apical half purple scaled; all the tarsal joints creamy scaled. Hind legs golden at the base and on the under surface, purple above; scales at apex similar as in the other legs; tibia purple scaled; metatarsus purple scaled except for a broad ring of creamy scales a little beyond its base; first and second tarsal joints purple scaled; third and fourth creamy scaled; ungues equal and simple on all the legs. Pleuræ dark brown, for the most part covered with silvery grey scales. Abdomen with the dorsum of the first segment covered with peacock-blue scales, in some lights a dark green; the other segments covered with rose-purple scales, basal banding of peacock-blue scales. Venter bright golden except for a patch of dark scales on the fourth segment; the last segment fringed with pale golden hairs, no caudal tuft.

♂. Head with a deep depression in the middle line; the scaling is much as in the female. Antennæ banded brown and white; plumes black; basal joint black; second joint scaled with numerous broad golden scales; the two last joints dark and elongated. Palpi 3-jointed, the first joint with a swollen base, having the appearance of a joint constricted in the middle; the second scaled with golden scales except at the apex, where there is a narrow band of purple-blue scales; in the middle there is also a band of purple scales, and towards the base there are on the upper surface purple scales. Proboscis purple scaled, green scaled at the angle. Thorax as in the female. Legs with the coxæ and under sides of femora gold scaled; knee spots peacock blue, or creamy in some lights; the remaining parts of legs purple scaled; no banding. Ungues, fore and mid, unequal; the larger tooth uniserrate. Abdomen as in female. Length 10 mm.

Habitat.—Kuala Lumpur.

Observations.—Described from two perfect specimens sent by Dr. Leicester. The beautifully adorned abdomen, metallic green thorax, with azure wing root-spots, and the last two white hind tarsals of the female, are very characteristic.

Toxorhynchites metallicus, n. sp. (Leicester:)

“Thorax brilliant metallic green; abdomen deep rose-purple, with basal creamy yellow bands, no caudal tuft. Legs in the male unbanded, in the female the mid legs have a basal creamy white band; fore and mid unbanded. Male palpi with the second and third joints mostly golden yellow.

“ ♀. Head black; a narrow band of creamy yellow scales along the orbital margin, which laterally broadens into a distinct patch; the rest of the upper surface of head is covered with broad flat scales which vary in colour. If looked at from behind, the central patch looks bronze-green and the scales at the sides blue-green. In one specimen the whole patch is a deep rich blue, while the marginal scales are silver. Immediately above the occipital foramen are a few fawn-coloured upright scales scarcely notched; a few small bristles are placed on the vertex which look black or purple or even golden brown according to the light. Antennæ with the basal joint black, with a silvery tomentum, naked save for a few short white hairs; the second joint scarcely swollen, light yellow in colour, with a few black spatulate scales on its upper face; the succeeding joints black with white pubescence; the verticillate hairs black. Clypeus black, with silvery sheen, notched on either side. Palpi short, not more than one-fifth the length of the proboscis, 4-jointed (?); last joint small and nipple-like. First two joints with golden scales at the sides and beneath; the two last joints are covered with scales which are coppery or rose-purple according to the angle the light strikes them. The proboscis is long, swollen at the base; the scales are purple or coppery. Prothoracic lobes small, thickly covered with broad, flat racquet-shaped scales of a creamy yellow colour, with some light brown bristles. Mesonotum black, thickly clad with spindle-shaped flat scales, which laterally become very broad and blunt-ended, and which in a good light appear of a brilliant metallic green to the naked eye in a fresh specimen. Under a lens the colour varies, peacock blue, bronzy purple and metallic green appearing intermixed, now one colour predominating, now another, as the fly is shifted to different angles. On the anterior margin are some golden scales and numerous golden bristles, and laterally in front, immediately behind the prothoracic lobes, there is a band of metallic rose-purple scales, and beneath this is a triangular patch of creamy yellow scales. The two patches meet in a straight line, but the external edges are convex; hence with the prothoracic lobe they form a rough ellipse. The upper band is to be seen when looking down upon the mesonotum, and is very ornamental. The scutellum is clad with rather long, flat spatulate scales, which are coppery, bronzy or purple-bronze as the direction of the light varies. There is a tuft of bristles over the root of each wing. Scutellar bristles are brown in colour. The pleuræ are a dark, glistening chestnut brown, naked in parts, scaled in other parts with creamy yellow scales. The wings are quite typical; the costa and first longitudinal vein are scaled with metallic rose-purple scales. Legs with the coxæ and femora light yellow; tibia and tarsi much darker; the coxæ, bases and under surface of femora clad with metallic golden scales; the upper and lateral surfaces of femora and the whole tibia and tarsi of fore leg covered with brilliant metallic scales, varying from coppery-bronze to rose-purple or bronze-purple; there are creamy scales at the apices of all the femora. Mid leg as the fore, except for a band of golden scales at the base of the metatarsus and golden scales covering the penultimate tarsal joint; tibia and tarsi of hind legs the same as the fore. Ungues equal and simple. Metanotum black. Halteres with pale yellow stems and dark scaled knobs.

Abdomen with the first segment scaled creamy yellow laterally, rose-purple centrally; the other segments brilliant rose-purple, with creamy yellow banding expanding laterally into triangular patches; venter scaled with metallic golden scales, except segment four, which has a patch of dark purple scales.

“♂. Head black, with a deep furrow in the centre; there is a large central patch of flat scales of a bronze green or golden green colour; the scales along the orbital margins are peacock blue, laterally there is a patch of scales peacock blue or rose-purple according to the light in which they are seen. Antennæ with the basal joint black, nude; remaining joints creamy, growing darker towards the apex; the second joint scaled with spatulate and elongated scales of a dark brown colour; a few scales show metallic colouring. There are numerous dark brown hairs on the joints; the verticillate hairs dark brown, almost black, neither very dense nor very long. The antennæ are not nearly so marked a feature as they are in a *Megarhinus*. Palpi, 3-jointed; first joint shows a slight swelling at the base, and there is a thinning of the chitin which looks like a joint but is not; there is also a second thinning, and the chitin is folded in more basally; the whole joint is very long. The second joint is about half the length of first; the third is long and pointed, almost as long as the first joint, which is almost entirely golden scaled except on its upper surface near its base, where there is a patch of rose-purple scales and a band of the same about its middle and a few dark scales dorsally at the apex; the second joint golden scaled beneath and also the sides, except apically; the upper surface is purple scaled; the third joint is entirely purple scaled. Proboscis scaled with purple scales to the angle, then green scaled. The markings of both proboscis and palpi vary. In one specimen I have the first joint of the palpus is entirely gold scaled save for a ring of purple scales on the middle and apex. The thorax is similar to the female. Legs with the coxæ and under sides of femora golden scaled. The upper surfaces of the femora and the rest of all the legs are clad with purple scales; a few pale scales are inserted at the apices of the femora; fore and mid ungues unequal, the larger uniserrate. Abdomen scaled as in the female. No caudal tuft. A few rather long golden hairs inserted on the two last segments.”—(Leicester). Length 10 mm., male and female.

Habitat.—Kuala Lumpur.

Observations.—This is a very distinct species. The most striking features are the honey yellow and purple male palpi and the single creamy band on the mid legs of the female. Had this species been described from the dried types sent me by Dr. Leicester, I should have described the abdomen as un-banded, for in the female it is evidently shrunken, and no trace of the bands seen in the fresh specimen can now be noticed.—(F. V. T.)

(To be continued.)

CURRENT NOTES.

BY G. W. KIRKALDY.

(Continued from p. 12.)

GEO. H. CARPENTER & DENIS R. PACK-BERESFORD, Sept., 1903: "The Relationship of *Vespa austriaca* to *Vespa rufa*" ('Irish Naturalist,' xii. pp. 221-38, pl. 2). [Hymenoptera.]

M. V. SLINGERLAND, 1903: "The Insects destructive to Fruits" (Thomas' 'American Fruit Culturist,' ed. 21, chap. xii. pp. 160-210, text-figs. 210-78). A practical working manual for the amateur and farmer. Prof. Slingerland's name is a guarantee of the scientific accuracy and the lucidity of the entomological contribution of fifty pages.

M. V. SLINGERLAND, 1903: "A big fight with Grape Pests" (Proc. Forty-eighth Ann. Meeting Western New York Hort. Soc., pp. 1-4 [? sep.]). An account of ravages of the Grape Rootworm (*Ptidia* —) and the Grape Leafhopper (*Typhlocyba comes*).

JOHN FIELDS, E. E. BOGUE, and others, Sept., 1903: Bulletin Oklahoma Agr. Exp. Sta. no. 59 (being reprints from Bulletins 47, 50, and 52, and Ann. Reports 8-11), pp. 1-200; text-figs. Notices on grape insects.

W. VAN DEVENTER: "Insecteneieren welke veel op het suikerriet gevonden worden," 1903 (Archief voor Java-Suikerindustrie, xi. pp. 437-46, pl. vii. & viii.). An important paper on the eggs of certain Javan sugarcane pests. These are delineated *in situ* and separately. Among these are *Hesperia conjuncta*, *Euproctis minor*, *Procodeca adara*, *Psalis securis*, *Dreata petola*, *Scirpophaga intacta*, *Chilo infuscatellus*, and *Diatraea striatalis* among the Lepidoptera, and various unidentified spiders, bugs, and flies.

A. ZIMMERMANN, 1903: "Ueber einige auf den Plantagen von Ost- und West-Usambara gemachte Beobachtungen," (Bericht über Land- und Forstwirtschaft in Deutschostafrika, i. pp. 351-81, pl. iv. (coloured)). An account of observations made on some of the plantations in German East Africa, principally of coffee; a number of injurious insects of different orders are figured with their work, &c.

"Proceedings of the Fifteenth Annual Meeting of the Association of Economic Entomologists" (Bull. U. S. Div. Entom., new series, 40, 1903, pp. 1-124, 2 plates and 6 text-figs.). The proceedings of last meeting of the above Association were as usual full of general interest. The address of the President (Dr. E. P. Felt) has been previously noted (see Entom. 1903, p. 311). Herbert Osborn (pp. 35-6) gives "a method for mounting Dry Coccidæ for permanent preservation." C. L. Marlatt has a most instructive article on "Applied Entomology in Japan" (pp. 56-63), illustrated by two plates, representing

Japanese insect placards, the first showing the Rhynchoton *Selenocephalus cincticeps*, an enemy of the rice plant, with its parasites, &c.; the second the Lepidopteron *Heemerophila atrilineata*, an enemy of mulberry, also with its parasites. Dr. J. B. Smith discusses "Mosquitocides" (pp. 96-108), and concludes that there are several preparations that will serve both as disinfectants and larvicides, even when highly diluted. We note that the Association numbers eighty-six active, forty associate, and forty foreign members, a total of one hundred and sixty-six.

K. NAGANO (July 15), 1903: "*Smerinthus planus*, Walker (*Uchi-suzume*)" ('Insect World,' vii. no. 7, 1 p. Engl. suppl.). [Lepidoptera.] Stated to be the same apparently as *S. ocellatus*, L. A figure is given, together with one of the larva, which is also briefly described; its food-plants are noted as *Salix*, *Prunus pseudocerasus*, and *Pyrus malus*. Plate vii. contains twelve figures of waterbugs, named only in Japanese, but recognizable; among them are the imago and ova of *Notonecta trivittata*, Motschulsky.

H. A. GOSSARD, 1903: "Whitefly (*Aleyrodes citri*)" (Bull. Florida Agric. Exp. Sta. 67, pp. 595-66, pls. i.-vi.; with a note on its allies by T. D. A. Cockerell, pp. 662-6). [Rhynchota.] This is a valuable contribution to our knowledge of this remarkable family, which links together in some ways the Coccidæ and Aphidæ, and the type of which was described by Linnæus as a *Tinea*. The Citrus whitefly is described and figured in all stages and in great detail; it is of unknown origin, though probably American, and is the worst orange pest where it now occurs. In Florida there are three annual broods, and there are few insect enemies, though two fungous diseases are more or less efficient in suppressing it.

P. PREUSS: Ueber Pflanzenschädlinge in Kamerun," 1903 (Der Tropenpflanzer, vii. pp. 345-61, 5 text-figs.). Descriptions and figures are given, amongst others, of various Longicorn Coleoptera injurious to coffee, cocoa, and india-rubber.

H. A. KELLY, 1903: The Culture of the Mulberry Silkworm (Bull. U. S. Div. Ent., new series, 39, pp. 1-32, text-figs. 1-15).

E. E. GREEN, 1903: The Tea Tortrix (*Capua coffearia*, Nietner) (1903, Circulars and Agric. Journal, Botanic Gardens, Ceylon, ii. pp. 33-46, 1 plate and 1 text-fig.).

E. E. GREEN, 1903: "The Lobster Caterpillar," a tea pest in Ceylon (*op. cit.*, ii. pp. 95-107, 3 pl.). *Capua coffearia* was described as far back as 1861, but has only come into prominence as a tea pest of late years. Mr. Green has worked out the complete life-history. The Lobster Caterpillar (*Stauropus alternus*, Walker) was formerly considered as somewhat of a prize by the collector of Lepidoptera, but has recently appeared in enormous numbers on certain tea estates in Ceylon. It occurs also in

Burmah and Java, and has been noted as occasioning considerable mischief in India. The life-history is worked out.

Among papers on American insects that will be useful to European workers may be cited:—

J. D. EVENS: "List of Canadian Coleoptera," commenced in 'Canadian Entomologist,' xxxv. (1903) pp. 239-43.

W. T. CLARKE: "A list of Californian Aphididæ," *l. c.*, pp. 247-54.

J. R. DE LA TORRE BUENO: "Notes on the Stridulation and Habits of *Ranatra fusca*, Pal. B., *l. c.*, 235-7.

Prof. C. H. FERNALD states that graduate students in entomology in the Massachusetts Agricultural College are tested for colour-blindness, to prevent possible errors in descriptive entomology (*l. c.*, p. 206).

H. F. WICKHAM has two short papers (*l. c.*, pp. 205-6, fig. 7, and p. 207, fig. 8) on gynandromorphism in *Lucanus elaphus*, and on a remarkable instance of duplication of part of the left posterior leg, which bears a bifurcate tibia, two tarsi, one of which is also bifurcate and carries two pairs of claws, thus six in all on one leg.

JOHN H. LOVELL: "The Colours of Northern Gamopetalous Flowers" (1903, 'American Naturalist,' xxxvii. pp. 365-84 and 443-79). On pp. 472-9 are discussed the relations between flowers and insects of the orders Coleoptera, Diptera, Lepidoptera, and Hymenoptera. The author believes that "the colours of flowers, both in general and particular, have been determined by their utility rather than by an æsthetic colour-sense in insects. Insects distinguish between different colours, but they do not receive greater pleasure from one hue than from another. Any preference they may manifest has arisen from the association of the colours with the presence of food substances. Conspicuousness, or contrast of the inflorescence with the foliage, has been induced by insects. It is of advantage to insects, since it enables them to find nectariferous flowers quickly, and to plants because it aids in securing cross-fertilization."

K. NAGANO continues his descriptions and figures of imagines and larvæ of Japanese Sphingididæ [Lepidoptera]. Two of the latest are *Cephonodes hylas*, Linné (*O-sukashiba*), and *Chærocampa lucasii*, Walker (*Beni-suzume*), both from Formosa ('Insect World,' 1903, vii., nos. 8 & 9, English page). In the former number is a plate (viii.) of the Lepidopteron *Zephyrus taxila*, Brem., and its metamorphoses; in the latter, one (ix.) representing an exhibition of insects used in secondary education.

(To be continued.)

NOTES AND OBSERVATIONS.

NOTES ON VARIATION IN MALACOSOMA (BOMBYX) NEUSTRIA.—On the 30th May I found a nest of the larvæ of *M. neustria*, about half grown, feeding on wild plum. Wishing to discover whether different food-plants had any part in causing the considerable variations in the imago, I divided the larvæ roughly into two batches—giving one ordinary garden plum, and the other apple. In due course about thirty-five pupated, and the moths began to emerge on July 22nd—ten females and one male on that day, and three females and four males on the 23rd. Twelve more, all males, emerged up to August 4th. It will therefore be noted that the bulk of the females emerged first. Of course, a much longer series of experiments would be necessary before arriving at any definite conclusion; but it may be interesting to put some of the facts on record, as a starting-point for further investigations. I must here acknowledge my indebtedness to Mr. F. A. Oldaker, of Dorking, for some interesting notes with respect to larvæ fed on apple and blackthorn, which notes I have incorporated. In the first place, there was a much greater disparity between the numbers of the sexes in those fed on apple and blackthorn than in those fed on plum, *viz.* on apple—(Dorset) three females, eight males; (Surrey) seven females, eleven males; or a total of ten females to nineteen males. On blackthorn—(Isle of Wight) two females, eight males; while on plum (Dorset), ten females to nine males. In colour there was nothing sufficiently distinctive of either batch to be noted; but there was an abrupt line of demarcation between the brown and yellow males—the brown, though varying in intensity, being always brown, never approaching yellow; the yellow constant in tone. As to number—Mr. Oldaker was not fortunate enough to get any yellow males either from the apple or blackthorn; but of mine, the apple produced six yellow and two brown; the plum, four yellow and five brown. The sizes across the wing when set were—Apple: Dorset, females 38–39 mm., males 29–30 mm.; Surrey, females 36½ mm., males 28 mm. Plum: Dorset, females 37–38 mm., males 29–30 mm. Blackthorn: Isle of Wight, females 32 mm., males 28 mm.—JAMES DOUGLAS; Sherborne, Dorset.

ACIDALIA DEGENERARIA PARTLY DOUBLE-BROODED. — Last year (1902) I took, at Portland, a few worn *A. degeneraria*, and, contrary to my expectations, obtained some ova from them, which duly hatched. The larvæ fed up satisfactorily, and the perfect insect commenced emerging on June 2nd last. On the 7th a pair mated, and ova were deposited on the 12th. Two other pairs were mated on the 22nd and 23rd, and eggs were laid on the 25th and 26th. On the 25th the first batch of ova hatched; and on July 1st the other two lots, which had been put into one box, commenced hatching. All the larvæ were subsequently put together. Towards the end of July I noticed that six of the larvæ were much larger than the others, and on Aug. 10th one of them spun up. On the 15th another had spun, on the 20th two more, and I found two that had pupated without spinning any web, one of which was deformed. On Sept. 2nd a pair of perfect insects emerged, and I found them mated on the night of the 3rd. Eggs were laid on the

4th and 5th. On the night of the 6th the same pair were *in cop.* again. Three other imagines, all males, subsequently emerged. On the 27th the ova hatched, and so far the larvæ have progressed satisfactorily. I am keeping the two lots of larvæ separate for observation in the spring.—JNO. V. HYDE; "Cranbourne," Kirtleton Avenue, Weymouth, Dec. 22nd, 1903.

CAPTURES AND FIELD REPORTS.

SIREX GIGAS IN THE ISLE OF MAN.—A somewhat small specimen was taken in Molly Quirks Glen, Isle of Man, August, 1902, by T. H. SHEPHERD, Carr Lane, Shipley.

SPHINX CONVOLVULI AT CARDIFF, GLAMORGANSHIRE.—On Sept. 25th last I took a male specimen of this fine insect on the ground beneath an electric lamp here. It might easily have been passed unnoticed, had it not been that its brightly banded body could be seen between the parted wings.—THOMAS J. SHELLEY; 103, King's Road, Cardiff, South Wales.

LAPHYGMA EXIGUA AT CHESTER.—On Sept. 25th of last year I took a moth at one of the Chester electric lamps which has been identified as *L. exigua*. This is the second recorded capture of the species here, the first being taken at an electric lamp in 1900, by Dr. Herbert Dobie. Unfortunately, my specimen is minus the tip of the right upper wing.—J. ARKLE; Chester.

CHEROCAMPA CELERIO AT SAXMUNDHAM.—I have much pleasure in recording the capture of a specimen of *C. celerio* at Saxmundham, on 15th or 16th of October last, by Mr. J. G. Franklin, who found it at rest at the base of a plant of *Nicotiana affinis* in his garden. I have not noted any mention of the appearance of this moth in this country for some time.—WM. A. CARTER; 4, Burr Villas, Bexley Heath.

[An example of this species was taken at Brighton, on Oct. 24th last; *vide Entom.* for 1903, p. 292.—ED.]

ENNOMOS AUTUMNARIA (ALNIARIA) AT FAREHAM.—In August last, one of my choir-boys brought me a few larvæ of a "thorn" I did not know, which he had found feeding on a cherry-tree in a neighbouring garden. It seemed that already a large number had been destroyed by the owner of the garden, as the larvæ had been found in great abundance. The resultant imagines turned out to be *E. autumnaria*, but very small in size, though the larvæ were nearly full-fed when received. The species has been taken elsewhere in Hants, but is not cherry an unusual food-plant for the larvæ?—(REV.) J. E. TARBAT; Fareham, Hants, Jan. 18th, 1904.

HEMEROPHILA ABRUPTARIA IN JANUARY.—On January 16th I opened a cage containing pupæ of *Hemerophila abruptaria*, and was surprised to find that a female specimen had emerged. It was somewhat worn, so had probably been out some days.—B. STONELL; 25, Studley Road, Clapham, S.W.

HYRIA AURORARIA AND MELITÆA ARTEMIS.—I was recently shown a series of these insects taken, I was informed, on Wimbledon Common in 1900. I should be pleased to hear if these species have been taken by other collectors in this district.—B. STONELL.

LEPIDOPTERA IN N. DORSET, 1903.—I think the most noteworthy fact this year after (and certainly consequent on) the abnormal rainfall was the paucity of individual specimens. Most of the species commonly occurring in the district put in an appearance, but the numbers of each could be counted with at least one nought less than usual, with one or two exceptions. Of these the most noticeable were *Bryophila perla*—a lichen-feeder and therefore one which would naturally revel in a wet season—and *Polia flavicincta*. The latter seems to have appeared in many places where not previously taken, and to have been abundant in its usual haunts; but for this I am unable to assign any reason. I should mention that various causes prevented any entomological work being done until April, and that I was away from home from July 23rd to Sept. 3rd, thus considerably shortening my list, which, however, does not include many of the very common species, of which no note was taken.

Smerinthus ocellatus, June 20. *Macroglossa stellatarum*, April 7. *Gnophria rubricollis*, June 1. *Arctia plantaginis*, July 8. *Hepialus humuli*, June 30. *Porthesia auriflua*, July 19. *Dasychira pudibunda* (from pupa), March 30. *Trichiura cratagi*, Sept. 24. *Pecilocampa populi*, Dec. 8, 9. *Malacosoma neustria*, July 22 to Aug. 4. *Lasiocampa quercus*, July 7. *Dicranura vinula*, May 22 to 30. *Thyatira de-rasa*, July 20. *Bryophila muralis*, July 20. *B. perla*, July 8 to Sept. 7. *Acronycta psi*, July 14. *Diloba ceruleocephala* (males), Oct. 12 to 19. *Leucania pallens*, Sept. 23 to Oct. 2. *Hydracia micacea*, Oct. 17. *Xylophasia lithoxylea*, June 25 to July 6. *Luperina testacea*, Sept. 11 to Oct. 1. *Mamestra sordida*, July 6. *M. brassicae*, Oct. 2 (just emerged). *Apamea basilinea*, June 22. *Miana fasciuncula*, July 6. *M. furuncula*, July 15 to 19. *Caradrina morpheus*, July 16. *C. cubicularis*, Sept. 6 to 30. *Agrotis suffusa*, Sept. 22 to Oct. 9. *A. saucia*, Sept. 22. *A. segetum*, Sept. 26 to Oct. 3. *Noctua plecta*, Sept. 3 to 7. *N. c-nigrum*, Sept. 18 to 26. *N. rubi*, Sept. 4 to 26. *Amphipyra traipogonis*, Sept. 3. *Orthosia pistacina*, Sept. 26 to Oct. 10. *O. rufina*, Oct. 2. *O. litura*, Sept. 12 to Oct. 10. *O. lunosa*, Sept. 16, 17. *Xanthia circellaris*, Oct. 2. *Polia flavicincta*, Sept. 17 to Oct. 5. *Miselia oxyacanthæ*, Oct. 19. *Phlogophora meticulosa*, June 22, Sept. 9 to Oct. 3. *Euplexia lucipara*, July 18. *Hadena oleracea*, June 21 to July 18. *Cucullia umbratica*, July 20. *Gonoptera libatrix*, May 21. *Habrostola tripartita*, July 16 to 20. *H. triplasia*, June 29 to July 19. *Plusia chrysitis*, July 10. *P. iota*, July 10 to 18. *Heliaca tenebrata*, May 22. *Phytometra ænea*, May 21 to June 27. *Rumia luteolata* (*cratagata*), July 18, Sept. 13 to 23. *Venilia macularia*, May 31 to June 1. *Odontoperu bidentata*, May 19. *Crocallis elinguaris*, July 7. *Ennomos fuscantaria*, Sept. 23. *Himera pennaria*, Nov. 22. *Biston strataria*, March. *Hemero-phila abruptaria*, May 21 to 28. *Boarmia rhomboidaria*, July 10 to 18. *Zonosoma annulata*, Sept. 5. *Asthena luteata*, June 20 to July 7. *Acidalia dilutaria*, July 21. *A. remutaria*, May 31. *A. imitaria*, July 15. *Timandra amataria*, July 15. *Bapta temerata*, June 1. *Halia*

rauaria, July 9 to 17, Sept. 13 to 17. *Panagra petraria*, May 31. *Numeria pulveraria*, May 31. *Fidonia atomaria*, May 21, 22. *Ligdia adustata*, July 10. *Emmelesia affinitata*, May 30. *E. decolorata*, May 30. *Melanippe procellata*, July 8. *M. rivata*, May 31. *M. sociata*, May 24 to 31. *M. montanata*, May 24. *Anticlea badiata*, May 4. *Coremia ferrugata*, May 24 to 30. *Triphosa dubitata*, Sept. 15. *Cidaria miata*, Sept. 25 to Oct. 24. *C. testata*, Sept. 27. *C. associata*, July 9 to 18. *Eubolia plumbaria*, July 11. *Tanagra atrata*, July 11.

The most notable absentees were *A. puta*, *A. corticea*, *A. pyramidea*, *O. lota*, *O. macilenta*, *C. ligula*, *S. satellitia*, *X. socia*, *E. alniaria* (*tiliaria*), *E. cervinata*. Some of these are accounted for by the atrocious weather in October, and the fact that ivy was a complete failure, the continuous and heavy rains washing off the pollen and rotting the unexpanded flowers.

L. pallens, in this district, appears either to be double-brooded, or to emerge over a much longer period than usual, as the specimens taken at the end of September, both this year and last, were perfectly fresh.—JAMES DOUGLAS; Sherborne, Dorset.

LEPIDOPTERA AT LIGHT DURING 1903, IN THE DORKING DISTRICT.—I devoted special attention to this method of collecting last year, and the results obtained are, I think, very encouraging, especially when the adverse climatic conditions are considered. The chief drawback to it is that one has to be out so late, the best work being done between 11 p.m. and 1 a.m., and scarcely anything is to be taken before 11, as a rule. I employed the Dixon lamp-net to a limited extent, and I only used it for lamps which were difficult to climb. But most of the lamps here have a projecting ridge about three feet from the ground, and this provides a fairly safe foothold. My captures consisted chiefly in males, quite ninety per cent, of the whole; but I was fortunate in taking several fertile females, such as *Dasychira pudibunda*, *Dicranura vinula*, *Notodonta dictæoides*, *Agrotis puta*, *Odontopera bidentata*, and *Biston strataria*. I append a list of the insects taken, with the date of capture of the first specimen in each case:—

Smerinthus ocellatus, May 27. *S. populi*, June 11. *Euchelia jacobææ*, May 25. *Arctia caia*, July 18. *Spilosoma lubricipeda*, May 24. *S. menthastri*, May 10. *Hepialus humuli*, June 17. *H. lupulinus*, June 10. *Porthesia similis*, July 17. *Dasychira pudibunda*, May 28. *Malacosoma (Bombyx) neustria*, July 22. *Dicranura vinula*, May 31. *Pterostoma palpina*, May 23. *Lophopteryx camelina*, June 6. *L. carmelita*, May 1. *Notodonta dictææ*, May 28. *N. dictæoides*, May 31. *N. trepida*, May 31. *N. trimacula*, May 23. *Phalera bucephala*, July 4. *Cymatophora duplaris*, July 16. *Bryophila perla*, June 27. *Diloba caruleocephala*, Oct. 19. *Leucania conigera*, July 24. *L. comma*, June 16. *L. impura*, July 12. *L. pallens*, July 1. *Hydræcia micææ*, Sept. 26. *Xylophasia rurea* var. *alopecurus*, June 20. *Neuria reticulata*, June 24. *Cerigo matura*, July 26. *Luperina testacea*, Sept. 14. *L. cespitis*, Sept. 14. *Mamestra brassicæ*, July 17. *M. persicariæ*, July 16. *Miana strigilis*, July 5. *M. fasciuncula*, June 27. *M. arcuosa*, July 18. *Grammesia trigrammica*, May 31. *Caradrina morpheus*, June 27. *C. taraxaci*, June 29. *C. quadripunctata*, June 4. *Rusina tenebrosa*, June 27. *Agrotis puta*, May 18. *A. exclamationis*, June 11. *A. corticea*, July 1.

A. cinerea, May 28. *A. nigricans*, July 1. *A. strigula*, July 5. *Noctua c-nigrum*, Sept. 6. *N. rubi*, June 4. *N. xanthographa*, Sept. 6. *Triphæna ianthina*, July 26. *T. pronuba*, July 22. *Amphipyra pyramidea*, July 24. *Pachnobia rubricosa*, May 8. *Tenioampa gothica*, March 21. *T. incerta*, March 26. *T. stabilis*, March 26. *T. munda*, March 26. *T. pulverulenta*, March 21. *Orthosia macilenta*, Oct. 28. *Anchocelis pistacina*, Sept. 25. *A. lunosa*, Sept. 12. *Cerastis spadicea*, Oct. 28. *Dianthæcia carpophaga*, June 23. *Aporophyla lutulenta* var. *lunenburgensis*, Sept. 21. *Miselia oxyacanthæ*, Oct. 19. *Phlogophora meticulosa*, Sept. 26. *Hadena dentina*, June 17. *H. pisi*, June 29. *Habrostola tripartita*, June 23. *Plusia gamma*, June 22. *Acontia luctuosa*, July 1. *Zanclognatha grisealis*, June 23. *Z. tarsipennalis*, June 26. *Hyppena proboscidalis*, July 14. *Urapteryx sambucaria*, July 9. *Rumia luteolata*, May 18. *Metrocampa margaritaria*, July 7. *Selenia bilunaria*, March 26. *S. lunaria*, May 28. *Odontopera bidentata*, May 18. *Ennomos alniaria*, Sept. 14. *Himera pennaria* Nov. 3. *Phigalia pedaria*, Feb. 11. *Amphidasys strataria*, March 20. *A. betularia*, June 18. *Hemero-phila abruptaria*, May 15. *Boarmia repandata*, July 4. *B. roboraria*, June 5. *Tephrosia crepuscularia*, May 10. *Asthena candidata*, July 1. *Acidalia imitaria*, July 16. *Cabera pusaria*, June 25. *Halìa vauaria*, July 16. *Strenia clathrata*, May 28. *Panagra petraria*, May 20. *Ligdia adustata*, May 21. *Lomaspilis marginata*, May 27. *Hybernia rupicapraria*, Feb. 13. *H. aurantiaria*, Nov. 13. *H. marginaria*, Feb. 13. *H. defoliaria*, Oct. 19. *A. æscularia*, March 26. *H. brumata*, Nov. 3. *O. dilutata*, Oct. 19. *Eupithecia oblongata*, May 18. *E. subfulvata*, July 28. *E. vulgata*, May 22. *E. absinthiata*, June 16. *E. assimilata*, May 2. *E. exigua*, May 31. *E. pumilata*, May 23. *E. rectangulata*, May 28. *Lobophora viretata*, May 29. *Thera variata*, July 26. *Melanippe fluctuata*, May 4. *Anticlea badiata*, March 25. *Coremia ferrugata*, May 10. *Phibalapteryx vitalbata*, May 8. *Eucosmia certata*, May 14. *Cidaria truncata*, Sept. 26. *C. suffumata*, July 28. *C. fulvata*, July 5. *C. dotata*, July 4. *Pelurga comitata*, July 28. *Eubolia cervinata*, Sept. 22. *E. bipunctaria*, Sept. 14. *Anaitis plagiata*, May 4. *Chesias spartiata*, Oct. 19.

It will be observed from this list that there is an absence of records for August. I was away from Dorking during that month, and though on my return in September the lamps afforded a fair harvest, the results for October, November, and December were very poor, a great many insects that I had taken in 1902 during those months being either entirely absent or present in very small numbers. Still, the results for the year as a whole may be regarded as good.—F. A. OLDAKER; Parsonage House, Dorking, Jan. 19th, 1904.

POLYOMMATUS (LYCÆNA) ARGIADES IN SOMERSETSHIRE. — I have a male specimen of *P. argiades* in my collection which I captured in 1895 or 1896 at Wrington, about twelve miles north of Bristol. I was not aware of the name of my insect until I saw the figure of this butterfly in the new issue of Mr. Kirby's 'Butterflies and Moths of Europe.'—R. D. R.; 3, Tirlestane Road, Edinburgh.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—November 18th, 1903.—Professor E. B. Poulton, D.Sc., F.R.S., President, in the chair.—Mr. John Rowland Cattle, of Nettleton Manor, Caistor and 59, Chancery Lane, E.C., and Mr. E. J. Hare, of 8, Hillsboro' Road, East Dulwich, S.E., were elected Fellows of the Society.—Mr. G. C. Champion exhibited numerous specimens of both sexes of *Xyleborus dispar*, from Moncayo, Spain, taken out of beech-stumps.—Mr. F. B. Jennings (1), on behalf of Mr. H. Britten, of Great Salkeld, Cumberland, a specimen of *Tropiphorus tomentosus*, Marsh, from Great Salkeld, showing the deciduous false mandibles intact; (2), a female specimen of *Anchomenus parumpunctatus*, F., from the same locality, showing a malformation of the middle right tibia, which was abnormally thin, and bent in the centre, but thickened at the base; the right antenna also had the last seven joints flattened and dilated.—Mr. Jennings also exhibited, on his own behalf, *Apion sanguineum*, De G., taken at Brandon, Suffolk, in August last, on *Rumex*.—Mr. H. St. J. K. Donisthorpe, *Apium sorbi*, male, taken this year at Freshwater, Isle of Wight, and said that the male of this species was extremely rare.—Mr. M. Burr, two females and two males of the largest known earwig, *Anisolabis colossæa*, Dohrn., from New South Wales.—Mr. A. J. Chitty, a specimen of the rare *Homalium testaceum* taken in Blean Wood in 1900, and a pair of bees, *Nomada guttulata*, of which the male has never been recorded hitherto in Britain, taken by him at Huntingfield, Kent, in May last.—Dr. Norman Joy (1), *Euconnus makiini*, Mannerh., taken at Bradfield in July, 1901, new to the British list of Coleoptera, and (2), a series of beetles taken at Bradfield at the exuding sap of trees attacked by *Cossus ligniperda*.—Colonel J. W. Yerbury, specimens of rare British Diptera from Porthcawl, including *Leptopa filiformis*, Zett., *Pelidnoptera nigripennis*, *Lucina fasciata*, and *Thyreophora fuscata*. Dr. T. A. Chapman, specimens of *Chrysophanus phleas* from Reigate, Locarno, and Spain, showing the apparent effects of temperature on the wing markings and coloration. Mr. G. J. Arrow showed specimens and diagrams illustrating a remarkable kind of variability noticed in beetles of the Trogid genus *Acanthocerus*. The President showed an exhibit sent by Mr. A. H. Thayer, of Mondarock, N.H., U.S.A. The greyish silhouettes of two butterflies were represented in a tint nearly the same as the basal ground, but sufficiently distinct to be easily recognisable. Mr. Thayer considered the dark ground colour of many Rhopalocerous insects represented shadow under vegetation, the white submarginal lines and dots a generalization of flowers and flower-masses. But these markings also had a second meaning in that they tended to obliterate the tell-tale margin of the wings. The President also exhibited specimens of *Drurya antimachus*, together with the butterflies which he suggested as forming a group synaposematic with it. The central species appeared to be *Acræa egina*, round which clustered a number of other species of the same genus so much alike as to be probably indistinguishable upon the wing. Examples of these were exhibited, viz. *A. zetis*, *perenna*, *rogersi*, and *pharsalus*. Another beautiful Papilionian member of the group, *P. ridleyanus*, was also shown; in pattern it was nearest to that of the male *A. egina*. In fact, so close was the resem-

blance, that Godart had been entirely misled by it, and had described the *Papilio* under the name of *zidora* as the female of *Acræa eqina*.—Mr. E. Saunders, F.R.S., communicated “A Supplementary Note to a Paper entitled ‘Hymenoptera Aculeata collected by the Rev. A. E. Eaton, M.A., in Madeira and Tenerife, in the spring of 1902.’”—H. ROWLAND-BROWN, *Hon. Sec.*

December 2nd.—The President in the chair.—Mr. F. H. Day, of Carlisle; the Rev. Thomas Prinsep Levett, of Frenchgate, Richmond, Yorkshire, and Parkington Hall, Lichfield; and Mr. Robert C. L. Perkins, B.A., of Honolulu, were elected Fellows of the Society.—Mr. H. Goss, one of the secretaries, again read the names of the officers and members of the council proposed for election at the General Meeting.—Mr. G. T. Porritt exhibited, on behalf of Mr. T. Ashton Lofthouse, a specimen of *Xylophasia zollikoferi*, taken at sugar near Middlesbrough, Yorkshire, on Sept. 26th last. He said he believed that this was only the second specimen which had been recorded as having been taken in Britain. Mr. McLachlan, F.R.S., said the strongest evidence existed that a very large immigration of insects from the nearest continental coast took place during the exceptional (for this year) spell of warm and calm weather prevailing towards the end of September, and he was of opinion that the specimen of *Xylophasia zollikoferi*, taken by Mr. Lofthouse in Yorkshire, formed an item in this migratory swarm.—Mr. Malcolm Burr exhibited, and remarked on, a specimen of *Diurachus dasypus*, Illig., belonging to a family of five or six species confined to the Balkans.—The President, a series of photographs sent by Mr. A. H. Thayer to illustrate his views on the significance of the colours and patterns of butterflies' wings. The insects had been photographed on masses of foliage and flowers, and it was obvious that the dark ground colour harmonized with the the dark shadow behind and under the vegetation, while the light markings stood out as unconventionalized representations of single flowers and flower-masses. Also the eyeless imagines and pupa cases of *Ennomos autumnaria*, in illustration of his remarks at the meeting on November 18th. Imagines produced by unblinded larvæ were also shown for comparison. Dr. Chapman made some remarks on the specimens exhibited by the President.—The Rev. Francis D. Morice, M.A., read a paper entitled, “Illustrations of the Male Terminal Segments and Armatures in Thirty-five Species of the Hymenopterous genus *Colletes*.”—H. Goss, *Hon. Sec.*

The 70th Annual Meeting of the Society was held on Wednesday, Jan. 20th, 1904, the President in the chair.—After an abstract of the Treasurer's accounts, showing a large balance in the Society's favour, had been read by Mr. R. W. Lloyd (one of the Auditors), Mr. Herbert Goss (one of the Secretaries) read the Report of the Council. It was then announced that the following had been elected Officers and Council for the Session 1904–1905:—President, Professor Edward B. Poulton, D.Sc., F.R.S.; Treasurer, Mr. Robert McLachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and Mr. Henry Rowland-Brown, M.A.; Librarian, Mr. George C. Champion, F.Z.S.; and as other members of Council, Lieut.-Colonel Charles Bingham, F.Z.S., Dr. Thomas A. Chapman, F.Z.S., Mr. Arthur John Chitty, M.A., Mr. James Edward Collin, Dr. Frederick A. Dixey, M.A., Mr. Hamilton

H. C. J. Druce, F.Z.S., William John Lucas, B.A., the Rev. Francis D. Morice, M.A., the Hon. N. Charles Rothschild, M.A., F.L.S., Dr. David Sharp, M.A., F.R.S., Colonel Charles Swinhoe, M.A., F.L.S., and Colonel John W. Yerbury, R.A., F.Z.S. The President referred to the loss sustained by the Society, in common with other communities for the advancement of science and thought, in the death of Mr. Herbert Spencer. He then spoke of the losses Entomology had sustained during the past Session by the deaths of Mr. F. Bates, Mr. W. D. Crotch, M.A., Mr. E. R. Dale, Herr Johannes Faust, Prof. A. Radcliffe Grote, the Rev. J. Hocking-Hocking, M.A., the Rev. T. A. Marshall, M.A., Dr. P. Brookes Mason, the Rev. Canon Bernard Smith, Mr. J. S. Stevens, and Mr. S. J. Wilkinson. He then delivered an address on the subject of "What is a Species?" What is there to fill the vacancy left by the disappearance of the Linnean conception, founded on "special creation"? In many respects it would be advantageous to abandon the word, or to use it solely with its original logical meaning of "kind," or, as zoologists would say, "form." This view was, however, regarded as "a counsel of perfection," impossible of attainment; and the attempt was made to show that the conception of a naturally and freely interbreeding (or syngamic) community lies behind the usual definitions; and that the barrier between species is not sterility, but simply cessation of interbreeding (or asyngamy).—H. Goss, *Hon. Secretary*.

RECENT LITERATURE.

The Moth Book. By W. J. HOLLAND, D.D., Ph.D., &c. Royal 8vo, pp. xxiv, 479; pls. 48; figs. 263. New York: Doubleday, Page & Co. Price 4 dollars net.

THIS handsome volume forms one of a series of "Nature Books with Coloured Plates and Photographs from Life" issued by an enterprising American firm at an incredibly low price. Many of our readers are probably already acquainted with Dr. Holland's 'Butterfly Book,' uniform with the present volume, which must have done more to popularize the study of American butterflies than all previous works on the subject put together.

Moths are so much more numerous than butterflies that it would have been impossible to treat them with equal fulness, unless a whole series of volumes had been devoted to them; but nevertheless nearly eighteen hundred species are illustrated, including most of the larger and more interesting species of North American moths, and a few representative species belonging to the *Micro-Lepidoptera*. Introductory chapters are devoted to such subjects as life-history and anatomy, capture, preparation and preservation, classification, and books; and much space is devoted to habits, economic importance, silk-culture, &c. The non-technical portions of the work are written in an easy and attractive style, interspersed with poetical and other quotations, even from so little known a poem as Oehlenschläger's 'Aladdin.' Here and there we meet with small popular digressions, such as the section entitled "The World of the Dark" (pp. 77-80). Why should not

entomology, as well as other branches of natural history, be made more generally interesting? Everybody cannot read text-books or catalogues, or even Kirby and Spence; and lighter books, like Acheta Domestica's 'Episodes of Insect Life,' have their place too. We are very pleased to see readable matter, not exclusively entomological, scattered through the works of such American writers as Scudder and Holland; and we should like to see the example followed in this country. On the other hand, the extent of Dr. Holland's book has left little room for detailed descriptions, the illustrations being the main feature of the more technical part of the book; and the matter on many pages (p. 251 especially attracted our attention) is as bald as that in the later volumes of Morris's 'British Moths.' English as well as Latin names are attached to many of the species. We note that many moths are being rapidly exterminated in America by the extensive use of artificial light. Thus we read (p. 95), under *Anisota rubicunda*, "The disappearance of the moth [in Pittsburgh] is due no doubt to the combined influence of the electric lights, which annually destroy millions of insects which are attracted to them, and to gas-wells and furnaces, which lick up in their constantly burning flames other millions of insects. Perhaps the English sparrow has also had a part in the work of extermination." This moth is still common in other localities in the United States; but we have been informed that the American representative of the European *Deilephila galii*, formerly common at Toronto, has almost disappeared from that locality during the last few years, having probably been destroyed in the same way by the electric lights.

There is much more interesting and important information in Dr. Holland's book which we have no space to allude to; but we most cordially recommend it to the notice of all lepidopterists who do not confine their attention exclusively to one continent or one country.

W. F. K.

Aquatic Insects in New York State. Albany. 1903. [Bulletin 68.]

In this Bulletin of the New York State Museum, consisting of 300 pages and 52 plates, besides a number of illustrations in the text, we have the result of work carried on at the entomological field-station at Ithaca in 1901. The chief papers have to do with—Life-histories of Dragonflies and Diptera (J. G. Needham), Aquatic Chrysomelidæ (A. D. MacGillivray), Aquatic Nematoceros Diptera (O. A. Johannsen), The Sialididæ of North and South America (K. C. Davis).

W. J. L.

Ichneumonologia Britannica: The Ichneumons of Great Britain. By CLAUDE MORLEY, F.E.S. Pp. i-1, and 1-315. With one plate and text illustrations. Plymouth: James H. Keys. 1903.

Six families of Hymenoptera are comprised in the suborder Ichneumonidea, and, with the exception of certain members of the Cynipidæ, all the species belonging to the group are generally understood to be parasitic on other insects, spiders, &c. The family Ichneumonidæ is again divided into five subfamilies, and one of these,

Ichneumoninae, has been monographed by Mr. Morley in the volume before us.

On pages xi-xxii are presented a copious glossary and a list of works consulted. Then follows the introduction (twenty-eight pages), dealing with, among other things, metamorphosis, structure, the history of the study of Ichneumonidae, and classification. In his excellent descriptive account of the tribes, genera, and species known to occur in the British Islands, the method of treatment will be warmly appreciated, not only by the student of the group, but by all who desire to work out the identification of their ichneumons.

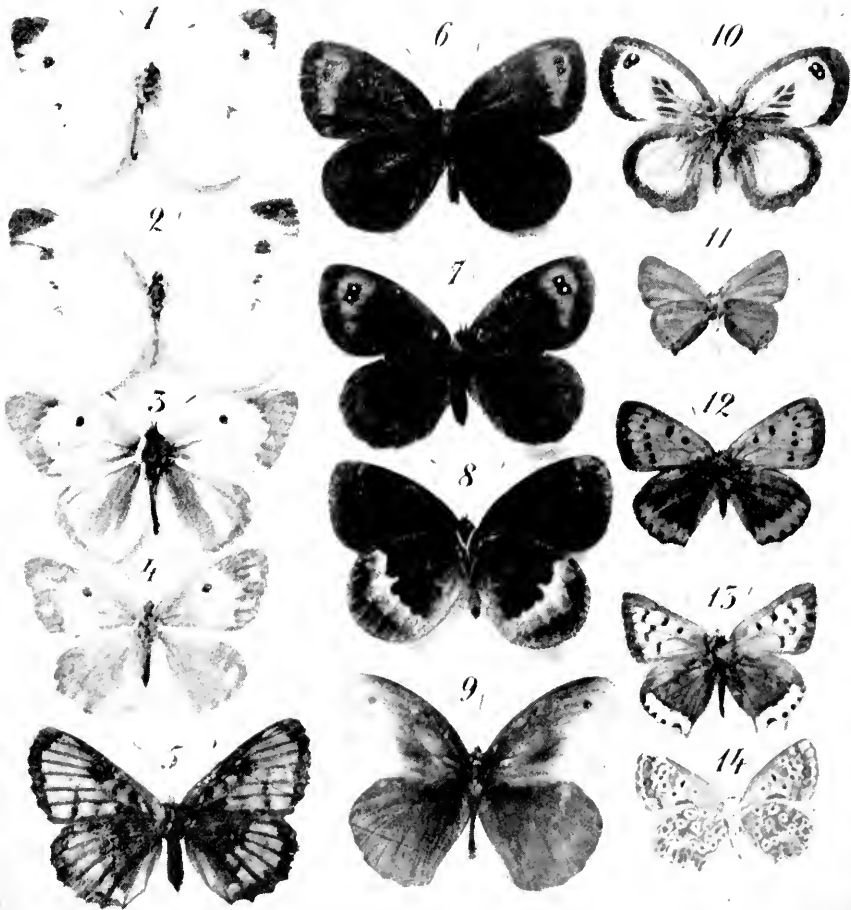
The number of indigenous species seems to be about three hundred and eight, while there are only about eight hundred that are so far known to occur in Europe altogether. These species are distributed among the ten tribes and subtribes as follows:—

| | Genera. | Species. |
|-------------------------|---------|----------|
| 1. Listrodromides . . . | 2 | 2 |
| 2. Joppides . . . | 7 | 35 |
| 3. Ichneumonides | | |
| (a) Oxypygini . . . | 9 | 119 |
| (b) Amblypygini . . . | 9 | 53 |
| (c) Platyurini . . . | 5 | 26 |
| 4. Phæogenides | | |
| (a) Heresiarchini . . . | 1 | 1 |
| (b) Phæogenini . . . | 16 | 71 |
| 5. Alomyides . . . | 1 | 1 |

To those who collect lepidopterous larvæ with a view of rearing moths and butterflies, the parasitic hymenoptera are by no means strangers. In fact, they are probably better known than appreciated. Although familiar, however, with the appearance and habits of these attractive insects, few lepidopterists are acquainted with the scientific names or the systematic position of even those species that most frequently come under their notice. With the majority of people especially concerned in lepidoptera, the presence of a "wretched ichneumon" in the breeding-cage is ruefully regarded, and although usually slaughtered on sight, is rarely preserved as a specimen. The publication of Mr. Morley's book on the Ichneumoninae will most certainly moderate present aversion to the tribe, even if it does not entirely transform that feeling into one of kindly interest.

OBITUARY.

WE have to record with regret the death of THOMAS KELSALL, who recently passed away at his son's house at Blackpool, at the age of eighty-three. He was formerly employed in the Geological Department of the Manchester Museum, Owens College, where for many years he rendered efficient service. He was a member of the Entomological Society in 1859, together with G. Aspinall, Benjamin Cook, Joseph Chappell, John Hardy, B. B. Labrey, and others. Mr. Kelsall was a man of marked and original character. His loss will be regretted by many, who will feel sincerest sympathy with his family.—R. J. W.



Some forms of Lepidoptera Rhopalocera found in Tuscany.
(See p. 53.)

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NEW FORMS AND NEW LOCALITIES OF SOME EUROPEAN BUTTERFLIES.

BY ROGER VERITY, F.Fr.E.S., F.It.E.S.

(PLATE IV.)

PIERIS RAPÆ, L. var. *ROSSII*, Stefanelli, Trans. of the Ital. Ent. Soc. xxxii. (1900).—This fine and well-marked variety is the summer form of var. *mannii*, Meyer, of the spring brood. It can at a glance be separated from all the other forms of *P. rapæ* by the great development in size and intensity of the black markings, and may well be said to be the variety of *P. rapæ* corresponding to var. *cheiranthi*, Hb. of *P. brassicæ*, L. The apical marking extends to more than one-third of external margin and has the shape of an equilateral triangle; the black spot in the middle of fore wing is in the male distinctly reniform in shape, much larger than in the type, and suffused along the edges; a well-defined black streak connects its upper end to the outer margin, which it joins just at the lower corner of apical patch; another streak runs parallel to the first, from lower end of reniform spot. Very often the space between these two streaks is filled up with dusky. In the female the first spot is more or less square in shape, three or four times as large as in type, and it has the two streaks connecting it with margin more marked than in the male. The second spot is distinctly crescent-shaped, with the concave side turned towards the base. The costal spot of hind wings is somewhat larger than in *P. rapæ*. As to the under side, it only differs from that of type in having the yellow colour much brighter.

This variety is so distinct that it might be thought a true species, if intermediate forms, which connect it with *P. rapæ*, did not occur commonly. Prof. Stefanelli collects var. *rossii*

sparingly in the neighbourhood of Florence every summer; I have found it in the pine-woods that run along the coast of Northern Tuscany: its habits and appearance at a distance are quite similar to those of *Leptidia sinapis*, L.: it flutters lazily about the undergrowth in sunny spots in the woods, but scarcely ever wanders out into the meadows where *P. rapæ* is abundant. (Plate IV., fig. 1, ♂; 2, ♀).

P. DAPLIDICE L., ab. *RAPHANI*, Esp., Die Schmett. in abb. nach der Nat. p. 163.—This form differs from the type in having the green markings on the under side of hind wing replaced by yellowish ones. It is found commonly in Morocco and Persia, where it often replaces true *daplidice* entirely. I found a specimen of it along the coast in Tuscany, where it seems to occur as an aberration, though very rarely indeed.

COLIAS HYALE, L., ♂ AB. — This accidental variety has been caught near Modena in September, 1900. It has the black borders very wide, just as wide as those of female *C. edusa*; the yellow spots upon it are nearly obsolete, and there is a wide dash of black joining the discoidal spot to the border. On the under side this dash is reproduced, though more faintly; and on the hind wings each of the crescentic reddish spots is prolonged in a dash of the same colour; these converge and join at the back of discoidal spot.

C. EDUSA, Fab., ab. *MINOR*, Failla, Naturalista Siciliano, vii.–viii. (1889). [*PYRENAICA*, Gr. Gr. Horæ, Soc. Ent. Rossicæ, xxvii. (1893)].—This is an exceedingly small form of *C. edusa* which occurs occasionally with type. The male and female figured in plate were caught in Tuscany, but I have lately obtained a still smaller specimen, which is not larger than *Chrysophanus dispar*. I also possess a specimen which combines the characters of ab. ♀ *helice*, Hb. and of ab. *minor* (Plate IV., fig. 3, ♂; 4, ♀).

C. EDUSA ab. *CÆRULEA*, ab. nov.—I propose this name for a most beautiful form of *C. edusa*, of which I possess a specimen (unique, I believe), caught in August, 1902, on the top of Mount Matanna, 4000 ft. (Alpi Apuane, the coast range in Northern Tuscany). The specimen is a female, and has the ground colour white as in ab. *helice*, Hb., but it differs from this form in having all the green colour of the under side replaced by the most lovely pale sky-blue. The whole of the upper side, too, is suffused with strong silvery reflections.

MELITÆA PHŒBE, S. V., ab. *ALBINA*.—I possess a specimen of this species caught in the province of Lucca in September, 1902, which has the ground colour of both right wings yellowish white, both on the upper and under surface.

M. ATHALIA, Rott., ab. *PYRONIA*, Hb., Samml. Europ. Schmett., figs. 585–8.—Of this well-known but exceedingly rare aberration figure a specimen which I found in a small collection made

more than half a century ago. The specimen comes from Central Tuscany (Plate IV., fig. 5).

ARGYNNIS LATHONIA, L., ab. ALBA, Spüler.—This is an albino, with the ground colour of all the wings white, of the well-known *Argynnis*. I possess a good specimen of it, caught in Tuscany, as well as one of the corresponding form of *A. aglaia*, L.; for the latter I propose the name of ab. *albescens*, ab. nov.

EREBIA NEORIDAS, Boisd., Europ. Lepid. Ind. meth. p. 23.—Since the discovery of this species towards the beginning of the last century, it had never been found beyond the French frontier, and it had always been thought that its range was limited to the south of France; but at the end of August, 1901, I received a specimen that had been caught by a friend of mine on the Pania della Croce (Alpi Apuane, the Tuscan mountains mentioned above). Soon after, a gentleman who was collecting for me during the same time on another mountain of the same range, sent me thirty males and three females, and during the two following years I discovered the species to be quite common in the second half of August on all the higher tops of the Alpi Apuane towards 1200 or 1300 m. (—3500 or 4000 ft.). Considering that the Alpi Apuane have a much older geological formation than the Apennines, being in fact a continuation of the Maritime Alps, it is interesting to notice that *E. neoridas* has never been found in the Apennines, where *E. ethiops*, *ligea*, *cassiope*, and other species of the genus, are common.

On examining an extensive series of specimens of *E. neoridas* from the south of France and others from Tuscany, one is immediately struck by the much greater variation this species undergoes in this locality. Some specimens are in fact so different from the typical form that one would certainly think they belonged to a distinct species, if there did not occur a series of intermediate forms to connect them.

E. NEORIDAS var. *ETRUSCA*, var. nov.—I possess some Tuscan specimens in which the submarginal fulvous band of the fore wings is reduced to half the width it has in the type; it rapidly tapers to a point towards the hind margin, and ends abruptly on or before the first medial nervule, instead of reaching the sub-medial. There are only two coalescent apical spots, greatly reduced in size, all the others being absent. The hind wings are uniform brown, with no fulvous band or ocellated spots. For this markedly different form I propose the name given above. (Plate IV., fig. 6, ♂; 7, ♀).

E. NEORIDAS ab. *ALBOVITTATA*, ab. nov.—Another fine variety which occurs in Tuscany has the apex of the fore wings on the under side, as well as the base of hind wings and submarginal band, bluish silvery white instead of light greyish brown as in type of the species. This light colour stands out well on the

dark ground colour, and gives this form quite a different look from true *neoridas*. I should call it ab. *alborittata*. It corresponds to ab. *leucotenia*, Stgr. of *E. ethiops*, Esp. (Plate IV., fig. 8).

EPINEPHELE JURINA, L. ab. ANOMMATA (*ἀνόμματος* = without eyes), ab. nov.—I propose this name for a new form of this well-known species, in which the apical white pupilled spot of the fore wings is entirely wanting. I possess a male specimen of it captured last July on Monte Senario, not far from Florence.

E. JURINA ab. SEMIALBA, Bruand.—The specimen figured is an uncommonly fine example of this exceedingly variable aberration. It was captured on Mount Matanna (Alpi Apuane) in August, 1902. I possess a few more specimens with large white patches on different parts of the wings, amongst others a male and a female with both the hind wings entirely white, the female having also the greater part of the fulvous patch on the fore wings replaced by white (Plate IV., fig. 9).

E. IDA, Esp., ab. SUBALBA, ab. nov.—M. Fallou described, in the Transactions of the French Entomological Society for 1883, an albino of *E. ida*, in which all the brown colouring of the wings was replaced by white, and he gave it the name of ab. *albomarginata*. The specimen figured in the plate, which is the exact reverse of it, was captured in August, 1902, at the foot of the hills at the back of Viareggio on the coast of Tuscany. It has all the ground colour yellowish white, instead of fulvous. This form, as well as the following, which is the corresponding one of *tithonus*, L., has, I believe, never been described (Plate IV., fig. 10).

E. TITHONUS, L., ab. SUBALBIDA, ab. nov.—I possess two males and one female of *E. tithonus*, collected on Mount Matanna in August, 1903, which have the ground colour yellowish white. I would give this albino form the name mentioned above.

THECLA ACACIÆ, F., ab. BECCARI, ab. nov.—Signor Nello Beccari, in the month of July, 1902, captured on Mount Senario, not far from Florence, a most interesting *Thecla*. I certainly think it is an aberration of *T. acaciæ*, though it differs so much from this species that it might even be at first sight an aberration of *T. w-album*, Knoch, or *T. ilicis*, Esp. As may be seen from the figure, it is much smaller than any of these three species; it has not got on the under side the faintest trace of the white streak; and only one of the marginal orange markings is distinctly visible (the one above the tails); the other two, on the right and left of it, can scarcely be seen; the tails are exceedingly short (Plate IV., fig. 11).

CHRYSOPHANUS DISPAR, Haw., var. RUTILUS, Wernb., Beitr. zur Schmett. (1864), p. 391.—This Continental form of the celebrated English large copper had in Italy only been found in the

provinces of Modena and Milan, and doubtfully, perhaps, also in Piedmont and in the Pontine Marshes. I have three specimens captured in the small marshes that extend along the coast of Tuscany, from Pisa nearly to Spezia; these are the first specimens recorded from Tuscany. The two females differ strikingly from specimens from Modena or other localities by their smaller size (one not being larger than good-sized *C. phlœas*), and by the minuteness of the spots on the fore wings (Plate IV., fig. 12).

C. DISPAR, Haw., ab. *NIGROLINEATA*, ab. nov.—I propose this name for a new aberration of which I have a specimen collected near Modena on the 6th of September, 1900. It may be said to correspond to ab. *radiata*, Tutt, of *C. phlœas*, having on the fore wings each of the black spots of the subterminal row greatly increased in size and prolonged across the submarginal brown band to the base of cilia. On hind wings the black dots are so enlarged and lengthened as to fill up entirely the internervular space up to the edge of coppery bands. The copper-colour also differs greatly on fore wings from that of type, as it is thickly strewed with reddish scales, which give it a much richer reddish tone. These scales are in every respect similar to those that may be seen very thinly strewed here and there on the fore wings of some female specimens of var. *rutilus*. On the under side of fore wings each spot of the submarginal row is greatly prolonged outwardly and ends in a sharp point, which, in the case of the three last spots, blends itself with the corresponding small black dots plainly visible in the type on the inner edge of the hind marginal grey border. The hind wings have nearly no blue at the base.

C. PHLÆAS, L., ab. *SCHMIDTII*, Gerh.—I have had the luck of being able to examine an uncommonly large number of specimens of the well-known albino of *C. phlœas*. In the last three years I was able to secure eight specimens from two Tuscan localities. Three were collected in the neighbourhood of Florence in September, 1901. One of these is represented in the plate. It has an unusually pure white ground colour, and also has the characters of var. *eleus*, F., well marked. The other two are very slightly suffused with pale coppery reflections. The five other specimens were found this summer, after a year of patient search in a locality at the back of Viareggio (province of Lucca), where *phlœas* is particularly abundant. One of these specimens is pure milky white; another has a remainder of metallic reflections; a third has both the left-hand wings normal, and both the right-hand side albino (I had already heard of specimens of this form); a fourth has the fore wings pure white, and the submarginal band of hind wings copper colour; whilst a fifth is exactly the reverse of this one, having the fore wings normally bright copper, but the band of hind wings white. The two last specimens are, I believe, unique (Plate IV., fig. 13).

C. DORILIS, Hufn., ab. *UPOLEUCA* (*ὑπόλευκος* = whitish), ab. nov.—The locality that has proved so rich in albino forms of *C. phlocas* has also produced some very interesting ones of *C. dorilis*. I possess a male, caught last year, with the hind wings quite white, and a female, collected near Modena, with the ground colour of fore wing pure white; the fulvous colour only remains along the costa and on an exceedingly small area of the base. The hind wings are quite similar to those of typical specimens. I may add there is not the slightest trace of blackish suffusion on fore wings, so that this specimen also belongs to ab. ♀ *fulvior*, Stef., a fine form that occurs probably in the whole of Southern Europe, but has at present only been recorded from Central Italy.

LAMPIDES TELICANUS, Lang, ab. nov.—I do not think it advisable to give this accidental form a name, but it is distinct enough to be noticed. Though I have never seen the Sicilian specimen named ab. *bellieri* by Ragusa [Nat. Sicil. i. (1881-2), p. 37, pl. 3, f. 2], I gather from his description that my specimen is a very near ally to it. Both forms differ from type on the under side only. The aberration, of which I possess a specimen has on this surface the whole of the ground colour of all the wings uniform greyish brown. On the fore wings are two subterminal rows of light grey lunules and three transverse oblong rings of the same colour, which cross the upper half of the wings respectively towards the middle of cell, at the end of it and between this point and first row of lunules. On hind wings the submarginal pattern of fore wings is prolonged, but the inner row of lunules widens greatly, and these take the shape of arrow-heads; at the end of discoidal cell is a very oblong ring, a very small round one is on costa above it, and a row of three extends from costa to hind margin across the middle of discoidal cell. Near anal angle are, as in type, two greenish spots surrounded by orange rings. This specimen was caught on July 31st, 1902, in the neighbourhood of Modena.

LYCÆNA ICARUS, Rott., ab. *MELANOTOXA*, Pincit. Marott. Giorn. Sc. Nat. Pal. xiv. (1879).—This well-marked form is but little known. It differs from the type in having a black streak parallel to the hind margin on the under side of the fore wings. This streak is formed by the last spot of marginal row and by the second of basal spots; these have, so to say, increased in length towards each other, and have blended together. Signor Pincitore thought this form was only to be met with in Sicily, and that it was only a female aberration. So did all the other writers think, who mention the form, up to the present day; but this summer I caught two males with the black streak very well marked, and discovered that specimens of this form, as far as the female is concerned, are not rare in Tuscany. (Plate IV., fig. 14).

L. ESCHERI, Hb., ab. ♀ SUBAPENNINA, Turati.—This new form, discovered only a few months ago, corresponds to ab. ♀ *ceronus*, Esp., of *L. bellargus*, Rott. It has the entire area of both fore wings and hind wings suffused with bright violet-blue. The orange spots are few, and much reduced in size. I possess a very fine specimen, caught in the Modenese Apennines, and had the intention of describing it, when I found out Signor Emilio Turati had anticipated me.

L. DAMON, Schiff. ab. AGRAPHOMENA (*αγραφόμενος* = not streaked), ab. nov.—I propose this name for an aberration of *L. damon* that I believe to be undescribed; it has the white streak on the under side of hind wings entirely obliterated. I describe this form from a specimen collected in July, 1902, on the Grand Salève Mountain, south of Geneva. The discovery of this aberration is more important than might be thought, when one considers that the chief difference between many *Lycæna* of the *damon* group, considered by most entomologists as distinct species, consists simply in the presence or absence of this white streak.

If anyone has met with the forms mentioned above, or with others allied to them, I would be glad to know of it.

1, Via Leone X, Florence, Italy: Nov. 26th, 1903.

EXPLANATION OF PLATE IV.

FIG.

1. *Pieris rapæ*, Z., var. *rossii*, Stefan., ♂ (coast of Northern Tuscany).
2. " " " " ♀ " " "
3. *Colias edusa*, Fab., var. *minor*, Failla., ♂ (Northern Tuscany).
4. " " " " ♀ " " "
5. *Melitæa athalia*, Rott., ab. *pyronia*, Hübn. (Central Tuscany).
6. *Erebia neoridas*, Boisd., var. *etrusca*, Verity, ♂ (N.-E. Tuscany).
7. " " " " ♀ " "
8. " " " var. *alborittata*, Verity " "
9. *Epinephele jurtina*, Z., ab. *semialba*, Bruand " "
10. *Epinephele ida*, Esp., ab. *subalba*, Verity " "
11. *Thecla acaciæ*, F. ab. *beccarii*, Verity (neighbourhood of Florence).
12. *Chrysophanus dispar*, Haw., var. *rutilus*, Wernb., ♀ (N.-E. Tuscany).
13. *Chrysophanus phlæus*, L., ab. *schmidtii*, Gerh. (neighbourhood of Florence).
14. *Lycæna icarus*, Rott., ab. *melanotoxa*, Pincit., ♀ (coast of Northern Tuscany).

NOTE.—To my great regret, the photograph has not accurately reproduced the black markings of *P. rapæ* var. *rossii* (figs. 1 and 2). They should be much more strongly developed, especially the two streaks connecting the spot with the outer margin.—R. V.

AN INTERESTING FORM OF *CHESIAS SPARTIATA*
(VAR. *CAPRIATA*, N. VAR.).

By LOUIS B. PROUT, F.E.S.

It is curious that although Guenée points out that *Chesias spartiata* varies much, and *C. rufata* "much less," and mentions three marked aberrations of the former (one almost becoming a local race in the South of France), yet there does not seem to be a single named form of it; whereas of *C. rufata* Staudinger catalogues no less than three. In the British Islands, to be sure, *C. spartiata* seems a very constant insect, excepting for the rather strong sexual dimorphism, but further south it would appear to be much more unstable, and its variation will deserve more attention than it has yet received.

My kind correspondent, Mr. C. Seymour Browne, who is doing such good work in investigating and making known the very interesting fauna of the Island of Capri, has brought to our notice a striking variety which occurs with him, and has suggested that if I think it of sufficient interest, I should describe it as "var. *capriata*."* I certainly do think it of sufficient interest, and have much pleasure in subjoining a description. I must not omit to add that Mr. Browne has generously presented me with the specimen which I am describing as the type, and to publicly tender him my thanks for this and other kindnesses.

Chesias (Eucestia, Hb.) spartiata (Herbst in Fuess. Archiv),
var. *capriata*, mihi, n. var.

Ground colour delicate pale grey, weakly marked, the characteristic white (or whitish) "streak" and the dark markings at the base and on the three "amygdaloid" patches in the central area being entirely absent. The result is that there are only two colour-shades present, and even these seem rather abnormally arranged and somewhat ill-defined. Basal area irregularly blended of the grey ground colour and light brown; "first line" (*i. e.* inner boundary of the narrow central area) light brown, forming two acute angles, or a kind of irregular Greek sigma (Σ), the upper angle not completely intersecting the central area, but the lower (on the fold between veins 1 and 2) intersecting it completely, thus leaving one amygdaloid grey blotch at inner margin. A rather broad light brown band runs obliquely from the apex, thence forming the outer boundary of the central area, narrowing and becoming more indistinct towards inner margin. Pale subterminal line traceable, though not very conspicuous, the colour again light

* Perhaps when more southern material is to hand we shall have to write "var. *et ab.*" I find amongst my Canales (Northern Spain) geometers a small worn specimen, taken by Dr. Chapman in July, which was apparently intermediate between the new form and the type.

brown between this and the termen. A rather conspicuous dark mark at the origin of veins 3 and 4. Hind wings normal or rather pale. Occurs on Capri in autumn, apparently supplanting the type.

Type (♀) in coll. L. B. Prout. Paratypes (♂ ♀) in coll. C. S. Browne et Brit. Mus.

NOTES ON THE GENUS *METROCORIS* (RHYNCHOTA).

BY G. W. KIRKALDY.

A MONOGRAPHIC revision of this genus and its immediate allies has, owing to a variety of causes, been shelved for some time, and is likely to remain so for a little longer. I hasten therefore to describe now a new species which was placed in my hands for study by Mr. Distant, and was returned to him a long time ago with a manuscript name attached.

Although it would not be profitable at the present moment to discuss any of the other species at any length, each of these is enumerated.

The generic synonymy is detailed in Lethierry and Severin's 'Catalogue des Hémiptères-Hétéroptères,' vol. iii. p. 64, and need not be copied here. *M. lituratus*, Stål, appears to be marine, but the record requires confirmation; it may well be so, however, as *Rhagovelia*, Mayr, contains a few estuarine or semi-marine forms, the majority being fluviatile or paludicolous. The other four species of *Metrocoris* are frequenters of fresh water.

TABLES FOR THE DETERMINATION OF THE SPECIES.

Males :

- | | |
|---------------------------------------------------------------------------------|---------------------------------|
| 1. Anterior femora strongly incrassate, with tubercles | 2. |
| 1a. Anterior femora not, or not strongly, incrassate, without tubercles beneath | 3. <i>compar</i> (F. B. White). |
| 2. Dark, with pale markings; one tubercle | 5. <i>stali</i> (Dohrn). |
| 2a. Pale, with dark markings; two tubercles | 1. <i>lituratus</i> (Stål). |
- Males of *histrion* and *distanti* unknown.

Females :

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------|
| 1. Ground colour pale flavous, with black markings (only apterous forms known) | 2. |
| 1a. Ground colour black, with pale markings | 3. |
| 2. Medio-longitudinal black line on the thorax reaching to the abdomen; abdomen truncate apically beneath. | |
| China: Wampoa, Hongkong | 1. <i>lituratus</i> (Stål). |
| 2a. Same line on thorax not reaching abdomen, which is apically angular (almost rounded beneath). | Japan |
| | 2. <i>histrion</i> (White). |

3. Ventral surface dark. India: Kurseong 3. *compar* (White).
 3a. Ventral surface pale 4.
 4. Base of pronotum practically uninterruptedly black,
 straight; anterior femora not incrassate; first ven-
 tral "genital" segment not visible above. South
 Africa 4. *distanti*, n. sp.
 4a. Pronotum black, with a "C" on each side pallid;
 femora subincrassate; first "genital" (ventral)
 segment visible above. India, Ceylon 5. *stali* (Dohrn).
 The pattern in both sexes is very similar.

1. *M. lituratus* (Stal).—The colours in the female are brighter and more distinct than in the male. The type is in the Stockholm Museum, and was from Wampoa; I have it from Hongkong.

2. *histrío* (White).—This species I know only by White's description. I believe the type is in the British Museum.

3. *compar* (White).—This was recorded by White from "India." Through the kindness of my friend Mr. G. Severin I have seen some examples in the Brussels Museum, from Kurseong. I believe the type is with *M. histrío*.

4. *stali* (Dohrn).—Of this I have seen specimens, both macropterous and apterous, sent to me by my friend Mr. E. E. Green from Ceylon (Pundaluoya), from sheltered pools in rocky streams; my friend Mr. M. Burr has also given me examples from Assam, Chenapunghi (Khasia Hills). The type appears to be lost.

5. *distanti*, n. sp.—This species may be best described by comparison with *M. stali*. As I believe Mr. Distant will describe in detail and figure it, I need only point out the salient characters.

The colouring and pattern in these two species is almost identical, except that the pallid markings on the mesonotum are more rounded exteriorly in *stali*, more angular in *distanti*. The base of the pronotum in *distanti* is practically uninterruptedly pale, while in *stali* there are two rounded pale markings; the pale marks are also redder in the former. The form of the "genital" segment is also very different; in *distanti* it is subtriangular, while in *stali* it is subrotundate; in the latter the apex of the "sixth" is almost truncate, and of the "seventh" is widely bisinuate; in the former the apex of the "sixth" is apico-laterally produced subrotundately, obtuse-angularly, and the "seventh" is truncate.

♀. Length, $5\frac{3}{4}$ mill. South Africa, Zoutspanberg (Koessner). Type in coll. Distant. ♂ unknown.

Honolulu.

DESCRIPTIONS OF SOME NEW SPECIES OF *MASTOSTETHUS* (PHYTOPHAGOUS COLEOPTERA).

By MARTIN JACOBY F.E.S.

THE species described here are contained in my collection, and seem to be new; these insects are proportionately rare, and form generally but a very small proportion in collections received from tropical South America, where they are principally found.

MASTOSTETHUS NIGROVARIANS, sp. n.

Narrow and parallel, flavous; the head with two spots; thorax impunctate, with an M-shaped mark; scutellum black; elytra closely punctured, a transverse band before the middle extending up the shoulders, the extreme basal margin and another band below the middle, black; breast and the flanks of the thorax spotted with black; femora flavous, with black streaks. Length, 8 mill.

Head closely punctured near the eyes, pale fulvous, a spot at the base of the vertex and a larger more elongate one between the eyes black; clypeus separated from the face by a deep transverse sulcus; antennæ black, the lower four joints shining, the basal joint flavous below; thorax nearly twice as broad as long, entirely impunctate; a black mark in shape of an M extends across the entire disc; elytra rather strongly and closely punctured, flavous, with two narrow transverse black bands, one before the other below the middle, both with their margins deeply indented, the anterior band extending with a narrow streak upwards at the shoulders, and connected with the black basal margin, the flavous portions dividing these bands of about the same width, the apical portion of the elytra more broadly of the ground colour, and more finely punctured than the rest of the surface; below flavous, the flanks of the thorax and the anterior coxæ with two black spots, the upper portion and the sides of the breast as well as the metasternum black, femora with a black band above, tibiæ and tarsi entirely yellow.

Hab. Prov. Goyaz, Brazils.

I possess two exactly similar specimens of this species, which seems most nearly allied to *M. aurantiacus*, Lac., but the head with two black spots only, the elytral bands connected, not composed of spots, the second one not at but below the middle, and of regular transverse, not oblique shape, but with its outer portion slightly widened at the lateral margins.

MASTOSTETHUS FUNEREUS, sp. n.

Black; thorax nearly impunctate; elytra very closely and finely punctured, flavous, the extreme basal margin, the apex, and four small spots at the middle black. Length, 11 mill.

Head black, finely punctured in front of the eyes, the anterior margin of the clypeus and that of the labrum fulvous; antennæ black,

the lower four joints shining; thorax about one-half broader than long, black, nearly impunctate; scutellum very finely punctured, black; elytra broad and flattened, extremely closely and rather finely punctured, yellowish white, the basal margin narrowly black, this colour extending to the shoulders and to the extreme lateral margins, the apical third portion in shape of a triangular patch and two small spots placed obliquely at the middle of the disc of each likewise black; under side and legs of the latter colour, clothed with long yellowish pubescence.

Hab. Peru.

This species is easily known by its system of coloration, and the four black spots at the middle of the light-coloured portion of the elytra.

MASTOSTETHUS FEMORATUS, sp. n.

Dark fulvous; the antennæ, breast, and legs blackish; head with three, thorax with two, black spots; elytra closely and finely punctured, the posterior femora with a strong tooth. Length, 10 mill.

Broad and flattened; head sparingly punctured at the vertex, more closely so near the eyes; between the latter is a black spot, and two others are placed at the base of the vertex; posterior edge of the clypeus raised in shape of a transverse ridge, testaceous as well as the palpi, the rest of the head reddish fulvous; antennæ black, the basal joint fulvous below; thorax nearly twice as broad as long, very sparingly and finely punctured, fulvous, the disc with two small black spots; scutellum finely punctured, fulvous; elytra broad, not narrowed posteriorly, the lateral margins below the shoulders strongly raised and preceded by a longitudinal sulcus, the surface closely and finely punctured; thorax below fulvous, the flanks with a black spot; the anterior coxæ likewise black; breast deep black; the mesosternum strongly produced, compressed and truncate anteriorly; legs nearly black, the anterior femora and their tibiæ within, as well as the anterior and intermediate tarsi, flavous; posterior femora strongly thickened, with an acute tooth; abdomen fulvous.

Hab. Bahia.

From all other uniformly coloured species, in regard to the upper side, the present one differs in the colour of the legs and the strong femoral tooth; a single specimen is contained in my collection.

MASTOSTETHUS ERICHSONI, sp. n.

Fulvous; the antennæ, tibiæ, and tarsi black; head and thorax spotted with black; elytra finely punctured, with two transverse narrow pale yellow bands. Length, 10 mill.

Head very finely punctured near the eyes, reddish fulvous, the vertex, a central longitudinal band, and a narrow stripe at the inner margins of the eyes black; clypeus and labrum with a transverse black band; antennæ black, the lower four joints shining, the rest opaque, strongly transverse; thorax narrowed anteriorly, the sides straight, the posterior angles strongly produced and pointed, the disc very finely and sparingly punctured, reddish fulvous, a U-shaped mark

at the middle and two spots at the sides black; scutellum black; elytra finely and rather closely punctured, the base more strongly so, black, with two transverse yellowish narrow bands, the edges of which are irregularly notched, the first band placed immediately before the middle, the other of slightly concave shape near the apex; under side fulvous, the sides of the breast and an obscure oblique streak at the sides of the mesosternum black, the latter strongly produced into a conical point; legs fulvous, the femora with black stripes above or below, tibiæ and tarsi entirely black.

Hab. Peru.

Almost identical in coloration with *M. alternans*, Lac., but the elytral pale bands much narrower and irregular in outlines, the basal margin not pale as in that species, and the elytral punctuation finer. From *M. trifasciatus*, Lac., the species differs in the markings of the head and thorax, also in the absence of the basal elytral pale band.

MASTOSTETHUS LACORDAIREI, sp. n.

Flavous; the antennæ, tibiæ, and tarsi black; head with a black band; thorax very finely punctured, black, the margins flavous; elytra extremely closely and finely punctured, flavous, a broad transverse band at the base (not extending to the basal margin) and another one below the middle black. Length, 10 mill.

Head strongly punctured at the vertex, the lower portion near the eyes more finely and closely punctate, flavous, the upper portion with a broad longitudinal band extending to the middle of the eyes; antennæ black, terminal joints broadly dilated; thorax of usual shape, rather closely and finely punctured, the disc black, the margins narrowly flavous; scutellum black; elytra distinctly narrowed posteriorly, very closely punctured, a broad transverse band at the base, narrowed towards the suture, and not extending quite to the basal margin, and another narrower band below the middle black; under side and the femora flavous; the tibiæ and tarsi, the anterior and intermediate femora, with a black streak above; mesosternum produced anteriorly.

Hab. Peru.

Closely allied to *M. tibialis*, Fab., but with the basal elytral band extending right across the suture, the thorax with the margins flavous only, the posterior band of the elytra placed higher, not concave at its upper edge, the margins not black but flavous.

MASTOSTETHUS ARGENTINENSIS, sp. n.

Flavous; the upper portion of the head, the disc of the thorax, the scutellum, and the tibiæ and tarsi black; elytra strongly and closely punctured, flavous, with a transverse band before, another behind, the middle, and the extreme apex black. Length, 8 mill.

Head closely and strongly punctured near the eyes, black, the lower portion flavous, the two colours separated by a straight margin, the space between the antennæ impressed with a deep transverse sulcus; antennæ black, the lower four joints shining, the rest opaque;

thorax about one-half broader than long, narrowed anteriorly, the disc very finely and sparingly punctured, black, the lateral and the posterior margin narrowly flavous; scutellum black; elytra rather strongly punctured, flavous, with two transverse black bands, the first placed before the middle, rather narrow, not wider than the following flavous space, its edges irregularly dentate; the second band rather broader, and nearly regular in outlines; both bands do not quite extend to the lateral margins; the extreme apex likewise black; under side flavous, the sides of the breast with a small black spot, the anterior and intermediate femora with a black streak above; tibiæ and tarsi entirely black.

Hab. Prov. Tucuman, Argentine Republic.

Of this species I received two specimens from the La Plata Museum. The insect is closely allied to *M. 5-maculatus*, Lac., but in that species the vertex of the head is fulvous, the basal elytral band is wider and of more regular shape, and the apex of the elytra is fulvous; the under side also differs in coloration.

MASTOSTETHUS NIGRICOLLIS, sp. n.

Black; thorax impunctate, with an obscure fulvous spot at the base; elytra dark reddish fulvous, closely punctured. Length, 10 mill.

Head black, shining, with the usual group of punctures near the eyes; antennæ with the lower four joints shining, black; thorax scarcely twice as broad as long, the angles very pointed, the disc entirely impunctate, black, with a small obscure fulvous spot at the middle of the base; scutellum fulvous, with a few fine punctures; elytra rather closely and finely punctured, the punctures much finer posteriorly, dark chestnut-brown; under side and legs black; the last abdominal segment fulvous or partly so; mesosternum strongly produced.

Hab. Prov. Goyaz, Brazils.

Closely allied to *M. abdominalis*, Klug, but the elytra dark brown without black basal margin, the abdomen with the last segment fulvous only, and the thorax with a fulvous spot, as well as the scutellum entirely, of this colour; two exactly similar specimens are contained in my collection.

MASTOSTETHUS BALYI, sp. n.

Testaceous; the head with a longitudinal black band; thorax with a few minute punctures; scutellum black; elytra strongly and closely punctured, the extreme sutural and lateral margins, a spot on the shoulders and the extreme apex, black; sides of the breast, the outer margin of the tibiæ, and the posterior tarsi black. Length, 9 mill.

Head testaceous, finely punctured near the eyes, the latter very large, the indented portion black; the middle of the vertex with a broad and long longitudinal band, which consists almost of two parts, joined at the middle; labrum black; antennæ obscure flavous, the lower joints with a black streak above; thorax short and transverse, the angles acute but scarcely produced, the posterior ones with a deep

fovea, the surface testaceous, extremely minutely and remotely punctured; scutellum black; elytra very slightly narrowed posteriorly, testaceous, closely impressed with deep and dark punctures, the margins very narrowly and a triangular spot on the shoulders black; at the apex this colour is slightly widened; under side and legs flavous, the sides of the breast black, femora darker fulvous, the posterior ones incrassate, the outer margin of the tibiæ and tarsi black.

Hab. Upper Amazons.

MASTOSTETHUS BOLIVIANUS, sp. n.

Flavous; a central band at the head, the disc of the thorax, and the breast and legs, black; elytra finely punctured, flavous, a broad longitudinal band occupying the entire disc and abbreviated at the apex black. Length, 7 mill.

Head with the usual punctures near the eyes, pale fulvous, the base, a longitudinal central band, and the space in front of the eyes black, the clypeus and the labrum with another transverse black spot, the indented portion of the eyes and the palpi fulvous; antennæ black, the basal joint flavous below; thorax twice as broad as long, the posterior angles acutely pointed, the disc nearly impunctate, black, the sides narrowly flavous; scutellum black; elytra somewhat remotely and finely punctured, each with a broad longitudinal black band, pointed at the apex, obliquely rounded anteriorly; this band leaves the extreme lateral and sutural margin, as well as a narrow space round the scutellum, of the flavous ground colour; the apex of the elytra in shape of a triangular patch remain likewise flavous; under side black, the apex of the anterior femora and the base of the abdominal segments are flavous; the tibiæ are strongly curved.

Hab. Bolivia.

In its system of coloration this species resembles somewhat *M. ephippiger*, Mann., but in that species the elytral black band is of quite a different shape, strongly narrowed at the shoulders, and constricted at the middle, the whole base of the head is black, and the entire abdomen is flavous.

MASTOSTETHUS QUADRIPLAGIATUS, sp. n.

Fulvous; the head with one, the thorax with two spots and the sides black; elytra closely punctured, the extreme sutural and lateral margins, a triangular spot at the base, and a transverse one at the middle black. Length, 8 mill.

Head closely punctured near the eyes, fulvous, with a black spot between the latter parts; first joint of the antennæ fulvous, with a black spot above, the other joints wanting; thorax about twice as broad as long, the lateral margins slightly concave, the angles acute, the disc with a few scarcely perceptible punctures, fulvous, the sides with a slightly curved black band near the lateral margins, the middle of the disc with two black spots; scutellum impunctate, fulvous; elytra closely and finely punctured, fulvous, the extreme sutural and lateral margins black, the middle of the base with a triangular black spot, the disc with a short transverse band at the middle, not extending to either

margin; under side and legs flavous, the flanks of the thorax and the sides of the breast with a black spot, the upper portion of the latter part likewise black, the posterior tibiæ at their outer edge, and the posterior tarsi entirely, black.

Hab. Bahia.

I know of no other similarly coloured species, of which a single example is contained in my collection.

DESCRIPTION OF THE EGG OF *COLEOPHORA* *MURINIPENNELLA*.

By T. A. CHAPMAN, M.D., F.E.S., &c.

Eggs of *Coleophora murinipennella*, laid in heads of *Luzula campestris*, were received from Mr. A. Sich on May 17th, 1901. The eggs are deposited at the base of the flower (or fruit) outside the perianth, within the scale or glume from within which each flower arises, occupying the little hollow between the scale and the flower-stalk, if so short a stem can be so called.

The egg is white, with pearly lustre. They vary a little in size, from a length of 0.26 to 0.33 mm., and a width of 0.15 to 0.19 mm. These measurements may be to some extent in error, since the egg is a very soft one, and moulds itself readily to the position in which it is laid, and also appears to dry readily, and show various hollows in consequence. Eggs placed in water for a minute or two rounded up, and measured the full sizes just noted. In looking for any sculpturing, the first things observed were some very definite striæ, very unlike, however, any ordinary egg-sculpturing. These proved to be the impressions received from the veins of the glume, within which the egg is laid. The long axis is the micropylar one, and the other two were not detected to be different; no surface sculpturing was detected. The micropylar area is a raised mammilla, about one-ninth of the width of the egg in diameter, *i. e.* rather less than 0.02 mm., and of half this height, or barely so. The whole so transparent that its rosetted structure was not very clear, but appeared to give the little prominence a scalloped margin.

Betula, Reigate.

NOTES ON A COLLECTION OF BUTTERFLIES AND MOTHS MADE IN TOURAINE.

BY GEOFFREY MEADE WALDO.

THE following notes cover a collection made from the end of May until the end of August round Tours, and for the most part at St. Avertin, a small village some four miles from it. In France, as elsewhere, the weather was most unseasonable, hence the not very large results in the number of species. Sugaring at the beginning of August was the most satisfactory method, although the weather then was not any better.

To begin with the Rhopalocera, *Papilio machaon* was taken on May 22nd and not seen again during my whole stay, though *P. podalirius* was out the first week in June, and again in the middle of August, when several perfect specimens were caught. The three "whites" were common everywhere, *Pieris napi* coming out much later than his congeners. *Leucophasia sinapis* was also common during most of my stay, males being by far the commonest. *Anthocharis cardamines* was abundant, as was *Gonepteryx rhamni*. Among the Lycenidæ, *L. cyllarus*, *L. hylas*, *L. arion*, *L. argiolus*, *L. argiades* were taken, as well as *L. semiargus (aeis)*. *L. arion* made its appearance the first week in July, and were out for about ten days only. A few hibernated *Vanessa antiopa* were seen, and any number of *V. io* larvæ could be obtained, which pupated about the middle of June and hatched in due course, producing a second brood of larvæ in August. Not many *V. egea* were seen, but I got a larva which safely pupated, but was unfortunately thrown away by the servant. *V. urticæ* was swarming, but *V. polychloros* and *V. atalanta* were much scarcer. *Aporia cratægi* was in splendid condition during the first half of June, and was followed by *Melanargia galatea*. *Limenitis sibylla* and *Thecla ilicis* were common in the oak woods, and *Colias hyale* and *Nemeobius lucina* were sometimes to be seen along roads and railway cuttings. *Polyommatus phlæas* was out principally in July and August, but *P. dorilis* was out in June. *Melitæa didyma* was plentiful and varied. *M. phæbe*, *M. dia*, and *M. athalia* were also taken. In early June some beautiful *Pararge mæra* and *P. megæra* were to be seen sitting sunning themselves on stone walls, and *P. egerides* was abundant in the woods. *Epinephele ianira* was, of course, almost a plague in July, and *E. tithonus* was very common. A beautifully fresh *Cænonympha arcania* was caught on June 22nd, followed by plenty more afterwards, *C. pamphilus* was very common. Among the Hesperidæ, *sylvanus alceæ* and *sao* were caught, but very few Hesperidæ were seen at any time. On Aug. 14th a solitary *Satyrus hermione* was

caught during a shower of rain. This was the only one seen; *S. hyperanthes* and *S. semele* were also taken. I saw *Argynnis paphia* often along the high roads, but never saw any of the dark variety.

During the greater part of my stay, going round the flowers at night constituted my collecting for moths. By this means I caught *Sphinx ligustri*, *S. pinastri*, *Chærocampa elpenor*, and *C. porcellus*, all at honeysuckle. *Saturnia pyri* was seen often, but only one taken; a batch of ova of this species, found on a poplar-leaf, all turned out to be ichneumonid. I rescued a very damaged *C. elpenor* from my killing-bottle one evening (June 24th), and kept her for ova; on the 25th she laid eight, which was all I got; these hatched on June 30th; two died during the skin-changing; the rest fed up well on vine, buried during the first week in August, and were six healthy pupæ when I packed them up on Aug. 25th. I also had ova from a *C. porcellus* (laid in a chip-box on May 29th): these took exactly a fortnight to hatch (June 12th) and, feeding well on *Galium*, were all buried by July 21st. It seems strange that whereas *C. porcellus* ova take a fortnight to hatch, *C. elpenor* only takes five days! *Euchelia jacobææ* swarmed as larvæ and imagines all the summer, and *Zygæna trifolii* was very common in the hayfields during June. From several larvæ of *Lasiocampa quercus* I obtained imagines from Aug. 9th onwards, and by means of "assembling" got several males; in fact, when I was bottling the female, a male flew in at the window and followed her into the killing-bottle. Males of *Euthemonia russula* were common enough, and I also got two females. *Spilosoma menthastri*, *Arctia caia* (common in larval stage, end of July, hatched in September), *A. villica*, *Spilosoma fuliginosa*, and *Diacrisia mendica* were also taken, and *Callimorpha hera* was caught by night and day, flying along the walls against which fruit-trees grew. Some ova of *C. hera* laid by the moth when on the setting-board Aug. 6th, hatched on the 18th, but never did any good. I bred a series of *Porthesia chrysoorrhœa* from larvæ on sloe, and later on found a batch of ova in their warm covering on a hawthorn-leaf. Larvæ of *Ocneria dispar* were common on willow. *Cossus ligniperda* was taken at sugar on July 24th. *Acronycta aceris*, *A. rumicis*, *A. tridens*, and *Actinotia hyperici* were also taken at sugar in August, and *Celæna cytherea* (matura) was in beautiful condition at the end of August. *Cucullia umbratica* and *C. scrophulariæ* were caught at honeysuckle in the beginning of July, and *Hecatera serena* and *Mamestra capsicola* at lavender. *Bryophila perla* (at the top of Tours Cathedral) and the beautiful *B. alge* (at sugar). Other catches at sugar were:—*Mania maura*, *Catocala nupta*, *Thyatira batis*, *Amphipyra pyramidea*, *Phlogophora meticulosa*, *Triphæna pronuba*, *T. comes*, *T. fimbria*, and *T. ianthina*, *Agrotis segetum*, *A. exclamationis*, *A. c-nigrum* and *A. puta*, *Dipterygia pinastri* (scabriuscula), *Mamestra brassicæ*, *M. persicariæ*, *M. genistæ*, *M.*

lithoxylea, *Calymnia trapezina*, *Caradrina ambigua*, and *Apamea didyma (oculea)*. Most of these species were abundant, but some nights were absolutely blank; nights with a wind and slight drizzle gave the best results. On Aug. 26th I caught a male *Macrothylacia rubi*. *Acontia luctuosa* was common at the end of July, and *Plusia chrysitis*, *P. gutta* and *P. gamma*, and *Habrostola urticae* were caught at different times, mostly on lavender. *Plusia festucae* was bred from ova found on willow. *Euclidia mi* and *E. glyphica* were also common. Among Geometers, which I did not much work for, I took *Cidaria bilineata*, *Ematurga atomaria* (males only), *Larentia truncata*, *L. fluctuata*, *L. tersata*, *Eubolia bipunctaria*, *Phasiane clathrata*, *Venilia macularia*, *Rumia luteolata*, *Boarmia rhomboidaria*, *Deilinia pusaria*, *Idea ornata*, *I. rubiginata*, *Timandra amata (amataria)*, *Abraxas grossulariata*, *Agrophila trabealis*, *Rhodostrophia vibicaria*, *Iodis cernaria*, and *Gnophos variegata*. The very different dates on which I took imagines of *Chærocampa porcellus* rather point to a second brood, for I took a very worn specimen on June 24th, and perfectly fresh ones on August 2nd and 4th. There was no resident collector that I ever discovered, although there was a naturalist's shop, with the usual assortment of exotic butterflies, but the proprietor did not know much about the Lepidoptera of the district, so I could not find out what does occur usually. *Plusia gamma* occurred very sparingly, as also did *Macroglossa stellatarum*, both insects generally being abundant on the Continent. Altogether the summer was most unkind for collecting, despite one or two spells of beautifully warm weather.

Stonewall Park, Edenbridge, Kent.

DESCRIPTION OF A NEW SPECIES OF CYRESTIS.

By PERCY I. LATHY, F.Z.S., F.E.S.

CYRESTIS GILOLENSIS, sp. nov.

Fore wing white, the basal half crossed by numerous irregular brown lines; a submarginal row of obscure dark spots faintly encircled by brown lines; nearer the margin a row of lunular brown markings, followed by a dark brown line; outer margin brown. Hind wing white, the basal half crossed by irregular brown lines, forming a W just above anal angle; marginal markings as in fore wing, but the inner series much more pronounced, and a yellowish patch at anal angle; wing produced into a short tail at upper median nervule; anal angle lobed. Under side as above, but basal markings much less; also those on outer margin.

Hab. Gilolo. Type in coll. H. J. Adams.

Allied to *C. paulinus*, Feld., but may easily be distinguished by the absence of the wide marginal dark borders.

CURRENT NOTES.

BY G. W. KIRKALDY.

(Continued from p. 42.)

1. F. M. WEBSTER, 1903: "The Price of Dairy Products as influencing the abundance of some Insects" (Journ. New York Ent. Soc. xi. pp. 59-60).
2. F. M. WEBSTER, 1903: "The Diffusion of Insects in North America" ('Psyche,' pp. 47-58, pl. 2 (map)).
3. LAWRENCE BRUNER, 1903: "A Plea for the Protection of our Birds" (Spec. Bul. Dep. Ent. & Ornith., Univ. Nebraska, no. 3, 4 pp.).
4. T. W. KIRK, 1902: "Rep. of the Biologist" (10th Ann. Rep. New Zealand Dep. Agr., app. x., pp. 359-470, 18 plates and several text-figs.).
5. W. W. FROGGATT, 1903: "Insects that damage Wheat and other Foodstuffs" (Agr. Gaz. N. S. Wales, pp. 481-92, and plate).
6. N. A. COBB, 1903: "Letters on the Diseases of Plants; 2nd series" (Agr. Gaz. N. S. Wales, pp. 627-52, and 681-712, 2 coloured plates, and text-figs. 1-71).
7. J. R. DE LA TORRE BUENO, 1903: "Brief Notes towards the Life-history of *Pelocoris femorata*, Pal. B., with a few remarks on Habits" (Journ. N. York. Ent. Soc. xi. pp. 166-73, text-figs. 1-2). [Rhynchota.]
8. W. W. FROGGATT, 1903: "Cicadas (Locusts) and their Habits" (Agr. Gaz. N. S. Wales, xiv. pp. 341 and 418-25, plates).
9. HARRISON G. DYAR, 1902: "A Lepidopterous Larva on a Leafhopper (*Epipyrops barberiana*, n. sp.)" (Proc. Ent. Soc. Washington, v. pp. 43-5).
10. HARRISON G. DYAR, 1903: Discussion in Proc. Ent. Soc. Wash. v. pp. 180-1, on the above.
11. L. REH, 1903: "Zur Naturgeschichte mittel- und nordeuropäischer Schildläuse" (Allg. Zeitschr. für Ent. viii. pp. 301-8 and 351-6). [Rhynchota.]
12. D. W. COQUILLET, 1903: "The Genera of the Dipterous Family Empididæ, with notes of New Species" (Proc. Ent. Soc. Wash. v. pp. 245-72).
13. RUD. ENDLICH, 1902: "Die Aussichten für die Bekämpfung des Texasfiebers und der Tsetsekrankheit" (Der Tropenpflanzer, vi. pp. 269-85). [Diptera, &c.]
14. CARL BÖRNER, 1903: "Eine neue im weiblichen Geschlecht flügel und halterenlose Sciariden-gattung, nebst Bemerkungen über die Segmentierung des Hinterleibes der Dipterenweibchen" (Zool. Anzeiger, xxvi. pp. 495-504, text-figs. 1-7).

15. W. GEEST, 1903: "Neue Schmetterlings-Aberrationen" (Allg. Zeitschr. für Entom. viii. pp. 308-13, text-figs. 1-5). [Lepidoptera.]
16. P. BACHMETJEV, 1903: "Über die Anzahl der Augen auf der Unterseite der Hinterflügel von *Epinephela jurtina*, L." (Allg. Zeit. für Ent. viii. pp. 253-6). [Lepidoptera.]
17. E. FISCHER, 1903: "Lepidopterologische Experimental-Forschungen" (Allg. Zeit. f. Ent. viii. pp. 221-8 with 42 text-figs., pp. 269-83 with 11 text-figs., and 356-68).
18. G. ULMER, 1903: "Über das Vorkommen von Krallen an den Bienen einiger Trichopteren-Puppen" (Allg. Zeit. f. Ent. viii. pp. 261-5, text-figs. 1-8). [Lepidoptera.]
19. H. FRIESE, 1903: "Über eine Koloniebildung bei der Mor-telbiene (Hym.) [*Chalicodoma muraria*, Retz.]" (Allg. Zeit. f. Ent. viii. pp. 315-5, with a text-fig.).
20. E. WASMANN, 1903: "Zum Mimicrytypus der Dorylinen-gäste" (Zool. Anzeig. xxvi. pp. 581-90). [Hymenoptera and Coleoptera.]
21. STEWART STOCKMAN, 1903: "On a Plague of Grasshoppers in the Central Provinces" (The Agric. Ledger, Calcutta, x. pp. 55-85, text-figs.). [Orthoptera.]
22. A. N. CAUDELL, 1903: "Notes on the Nomenclature of Blat-tidæ" (Proc. Ent. Soc. Wash. v. pp. 232-4). [Orthoptera.]
23. AUGUST BUSCK, 1903: "Notes on Brackenridge Clemens 'Types of Tineina'" (Proc. Ent. Soc. Wash. v. pp. 181-220). [Lepidoptera.]
24. ARTHUR M. LEA, 1903: "Rep. of Govt. Entom.," Chief Inspector of Stock Rep. for 1902, Parlt. of Tasmania (no. 32), pp. 10-12. [Principally Rhynchota.]
25. W. W. FROGGATT, 1903: "The White Ant City" (Agr. Gaz. N. S. Wales, pp. 726-30, plate, and 7 text-figs.). [Neuroptera.]
26. L. ZEHNITNER, 1903: "(a) De Zeuzeraboorder (*Zeuzera coffea*, Nietner); (β) Een Rupsenplaag veroorzakt door *Orthocraspeda trima*, Moore" (Proefstation voor Cacao te Salatiga Bul. 2, pp. 1-23, pl. i.). [Lepidoptera.]
27. W. H. HARRIS, 1903: "The Dentition of the Diptera" (Journ. Quekett Micr. Club, pp. 389-98, 1 plate).
28. I. TRÄGÅRDH, 1903: Beiträge zur Kenntnis der Dipteren-Larven, i. Zur Anatomie, &c., der Larve von *Ephydra riparia* (Arkiv för Zool. i. pp. 1-42, 4 plates).
29. H. SCHOUTEDEN, 1903: Note Complémentaire sur les Aphido-cécidies paléarctiques (*Marcellia*, ii. pp. 91-9). [Rhynchota.]

(To be continued.)

A FORTNIGHT IN MID-NORTHUMBERLAND.

BY J. ARKLE.

A MORE extended list of insects than the following could doubtless be obtained in Mid-Northumberland in the latter half of August, provided the weather conditions were more favourable than those for that period in 1903. But records from the county, under any circumstances, appear to be so rare, that the species forming the subject of these remarks may, possibly, be of general interest. I took the long cross-country railway-ride from Chester on the morning of the 14th of August, and reached Morpeth, on the river Wansbeck, late in the afternoon. Here I stayed for the night, and then went on next day by the Wansbeck Valley Railway to the hotel at Scots Gap, which I had already fixed upon as my chief quarters. The day was one of fierce wind and rain storm; but, next morning, I began my list of captures by taking a fine female *Boarmia repandata* as it rested low down on a wayside beech trunk. It is paler in general coloration, and less distinctly marked, than the Cheshire examples I have seen, and particularly so when compared with the dark, richly marked Delamere form. From this female I obtained about a hundred eggs, which hatched September 4th; and the larvæ, evidently night-feeders, are now (January 7th) hybernating and doing well.

The district I had visited to spend a fortnight in is composed of rolling and often well-wooded uplands, with extensive moors covered by coarse grass or heather, the heather being at the time in all the purple glory of fullest bloom. Here and there the moors rise in stately slopes, and terminate in abrupt, tumbled, blackened, and overhanging crags of coarse, pebbly millstone grit. Shaftoe Crags would be three or four miles to the south of my hotel; Simonside Hills eight miles to the north; Rothley Crags about two to the north-east; and Wannie's Crags about eight to the south-west as the crow flies; the whole enclosing the upper part of the Wansbeck basin. Nestling on the upward slope of Wannie's Crags is Sweethope Lake, where the river takes its rise. Beyond Simonside Hills is Rothbury, on the river Coquet, and west of Wannie's Crags is Bellingham, on the North Tyne—two small country towns which each command a ten miles' view of the border range of the Cheviots. There were many evidences, other than insect life, of the retarded appearance of things in this north-country district. Lime and elder trees, for example, were just coming into bloom.

August 17th was a fine sunny day, and was spent on Shaftoe Crags. Here I took my first *Larentia caesiata*, a fine female, resting on some white-blossomed heather. This moth had a distinct green tinge, which has not yet altogether disappeared. Other insects were *L. didymata*, two or three *Cidaria russata*,

Crambus culmellus, and *Chorax graminis*. The last-named species was common everywhere in the pastures leading up to the moor, resting among and creeping about the grass.

At Rothley Crags, on the 19th, *L. cæsiata* was plentiful enough. *C. culmellus*, *C. tristellus*, *Aphelia osseana*, and the pretty *Amphisa gerningana* were common moths. I came upon a female *C. associata* = *dotata* at rest upon the heather. This was the only locality where I found *A. gerningana*, and it was certainly plentiful. Flying lazily, and in numbers whenever the sun broke out, was a curious-looking coal-black dipteran. This has been identified as *Bibio marci*; and the sight of it, with its easy aerial motions, and trailing its long russet and black legs behind it, was something very odd. In size this insect is a little larger than our common housefly, but with very much longer legs. The wings are also longer. At dusk I netted a fresh *C. prunata* = *ribesiarum* in a garden.

At Bellingham I found the moors in the neighbourhood apparently destitute of insect life at this time of the year. On the 21st, on a piece of rough grassy ground near the railway-station, and covered with knapweed, scabious, galium, St. John's wort, harebells, yarrow, and thistles, all in full bloom, I netted *Pieris rapæ*, *P. napi*, a chipped *Lycaena icarus* = *alexis*, several *Eubolia limitata* = *mensuraria*, as well as a lot of *Scopula lutealis*. The last-mentioned occurred by every roadside in the district. One of the *limitata*, a male, is a very dark insect, and almost unicolorous. Hareshaw Linn is a fine waterfall at the top of a lovely wooded glen about a mile or so from the town. Here my captures were only one *P. napi*, two *Hyssipetes sordidata* = *clutata* (both dark insects, and one of them almost unicolorous), and *L. didymata*. But I could not help thinking what a fine locality this must be earlier in the summer. Netting at dusk only showed a solitary *C. pyraliata*; and in my comfortable hotel, redolent with the scent of sweet peas, I found a *Caradrina quadripunctata* = *cubicularis* at rest on one of the windows. I only saw a single caterpillar in all the fortnight—a full-fed *Notodontia ziczac*, on sallow.

At Wannie's Crags, on the 24th, *L. cæsiata* was most abundant. The moth, throughout the district, is more clearly marked with waved and almost black striæ—on an almost white ground—than examples I have taken in North Wales. I have met with the same distinctly-marked form on the Cumberland hills. In two of the Wannie's specimens the median band across the fore wings is sooty black, and unicolorous except for the smallest possible indication of the grey blotch close to the costal margin. The males of *L. didymata* on these crags have an ochreous tinge, and the females, throughout the whole district, appear to be very pale in coloration, and similar in this respect to those on Clougha Pike, North Lancashire. I met swarms of the black

dipteron (*B. marci*) sailing above the heather; and the common Crambidae, already referred to, occurred on the low boggy ground at the foot of the rocks. This weird and lonely spot very likely saw an entomological net that day for the first time. A more desolate lake than that under the curious misnomer of Sweethope can hardly be imagined; nothing but heaving, heather-clad moors about, with a few dwarf trees at the east end, evidently imported, and dragging on a miserable existence. An east breeze set in, and the only insect that would then condescend to fly was the caddis-fly, *Limnophilus lunatus*. The pale lunule on the outer margin of each upper wing, together with the markings generally, are darker and more clearly defined than in our Hatchmere specimens (Delamere Forest).

At Rothbury, Aug. 26th, the weather was so thoroughly broken up that I saw no insects except *L. didymata* and a few dark *Bryophila perla* sitting on the stone walls; and I was glad to get back to my quarters at Scots Gap. In a pine wood hard by I netted, one evening (the 25th) a male *Ellopiopsis prosapiaria* = *fasciaria*, but the nights throughout my stay were too cold for either sugaring or sport with the net, and I was not sorry to get back to Chester on the 29th, and more within the influence of the Gulf Stream.

Only once did I meet with an irate gamekeeper. As to my doings with the net, he assured me "naething disturbed game sae much as gannin aboot like that." The only thing I had disturbed was a fox from its lair among the rocks, and, after all, the keeper and I parted on friendly terms with each other. On one or two of the localities named, however, intending visitors will do well to get a permit from the owners.

I had a good look through the collection of the late Mr. Edward Pearson, of Wallington. The collection, if secured for the benefit of future lepidopterists in the neighbourhood, and placed under care in the adjoining village institute, would form a valuable work of illustration and reference for this part of Northumberland. The following list is a personal note of some of the species in Mr. Pearson's collection which had been taken in the fertile valleys or on the extensive moorlands of the district:—

Colias edusa. Occasional at Middleton.

Epinephele hyperanthus. Almost black; white fringes on all the wings.

Canonympha typhon = *davus*. Not such a good form, I thought, as that taken in Delamere Forest (Cheshire) and in North Lancashire.

(*Vanessa antiopa*. A specimen used to be in the collection of Mr. Hedley, of Wallington. Another was nearly captured by Mr. Pearson and others.)

Acherontia atropos. Belsay; South Middleton.

Sphinx convolvuli. Close Houses; Wallington; Mr. Pearson's garden.

Deilephila galii. Six; Mr. Pearson's garden.—*D. livornica*. One; Humshaugh, near Hexham.

Chærocampa porcellus. One; Mr. Pearson's garden.

Macroglossa stellatarum. Numerous; Wallington.

Lasiocampa quercus. Numerous; moorland; one a fine dark female.

Saturnia carpini. Numerous, and very fine; moorland.

Spilosoma mendica. Numerous.

Plusia bractea, *P. festuæ*, and *P. iota*.—*P. pulchrina*. Numerous, and very dark.

Xylophasia rurea. Ground colour of upper wings pale grey; markings as usual, and distinct; a fine form.

Euclidia mi and *E. glyphica*. Numerous.

Uropteryx sambucaria. A few.

Anaitis plagiata. Numerous; typical.

NEW CULICIDÆ FROM THE FEDERATED MALAY STATES.

BY FRED. V. THEOBALD, M.A.

(Continued from p. 39.)

CULICINA.

Genus SCUTOMYIA, nov. gen.

Head covered with flat scales except in the mid region, where there are narrow-curved ones. Scutellum with all flat scales. Other characters as in *Macleaya*.

One species, so far, has only been observed.

The genus differs from *Stegomyia* in having narrow-curved scales on the head, and from *Macleaya* in having the scutellum entirely clothed with flat scales. From the new allied genus (*Leicesteria*), described here, it differs in having all flat scutellar scales.

SCUTOMYIA ALBOLINEATA, n. sp.

Thorax black, with a broad median silvery white line in front and a median silvery spot on the scutellum. Abdomen black, with basal silvery white lateral spots, the last two segments with basal silvery white bands. Fore and mid legs black, unbanded, the hind with the metatarsi and the first two tarsals with basal white dorsal patches.

♀. Head clothed with black flat scales except in the middle, where there is a median broad area of white, narrow-curved scales; palpi, clypeus, proboscis and antennæ black, the basal joint of the latter with white scales inside; proboscis long, nearly as long as the whole body. Thorax black, with long narrow-curved bronzy black scales and with a broad median silvery white line running from the front of the mesothorax to about its middle; numerous long black bristles project in front and over the roots of the wings; scutellum black, very

deeply trilobed, the mid lobe with dense flat silvery white scales, the lateral lobes with black flat scales; there are also a few black ones bordering the posterior edge of the mid lobe, which has five brown bristles; metanotum black and shiny; pleuræ brown, with silvery white spots. Abdomen narrow, basally broadening to the apex, which is truncated, smoky black, with triangular silvery white lateral basal spots, the two last segments with basal white bands (under the microscope the lateral spots look pale blue), border-bristles black; the first segment densely black scaled, large, with black scales forming two backwardly projecting patches, and with black bristles; venter with broadish basal white bands. Legs black, the fore and mid pairs unbanded, the hind with the base and venter of the femora yellowish-white, a small snowy white apical spot; the metatarsi and first two tarsi with a basal streak of white on the dorsal sides, giving a banded appearance when viewed from above; ungues all equal and simple. Wings with brown scaled veins, the costa dark, fork-cells small, the first submarginal longer and narrower than the second posterior, its stem nearly as long as the cell; stem of the second posterior as long as the cell; the bases of the fork-cells nearly level; posterior cross-vein rather more than its own length distant from the mid; median vein-scales small and spatulate, dark; lateral ones short and rather thick on the first and second veins, others longer and thinner. Halteres short and with contorted yellow stems, the knobs broadly expanded, with black scales. Length 4 mm.

Time of capture.—June.

Habitat.—Kuala Lumpur (in jungle, six miles away).

Observations.—Described from a single female. It bears at first sight a close resemblance to *Stegomyia scutellaris*, Wlk., but the median white thoracic stripe is wider, and the markings of the abdomen and legs are different; moreover it cannot be placed in the genus *Stegomyia*. I am not sure if the narrow waist of the abdomen is natural or due to subsequent contraction in drying. The fact that the white abdominal lateral patches appear blue under the microscope and yet not under a hand lens is peculiar. I have not observed the same in any specimen before.

Genus DANIELSIA, nov. gen.

Head covered with small flat scales, with truncated ends, loosely and rather raggedly placed on the head, a few long narrow-curved ones behind, and small upright forked ones with them. Scutellum with small narrow-curved scales; mesothorax with narrow-curved scales. Palpi short in female, densely scaled; in the male as long as the proboscis, the two apical joints short, the apical rather shorter than the penultimate, hair-tufts scanty; fork-cells rather short.

A single species only occurs at present. It comes near *Macleaya* and the former genus, but can at once be told by the narrow-curved scutellar scales, and from *Catageiomya* by the long male palpi.

(To be continued.)

A "BUTTERFLY SUMMER" IN ASIA MINOR.

BY MARGARET E. FOUNTAINE, F.E.S.

ASIA MINOR is a part of the world that for some time has had a particular attraction for me; in fact, ever since I visited the Natural History Museum at Athens, some three years ago, and found that I was almost invariably informed by Herr Krüper, in reply to any exclamation of admiration on my part over some special insect I saw in the collections there: "Das ist von Klein Asien bekommen!" But the accounts I received of this "happy hunting-ground" from those in authority at Constantinople were scarcely encouraging. The British Consul did not hesitate to tell me that the country was *not* safe, and when I divulged to him some of my plans for the summer, he remarked dryly: "There would need to be an Englishwoman at the back of all that!"

However, I had made up my mind to risk it. So, on the 17th of April, I started for Broussa (a place easily reached by a short sea trip on the placid Sea of Marmara, to Moudania, and from thence in about two hours by train); having secured the services of a first-rate courier called Bersa, and with a strong belief in the infallibility of the butterfly-net as a protection, inasmuch as its presence to the ignorant and uninitiated natives of these remote regions is generally looked upon as a badge of harmless lunacy, and no one troubles to interfere with a poor lunatic, especially if he is such an apparently harmless one.

I remained five weeks in this neighbourhood, at a place called Tchekirghé, about three miles to the west of the town of Broussa, which is most beautifully situated at the foot of Mount Olympus. The country was quite lovely, and water was abundant, but I was too early for most of the butterflies, and did not get anything special, except *Doritis apollinus*, some *Melitæa* I believed to be *arduinna*, *Lycæna anteros*, and *L. semiargus* var. *bellis*—a very distinct form, and quite unlike var. *helena* from Greece, or var. *antiochena* from Syria. It was much too early to make the ascent of Mount Olympus, and much as I enjoyed the wonderful beauty of the country, and the eternal songs of the nightingales, about the 20th of May I returned to Constantinople, intending to go on by the next steamer leaving for the Black Sea to Samsoun, *en route* for Amasia.

As the result of a letter of introduction Mr. Elwes had given me to Dr. Washburn, the Principal of the Robert College, I now obtained from him another letter of introduction to Dr. Riggs, of the American College at Mersivan. This was, of course, invaluable to me, and I resolved that I would in consequence first go to Mersivan, and from thence to the much-longed-for Amasia.

I reached Samsoun on May 25th, my impressions of the Black Sea having been far from favourable, and that same day I started with Bersa for the interior. Now there are so-called carriage-roads in most parts of Asia Minor, but the advantages of this in practice I soon found to be somewhat dubious, for anything more appalling than the condition of these roads would be quite inconceivable. Heavy rains having recently fallen, the entire surface was one deep quagmire of mud for miles. The carriages I had secured at Samsoun (kind of covered vans, called "yileys," whose occupants had nowhere to sit except on the floor) were constantly over the axles of the wheels in thick mud, while the horses sank in above their knees, and the holes were so deep, and the joltings so frequent and yet so sudden, that it really seemed as though the horrors of the Black Sea were being "continued in our next." Outside and away from the town I hoped for better things, but if anything matters grew worse, and the "arabaje" (yiley driver) looked very gloomy when asked if the road was going to be like this the whole way. So I declared that I would take only the one yiley for my luggage, that they must procure saddles for the two horses now attached to the other one, and that I and Bersa would ride, rather than be shaken to atoms. But all kinds of obstacles were raised in the way of this arrangement, which I afterwards found out was because the two yileys I had engaged did not hail from Samsoun, but were returning anyhow to Mersivan. The man they belonged to therefore did not wish to leave his yiley behind in exchange for a couple of saddles. So we persevered, and I resigned myself to my fate, with an inward reflection that travelling in Asia Minor was not exactly "travelling made easy." Neither was it possible to get out and walk, for the mud was so deep and thick that in many places I might almost as well have decided "to get out and walk" from the Austrian Lloyd steamer on the Black Sea. And yet every peasant here is taxed three francs a year for the maintenance of these roads, the money being unscrupulously appropriated by the authorities.

As we got up into the mountains rain came on—a perfect deluge; we passed through dense clouds of vapour, sometimes scarcely able to see a yard ahead, and towards evening experienced the effect of driving through the heart of a thunderstorm. It was a marvellous sight, as from time to time the thick atmosphere became one mass of lurid fire from the lightning, and the simultaneous roar of the thunder was quite deafening. For we were *in* it, and it was all around us, and the torrential rain descended with unabating violence. Then darkness came on, and still through the night the rain fell heavily, though the thunderstorm had swept away. The road was wild and deserted, but the very violence of the storm was in itself a protection, and one must be prepared to encounter some inconveniences in order

to reach such a butterfly paradise as Amasia was to prove afterwards to be. At about 9 p.m. we reached a village called Tchakaler, where there was a khan (there are no hotels or even inns in the interior of Asia Minor). Here I put up for the night. Bersa had procured provisions at Samsoun, enough to last for the three days' journey to Mersivan; so, having had an open stove of charcoal placed in my room, I soon became warm, and passed an excellent night.

It was still raining the next morning, but the weather was better that day on the whole, and so were the roads—just a little better, I thought—though it might only have been that I was getting more accustomed to them. In some places where they were under repair, and in others where they were too hopelessly bad, the yileys would strike down into the fields, and go for miles along temporary tracks, which were certainly less rough than the main road even at its best; but the descent and ascent to and from this lower level was exciting, to say the least of it. The bridges across the rivers were generally so hopelessly out of repair as to be practically useless, so that one of these precipitous leaps over the side of the road would be made, and then, in order to cross, a swollen ford must be scrambled through, to the imminent peril of the yileys being upset over and over again; and sometimes they are upset, I was told.

Kauzar was the next stopping place, and on the third day I reached Mersivan, where Dr. and Mrs. Riggs most kindly invited me to stay as a guest at their house, the luxury of which was wonderfully appreciable after the hardships of that journey. Here I made the acquaintance of Prof. Manissajian, the zoologist at the College, and he showed me the collections, which were most interesting, and gave me many useful hints about Amasia, also providing me with a letter for two Armenians, with whom, he said, I could stay during my sojourn there, as there were nothing better than khans even in Amasia. During the two days I spent at Mersivan I met with much hospitality and kindness, more especially from my host and hostess, Dr. and Mrs. Riggs.

The way to Amasia lay across a wide flat plain, and I was told that the road was better than that from Samsoun, but nothing would induce me to resign myself again to the tender mercies of a yiley; so I told Bersa to hire only one for the luggage, and two saddle-horses. This was a much better arrangement, but when I had ridden for the better part of eight hours on a Turkish saddle, I could stand it no longer; so a Greek master from the College, who had joined forces with me for the journey, said he would take my horse and gallop on to Amasia with the professor's letter, so that the old couple with whom I was going to lodge would be all in readiness to receive me. I thought this an excellent arrangement, but I could not stay in the yiley, so I got

out and walked; for this conveyance was by this time, as usual, filled up with Turks and Armenians, of that class who wear European clothes surmounted by the never-failing tarboosh. Persons of this description always did seem to occupy my luggage-waggon, though how they got there, or what became of them afterwards, I never knew; and I would only stipulate that no one should sit on my hold-all.

It was still over an hour before I came within sight of Amasia (1500 ft.), and, though I was very tired, footsore, and otherwise, I thought I had never seen any place so beautiful before. The town was, as it were, wedged into a huge cleft in the mountains, by which it was shut in on all sides, and the surrounding country in every direction presented an aspect which made me long to explore it at once.

Neither were my anticipations doomed to be disappointed; the neighbourhood of Amasia was quite delightful, and the butterflies wonderful. Every day I came across some species new to me, and some days two or even three new ones; and these in most cases were so abundant that good series were easily obtained of almost everything. My only regret was that I had not come to this "butterfly paradise" a month earlier, for the first brood of *Pieris chloridice* had quite disappeared, and the few specimens of *Chrysophanus ochimus* which still remained were so worn that I could only wait for their second appearance also; while the beautiful *Zegris menestho* was, alas! practically over too, with no hope of a second brood there. That *Thaleropsis ionia* was also quite worn and faded, I scarcely troubled about; it was, I knew, so certain to return in far greater numbers in its second brood towards the end of June. Besides, there were plenty of species fresh enough, some just emerging, and many yet to come.

The country was quiet and settled, and the peasants civil and obliging. Prof. Manissajian had told me of an old Armenian peasant, who, having collected with himself for years, knew all the specially favoured haunts in the neighbourhood, having also acquired a certain amount of knowledge relating to nearly all the most important of the local species, calling them for the most part by their Latin names. The services of this old man, when I first got to Amasia, were invaluable, for Bersa had not previously visited this district, so that the country was as new and unexplored to him as it was to me. But I soon discovered that he was possessed of a wonderful faculty for finding his way about, which proved most useful, as I have no talent at all for doing so. We had only to go once to some favoured haunt—say, the little narrow gorge on the Caraman, where *Thestor nogellii* flitted over the hot rocks below—and the next day, or a week later, or at any time, Bersa would take me back to the exact spot with an unerring certainty which was most convenient; for Amasia abounded in special localities, and none there were which did not demand many subsequent visits.

Prof. Manissajian had also most kindly lent me Dr. Staudinger's book on the 'Lepidoptera of Asia Minor,' especially treating of Amasia, where he spent the summer himself some thirty years ago. I took most of the species he mentioned, and in one or two instances, such as *Satyrus bischoffii*, I seemed to meet with rather better success. But there were also some he referred to, such as *Hesperia alcides*, which I never saw at all. A place called Guelly, not more than forty minutes' walk from the town, was capital hunting-ground. But for the Lycænidæ, and all the "valley" species, the Tschirtschir Valley was the most prolific; *L. hopfferi* and *L. dolus* var. *menalcas* literally swarmed here towards the end of June and throughout July. The females were much less abundant than the males, and it was extremely difficult to separate the individual species from each other, all having got the white dash, as in *L. damon*, on the under side, and the markings almost similar. Var. *menalcas* was comparatively distinct, I thought, for it was always smaller, and there was also a strong family likeness on the under side to the males of that species, which was to me unmistakable. But *L. hopfferi* and *L. poseidon* were almost impossible to distinguish (as even the males of those two species were identical underneath), so I have only separated the females of them by the more strongly accentuated venation visible on the upper side of those I consider to be *L. poseidon*, as there were more like this on the Caraman, where *poseidon* was the commoner of the two, and very few in the Tschirtschir Valley, where the preponderance of *hopfferi* was very decided indeed. Added to all this, *L. admetus*, with an occasional var. *ripartii*, flew abundantly in the same localities at the same time, to say nothing of *L. mithridates*, of which last, however, I only succeeded in taking one magnificent male, and one rather doubtful female.

The Kerasdere (Cherry Valley), which seemed to have been Staudinger's most happy hunting-ground, was always disappointing; so that I could only conclude that during the thirty years which had elapsed since then an increase of cultivation had diminished its attractions from an entomological point of view.

On the top of the Lokman, three or four hours' ride from the house where I was staying, I found but little in June, and, though I went there at frequent intervals, at the time when *Colias aurorina* var. *libanotica* was due to be out, I never saw a sign of it. Staudinger did not seem to have met with much success with this species either, but there it most certainly must occur sometimes, for I saw a pair myself in the museum at Mersivan, taken by Prof. Manissajian on this very mountain. Another of my disappointments was *Melitæa aurinia* var. *orientalis*—a most beautiful insect, which I had also seen in that museum—for it appears to fly only in May, and towards the beginning of

the month ; so that I had to resign myself to the loss of that too by spending so many weeks at Broussa, where there was comparatively little to be got.

(To be continued.)

NOTES AND OBSERVATIONS.

LARVA OF APATURA IRIS ON POPLAR.—In looking through my notes for 1903, I find that a full-grown larva of *Apatura iris* was taken on a poplar (*Populus*) in June near the village of Rottingdean, Sussex. I hope this note may be of interest to the readers of your paper.—J. A. CROFT ; Charterhouse, Godalming, Feb. 11th, 1904.

[Nearly all continental authors mention poplar as well as willow as the food-plants of the larva of *A. iris*, but in works on British Lepidoptera willow alone is given.—ED.]

DRAGONFLIES IN 1902 AND 1903.—In connection with my paper on this subject (*ante*, p. 29), Mr. G. T. Porritt tells me that he found *Orthetrum cancellatum* plentiful in the Norfolk Broads in 1903. He further reminds me that he found *Aeschna mixta* very common in S. Devon in 1902, and that it then occurred over a wider area than that in which he had found it previously.—W. J. LUOAS.

DIPTEROUS PARASITE ATTACKING SILKWORM LARVÆ. — Wishing to breed a few *Charocampa eson* this season, I collected about fifty larvæ of the species. Over thirty of these were badly "ichneumonized"; this, however, was not apparent until they reached the pupa state. From these thirty there must have been over two hundred dipterous flies, and many remained in the room, on the windows, &c. My wife was rearing a large number of silkworms in the same apartment. On Dec. 2nd she showed me several of these silkworms turning black, and in many places swollen. I opened some, and found them full of maggots. I killed over fifty of the worms that were attacked in this way, keeping three or four. They never spun up, but two managed to turn to pupæ, and I have since bred several of the same parasitic flies that emerged from the *C. eson*. One, however, was so full of the grubs that, before it finally burst, fifteen large maggots emerged. Thinking this was something unusual, I have written these few notes. In any case the fly must have made a mistake, as besides the one that burst as mentioned, I am sure many that I killed were too full of the grubs for the latter to be able to feed up in their host. From the two that pupated without spinning, only eleven flies resulted. I conclude the silkworm is "ichneumonized" in the natural state, but this is the first time I have ever seen any, or heard of any, being attacked when kept in confinement, and my wife has been rearing silkworms for years. I may mention that the silkworm is double-brooded here.—G. F. LEIGH ; Durban, Natal.

NOTE ON A SAWFLY FROM NEW ZEALAND.—Some years ago I described a small species of Tenthredinidæ from New Zealand, which appears

to be the only sawfly known from that locality. Mr. P. Cameron, however, sinks it as a synonym of the well-known European species, *Eriocampa adumbrata*, Klug; and repeats the statement in a list of Hymenoptera published in vol. xxxv. of the 'Transactions of the New Zealand Institute.' Col. C. T. Bingham has kindly examined my types with me, and we find that the New Zealand species is a true *Monostegia*, with only one middle cell in the hind wings, whereas Klug's species is a true *Eriocampa* with two cells. It is, of course, possible that Mr. Cameron may have received specimens of the real *E. adumbrata* from New Zealand, in which case it would be a second (and probably introduced) species; but it would not be my *M. antipoda*, though the two insects are superficially alike.—W. F. KIRBY.

THE NATIONAL COLLECTION OF BRITISH LEPIDOPTERA.—Paymaster-in-Chief, Gervase F. Mathew, has presented three specimens of *Leucania favigolor*, Barr.; also an example of a form of *Apamea gemina* closely resembling var. *oblonga*, Haw. (Steph. Ill. ii. 182).

CAPTURES AND FIELD REPORTS.

CARABUS NITENS IN ISLE OF MAN.—I have to record the capture of *Carabus nitens* in the Isle of Man by Mr. J. H. Shepherd in August, 1903. It is a rather small specimen.—E. C. ANSORGE; 12, Addison Road, Bedford Park, W., Feb. 4th, 1904.

AGRION HASTULATUM, ÆSCHNA JUNCEA, AND Æ. ISOSCELES.—Mr. C. W. Dale informs me that he has specimens of *Agrion hastulatum* taken by Mr. Richard Weaver in Sutherlandshire in 1842, and that he has taken *Æschna juncea* near Penzance. He tells me also that his father took *Æ. isosceles* at Whittlesea Mere in 1818 and 1824.—W. J. LUCAS.

GRYLLUS CAMPESTRIS.—I have four specimens of the Orthopteron, *Gryllus campestris*, taken by my brother at Christchurch in 1885.—C. W. DALE; Glanvilles Wootton, Dorset.

NOTHOCHRYSA CAPITATA.—My brother took this species (sub-order Planipennia of the Neuroptera) here in 1868. My father took it in the New Forest in 1827 and 1830.—C. W. DALE; Glanvilles Wootton, Dorset.

SOCIETIES.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—November 26th, 1903.—Mr. E. Step, F.L.S., President, in the chair.—This evening was set aside for the Annual Exhibition of varieties, special forms, and notable captures of the year. There was a very large attendance of members and their friends, and many very interesting exhibits were made.—Mr. J. A. Clarke exhibited a gynandromorphous specimen of *Cyaniris argiolus*, taken in Yorkshire in May,

1903; and a uniformly smoky example of *Ligdia adustata*, taken at Bexley in March, 1903.—Mr. Chittenden, *Heodes (Chrysophanus) phleas*, light and dark forms, from Kent; *Hydriomena (Hypsipetes) sordidata*, dark from Yorkshire, and red-barred from Ashford; and black-fringed *Spilosoma lubricipeda* var. *zatima*.—Mr. McArthur, a very pale example of *Amorpha (Smerinthus) populi*, and a very strongly suffused reddish example; with a photograph of a *Pieris rapæ*, having two large black spots on the under side of the left lower wing.—Mr. R. Adkin, examples of *Argynnis aglaia* from Brighton, with the black markings on the upper side elongated and joined up, as were also some of the silvery markings of the under side; also several richly coloured females; a partially bleached female of *Epinephele jurtina (ianira)*; a *Cleora glabraria* with a much extended series of black markings; a hybrid *Smerinthus ocellatus-populi*, bred July, 1903, from a 1901 larva; and a long series of *Boarmia repandata* from various localities, to show local variation.—Dr. Chapman, a large number of specimens of *H. phleas*, taken in various parts of Western Europe, especially to illustrate the geographical and seasonal variation rather than the possible aberrational variation. He discussed the named forms—var. *suffusa*, var. *eleus*, and var. *hypophleas*—with regard to size, form, tail development, and colour.—Mr. Simmonds, a long series of the rare *Cucullia gnaphalii* from Sevenoaks; a variety of *Epunda lichenea* without the usual reddish or greenish markings, perhaps corresponding to var. *calvescens* of *P. flavicincta*.—Mr. Colthrup, long and varied series of *Bryophila perla* and *B. muralis*, the various shades of green; a pink form, from the Isle of Wight; a black form; very dark forms from South Devon, and most of the named forms of the latter species, including var. *par*: of the former species were many pale, dark, and suffused forms.—Mr. G. B. Browne, varied forms of *Aplecta prasina*, *Polyommatus icarus*, *H. phleas*, *Camptogramma bilineata* (banded), *Melanthia ocellata* (dark black band), and a brown form of *Tanioscampa munda*.—Mr. Main, a living example of *Blatta australasiae*, found among imported bananas. Mr. Dodds, some very remarkable and aberrant bred male forms of *Oenevia dispar*, having numerous irregular patches and streaks of light colour on all four wings. The species had been inbred for three years.—Mr. Pickett, series of *E. jurtina* with bleached vars.; of *Polyommatus corydon* with vars. and abs.; *suffusa*, *marginata*, *obsoleta*, *striata*, &c., with dwarf examples; very deep-banded females of *Cyaniris argiolus*; various local races of *H. phleas*; *Callimorpha dominula* with much suffused hind wings; *Abraaxas grossulariata* with var. *lucticolor*, and a very dark form; long series of forms of *Angerona prunaria*, including numerous beautifully banded examples; a long and graduated series of *Arctia lubricipeda* and var. *radiata*, some being exceptionally dark; and a curiously marked *Arctia caia* with streaked arrangement of the markings.—Mr. Moore, *H. phleas* from the Himalaya Mountains and from North America (Indiana to Cape Breton); the former was an exceedingly dark example, while the latter were much like the Lapland forms in Dr. Chapman's exhibit.—Mr. Carpenter, series of *H. phleas*, bred, from Abbot's Wood, Folkestone, and Bude, each of which showed a racial facies, although the divergence was but small.—Mr. Montgomery, long series of *H. phleas*, including many pale and sparsely

spotted specimens, some of which were emergences as late as November.—Mr. Harrison and Mr. Main, series of *Dianthæcia nana* (*conspersa*), *Eupithecia venosata* and *Aplecta nebulosa*, showing their various geographical forms and races; series of *Noctua brunnea* and *Notodonta dromedarius*, bred from Delamere Forest larvæ, comparatively darker than South England forms; and Cornish specimens of *Hipparchia semele*, considerably darker on the under side than Eastbourne forms.—Dr. J. H. Spitzby discussed the variation of Edmund Reiter's group of the Carabidæ, *Carabi multisetosi* and of *Cetonia aurata*, and exhibited a large number of examples from various parts of Europe.—Dr. Sequiera, a box of most interesting and remarkable aberrations of Lepidoptera, including *Vansesa io*, slate-blue suffusion; *Catocala nupta* with smoky black margins; *Polygonia c-album* without a trace of the C-mark; a strongly marked melanic form of *Hemerophila abruptaria* from the New Forest; *Nemeophila russula*, female, with wholly black hind wings; pale salmon *Anthrocera jilipendulæ*; and *Colias edusa* with exceedingly pale margins.—Mr. Lucas, specimens of the earwig, *Labidura riparia*, from Bournemouth, and a pupa of *Leucanus cernus*.—Mr. Cannon, a series of *Euvanessa antiopa*, bred from ova deposited by a female taken in the South of France; *Limenitis sibylla* with only faint white markings showing through the almost uniform black of the upper side; a long series of bred *Melitæa aurinia* from Ireland; bred *M. cinxia* from Isle of Wight larvæ; a very fine series of *Cænonympha typhon* var. *rothliebii* taken at Witherslack; a deeply marked female of *Brenthis euphrosyne*, from Reading; and captured examples of *Melinia ocellaris*.—Mr. Manger, a case containing more than twenty species or named forms of the gorgeous South American genera, *Catagramma*, *Perisama*, and *Callicore*, including the type-form of the genus *Catagramma*, *C. astarte* (*hydaspes*).—Mr. Schooling, a varied series of *Spilosoma fuliginosa* bred from ova; and a fine series of *Xylocampa areola* (*lithorhiza*).—Microscopes were lent by Messrs. Cant, Edwards, Fremlin, Warne, and West (Streatham).

December 10th.—The President in the chair.—Mr. Smallman, of Herne Hill, and Mr. Anson, of Kingston-on-Thames, were elected members.—Mr. Edwards exhibited a specimen of the floral simulator, the orthopteron *Gongylus gongyloides*, from India.—Mr. McArthur: (1) a specimen of *Hepialus humuli*, male, showing white patches of scales on the under side; (2) two examples of *Dianthæcia nana* (*conspersa*) from the Isle of Lewis, both very dark, and five examples from Shetland, all much, and two very much lighter, from the development of white and orange patches.—Mr. West (Greenwich), two species of aquatic Rhyncophora from near Montreal—the huge *Belostoma americanum* and the smaller *Zaitha fluminea*—as well as an example of *Cicada tibicen*.—Mr. Dobson, a very light specimen of *Amphipyra pyramidea*, taken in his garden at sugar; it was a striking contrast to the rich mahogany form characteristic of the New Forest race; *Pygæa curtula*, bred, rich in colour; one captured at light very pale; a series of *S. fuliginosa* of a rich coloration.—Dr. Chapman, a large number of species of Lepidoptera he had captured during a tour in Spain, in company with Mr. Champion, and read notes on his journey.

January 14th, 1904.—E. Step, F.L.S., President, in the chair.—

Mr. East, of Stoke Newington, was elected a member.—Mr. R. Adkin exhibited a short bred series of *Acontia luctuosa*, and contributed notes on their life-history.—Mr. Edwards, ova of *Hybernia rupicaprariva*, and a specimen of the large and curious Orthopteron sent by M. Montandon from near Bucharest.—Mr. Tonge, a series of capital photographs of the ova of Lepidoptera, including *Hybernia rupicaprariva*, *Hemerophila abruptaria*, *Melinia circellaris*, *Argynnis thore*, and *Anchocelis rujina*.—Mr. West, specimens of *Dermestes lardarius*, which he had bred from almonds, among which it had occurred freely.—Mr. Browne, a large number of species of Lepidoptera captured at Dawlish between July 23rd and Aug. 7th, 1903.—Mr. Turner, a few species of Lepidoptera taken at the same place and at about the same time. Mr. Browne then read a paper descriptive of his holiday-collecting at Dawlish, to which Mr. Turner added a few notes on the Micro-Lepidoptera and other orders.—The report of the field-meeting held on July 11th, 1903, at Wendover, was read.

January 28th, Annual Meeting.—The President in the chair.—The first half of the meeting was devoted to the receiving of the Treasurer's Report and Balance-sheet, the election of the Officers and Council for the ensuing year, and the reading of the Annual Address by the President.—The following is a list of the Officers and Council for 1904:—President, Alfred Sich, F.E.S.; Vice-Presidents, H. Main, B.Sc., F.E.S., and E. Step, F.L.S.; Treasurer, T. M. Hall, F.E.S.; Librarian, A. W. Dodds; Curator, W. West (Greenwich); Hon. Secretaries, Stanley Edwards, F.L.S. (Corresponding), and Hy. J. Turner, F.E.S. (Report); Council, R. Adkin, F.E.S., F. Noad Clark, F. B. Carr, H. L. Fremlin, M.R.C.S., L.R.C.P., F.E.S., M. J. Lucas, B.A., F.E.S., H. A. Sauzé, and M. West (Streatham). Subsequently Mr. Thompson, of "Garlands," Redhill, was elected a member.—Mr. Tonge exhibited several admirable photographs of the ova of Lepidoptera; Mr. Step, a specimen of the Dublin prawn; and Mr. Turner read notes on the natural history of Canada, sent to him by Mr. A. J. Croker.—HY. J. TURNER, *Hon. Rep. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—By the courtesy of the St. Helen's and District Naturalists' Society the concluding meeting of the present session was held in the Association Buildings, St. Helen's, on December 21st, the gathering partaking of the nature of a joint meeting of the two societies, of which a large number of members were present. Mr. Wm. Webster, M.R.S.A.I., Vice-President, occupied the chair. The minutes having been confirmed, the Secretary announced the following donation to the library: "The Coccidæ of the British Isles," vol. ii., by Robt. Newstead, A.L.S., F.E.S., Hon.F.R.H.S., &c., presented by the author. On the motion of the Council it was unanimously resolved to elect Major Ronald Ross, F.R.C.S., F.R.S., &c., an Honorary Member of the Society. The following gentlemen were proposed for election as ordinary members in January: Messrs. H. Mousley, of Buxton, and Donald Kent, of Sefton Park, Liverpool. Certain amendments to the rules of the Society having been adopted, communications were read by Messrs. R. S. Norman, F.G.S., and J. G. Wallbridge, M.P.S. Mr. R. S. Norman's paper on "Fossil Insects" dealt in an exhaustive manner with

the palæontological branch of historical geology. Having first briefly described the process of formation of the great groups of stratified rocks, he dealt *seriatim* with the principal systems that have proved prolific of fossil insect remains in both Europe and America, special attention being paid to those occurring in Britain. In dealing with the wealth of material from the carboniferous strata, the lecturer dwelt interestingly on the vast number of insects that had been recovered from the coal-measures of Commentry. Passing to the secondary series of rocks, he alluded to the abundance of insect remains that had recently been discovered in certain of the limestone formations. In commenting on the Coleoptera and Diptera from the Wealden rocks, he attributed the smaller size of the majority of specimens therein found to a lowering of the temperature during the period in which the deposits were laid, contending that, other things being equal, the lower the temperature the smaller would the insects tend to range. On the whole, however, he was of opinion that with some few exceptions the climate of the geological past differed little from that of the present day.—Mr. J. G. Wallbridge's interesting communication on "Economic Insects" was divided into (1) a general survey of his subject under the headings of (*a*) beneficial and (*b*) injurious insects; and (2) the consideration of the life-histories of several of our better known hexapods, with special reference to the honey-bee. Treating of oak-galls, he remarked that perhaps the most commercially valuable was that of the dyer's oak (*Quercus infectoria*). From this we obtain gallic and pyrogallic acid, whilst the powdered galls constitute the essential ingredient in gall ointment, and are also largely used in the manufacture of ink and dyes. An interesting account of the blister beetle (*Cantharis vesicatoria*) was given, and the use of cantharides in hair restorers explained. The habitat and habits of the cochineal insect (*Coccus cacti*) were dealt with in full, and the commercial value of the carmine dyes commented on, a colouring we constantly meet with in our confectionery, jellies, and tooth-powders, and which is not altogether unknown to ladies who are given to adorn nature. The lac insect and others were also instructively referred to.—On the conclusion of the papers an interesting discussion took place, in which many of the members participated, and a cordial vote of thanks was accorded the readers.—E. J. B. SOPP and FRED. BIRCH, *Hon. Secs.*

The Annual Meeting was held in the Royal Institution, Liverpool, on Jan. 18th, Mr. William Webster, M.R.S., Vice-President, in the chair. Major Ronald Ross, C.B., F.R.C.S., F.R.S., was elected an honorary member, and Messrs. H. Mousley (Buxton), and Donald Kent (Sefton Park, Liverpool), ordinary members of the Society. The report of the Council was read by Mr. E. J. B. Sopp, who congratulated the Society on its marked and steady progress. The Hon. Treasurer then presented his balance-sheet, by which it was seen that notwithstanding an increased expenditure the credit-balance in the Treasurer's hands was the largest of recent years. The following officers were elected to serve during 1904:—President, Samuel J. Capper, F.E.S.; Vice-Presidents, R. Tait, F. C. Thompson, and Rd. Wilding; Hon. Treasurer, Dr. J. Cotton, F.E.S.; Hon. Secretaries, Messrs. E. J. B. Sopp, F.R.Met.S., F.E.S., J. R. le B. Tomlin, M.A., F.E.S., and W.

D. Harrison; Hon. Librarian, Mr. F. N. Pierce, F.E.S.; Council, Dr. G. W. Chaster, and Messrs. B. H. Crabtree, F.E.S., J. F. Dutton, A. Tippins, H. Tonkin, W. A. Tyerman, and Wm. Webster, M.R.S.A.I. It was resolved that the summer meeting be held at Petty Pool, Delamere Forest, on Saturday, June 11th. This concluding the business, the retiring Vice-President delivered his Address, entitled "The Entomologist before the Law," in which he ably reviewed those laws of the land which affect the entomologist in the pursuit of his hobby. Property in law was described under the heading of real or land, and personal, after which the law of trespass as applying to collectors was fully dealt with, and much useful information furnished on rights of way and other matters of considerable importance to entomologists. After dealing exhaustively with the law as affecting ourselves, the lecturer described the influence that insects have had on the law. A brief allusion to the law of copyright brought a most interesting paper to a close. On the motion of Mr. R. Wilding, seconded by Dr. J. Cotton, a hearty vote of thanks was accorded Mr. Webster for his instructive discourse, as well as for his able services in the chair during the session just closed. Mr. E. J. B. Sopp, F.E.S., exhibited *Epilampra caraibea*, Sauss., captured in Liverpool, a Cuban cockroach which had not previously been recorded as having occurred in Britain. The insect had been kindly identified for him by Mr. M. Burr, F.Z.S., F.E.S.—E. J. B. SOPP and J. R. LE B. TOMLIN, *Hon. Secs.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—November 16th, 1903.—Mr. G. T. Bethune-Baker, President, in the chair.—Mr. G. W. Wynn read a short paper giving an account of all the rarer and more noteworthy Lepidoptera he had found in Wyre Forest, and illustrated the paper by a boxful of selected specimens. The more noteworthy were our old friend *Endromis versicolor*, *Hylophila bicolorana* (very rare), the Cymatophoridae (all the British species of which occur, *octogesima* being the rarest), *Stauropus fagi* (one specimen only having been taken so far), *Drymonia chaonia* (of which he showed five specimens, reared from seven eggs laid by a captive female; very rare), and *Plusia bractea*.—Mr. W. H. Flint showed a specimen of *Argynnis lathonia*, taken in Wyre Forest (on Worcestershire side) in 1899, when he believes he also saw one or two others, also Kent specimens for comparison.—Mr. A. H. Martineau, a little lot of Aculeates, the result of five or six days' collecting, at different times in 1901-2, at Budleigh Salterton. He also gave an account of the district, the coast-line, and geological formation, and the occurrence of each species in turn. Amongst other species taken were *Pompilus rufipes*, *P. cinctellus*, *Gorytes tumidus*, *Arpactus lucinctus*, *Andrena pilipes*, *A. fuscipes*, *Stelis phaeoptera*, &c. He also showed a specimen of the Tachinid *Miltogramma punctata*, bred from a pupa found inside a cocoon of *Trypoxylon figulus*.—Mr. Gilbert Smith, a few nests of Hymenoptera, from various places.—Mr. G. H. Kenrich, a number of Lepidoptera, all having been bred this year, from various localities, amongst others were *Endromis versicolor* (from Wyre Forest), *Thecla pruni*, *T. w-album*, *Xanthia gilvago* (from Northamptonshire), *Demas coryli* and others (from Sutherlandshire). He mentioned that in Sutherlandshire he had found larvæ of *Gonodontis bidentata* commonly on birch, in three well-marked forms,

one grey, one purple, one black and white, each agreeing perfectly with different parts of the birch trees.—Mr. W. H. Flint, drawers containing his collection of the genus *Cucullia* and the Sesiidæ, both containing fine series of most of the species. In *Cucullia* was a fine series of *absinthii*, all taken in one night at light near Rossall; also *scrophularia*, Capieux, from Cambridge, *asteris* from Kent, and *lychnitis* from Arundel. Amongst the Sesiidæ were *Sesia formicæformis* from Sutton Park (one), *respiformis*, L. (*asiliformis*, Rott.) from near Knowle, *tipuliformis* from Sutton, *culiciformis* from near Knowle, Shirley, and Wyre Forest, *ichneumoniformis* long series from Forest of Dean, *scoliaformis* from Dolgelly, and *sphæciformis* from Wyre Forest and Abrewaa.—Mr. Bethune-Baker, various new books.

January 18th, 1904.—The President in the chair.—Mr. R. C. Bradley exhibited *Caliosage acuminata* and *Crabro cetratus*, both taken in his garden at Moseley, in 1903.—Mr. A. D. Imms read a paper upon tsetse flies and nagana, in which, with the aid of lantern-slides, black-board diagrams, &c., he gave an account of all that is known at present about the flies of the genus *Glossina*, their structure, life-history, distribution, &c.; and also described the disease nagana and the *Trypanosana brucei* which causes it.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

MANCHESTER ENTOMOLOGICAL SOCIETY.—December 2nd, 1903.—At the Manchester Museum, Owens College, Dr. W. E. Hoyle, M.A., F.R.C.S., President, in the chair, the meeting took the form of an exhibition evening, and included specimens captured by members of the Society. These were much appreciated, being of a very interesting character. The following is the complete list:—Mr. B. H. Crabtree, varieties of *O. bidentata*, ranging from very pale forms to black, from South Manchester district. Mr. W. Buckley, Lepidoptera taken at Wallasey, Delamere, Padgate, and Anglesey, during the year. Mr. Geo. O. Day, a series of *T. opima*, and Lepidoptera bred in 1903. Mr. R. Tait, junr., a case containing *H. atriplicis*, *L. albipuncta*, *A. ashworthii*, *C. absinthii*, &c. Mr. R. Brauer, a collection of preserved larvæ (British), and a specimen of *Cleniza californica* with trap. Mr. R. J. Wigelsworth, insects captured on the River Plata, and at Ensenada (Argentine Republic). Mr. J. Ray Hardy briefly referred to the late Thomas Kelsall, and commented on the valuable work he did on behalf of entomology, especially in connection with the collection at the Manchester Museum. A case containing Coleoptera mounted on cards, by Mr. Kelsall, was shown by Mr. G. Kearey. Some recent publications from the British Museum, concerning several orders of insects, were reviewed.

January 6th, 1904.—Annual Meeting held in the Manchester Museum, Owens Collage. The President occupied the chair. The report from the Secretary showed a membership of forty, and ten meetings and two excursions having been held during the year. The Treasurer's report was satisfactory; notwithstanding heavy expenses, there was an encouraging balance in hand. The following officers were elected for the current year:—President, Dr. W. E. Hoyle; Vice-President, B. H. Crabtree, F.E.S.; Treasurer, W. Buckley; Secretary, R. J. Wigelsworth, 131, Duke Street, Old Trafford, Manchester; Librarian, J. Ray Hardy; Council, C. F. Johnson, R. Tait,

and W. W. Kinsey.—Exhibits were afterwards shown by the members: Mr. B. H. Crabtree, case containing species of the Acidalias. Mr. Brauer, a case of *V. cardui*, *V. c-album*, *V. atalanta*, and *V. polychloros*, showing in each instance their foreign relations. The members, under the guidance of Mr. J. Ray Hardy, afterwards inspected the collection of British Curculionidæ belonging to the Manchester Museum. In the group Rhyncophora 460 species out of the 480 known were shown, including the grain- and the whole of the timber-destroying species. Also the group Scolytidæ, the species of which were notorious for the ravages inflicted, both in its larval and perfect state, upon elm-trees, especially in London parks. — R. J. WIGELSWORTH, *Hon. Secretary*.

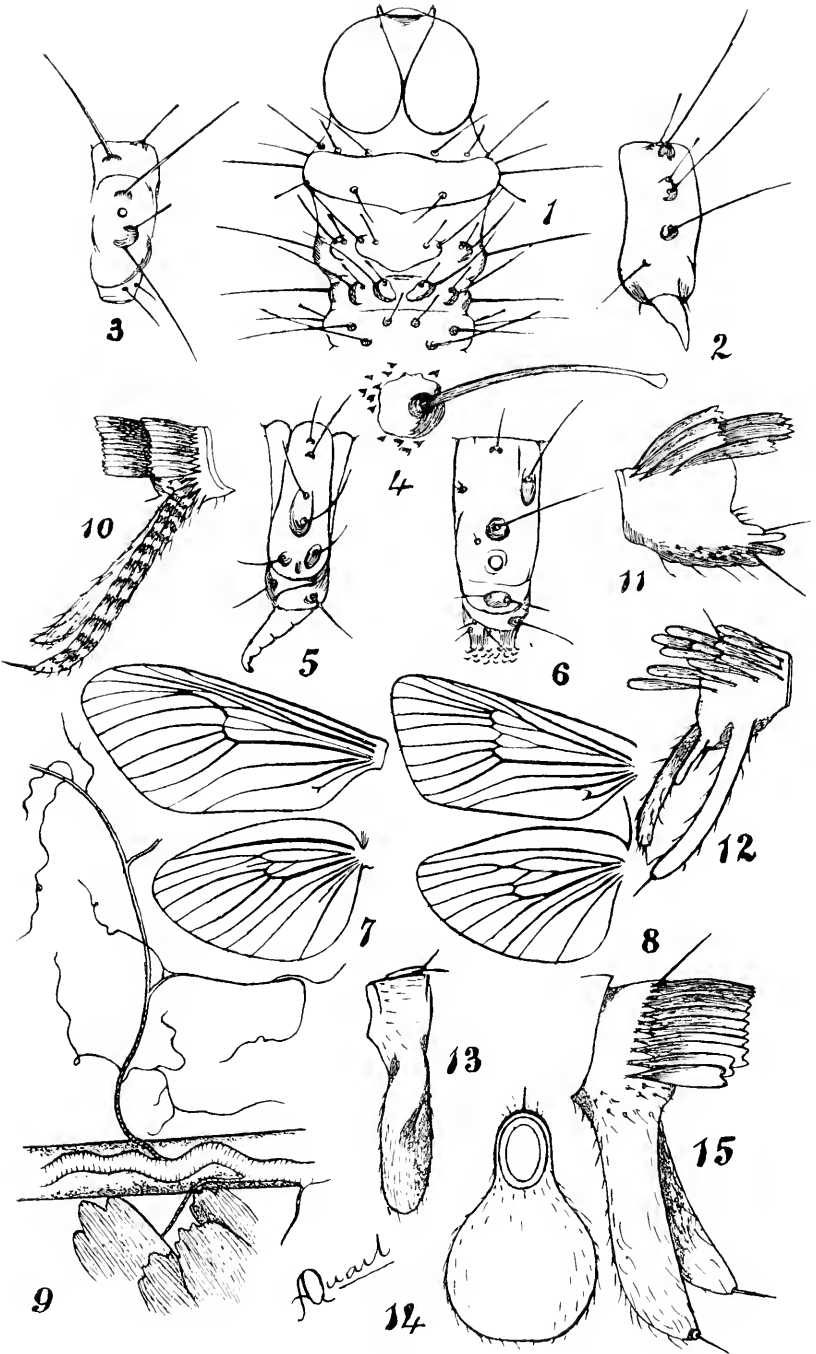
RECENT LITERATURE.

British Tyroglyphidæ. By ALBERT D. MICHAEL, F.L.S., &c. Vol. II. 183 pp. 20 plates. London: Ray Society. 1903.

THE first volume of this important work was issued by the Ray Society to its subscribers for 1901, and a notice of it was published in the 'Entomologist' for 1902, p. 176. In this, the concluding volume, the remaining nine genera and sixteen species are described and their habits discussed. There is a list of the principal foreign species which have not so far been recorded as British. The chief books and papers dealing with the Troglyphidæ are also referred to in the bibliography, and a most convenient index has been provided. As in the previous volume, the plates are excellent, and many of the numerous figures are coloured. When one understands that the author had to rely almost entirely upon his own exertions in obtaining British species for study, and that he drew all the figures on the thirty-nine plates, one can form some idea of the enormous amount of labour that he has bestowed in the preparation of this work.

Who's Who? 1700 pp.; *Who's Who Year-Book*, 112 pp.; and *The Englishwomen's Year-Book*, 352 pp. London: Adam and Charles Black. 1904.

As we have been favoured with a copy of each of the above-mentioned works, we have much pleasure in calling the attention of our readers to them. Among the host of notable personages whose biographies are given in 'Who's Who,' we find, among others, the names of Bateson, William; Distant, William Lucas; Elwes, Henry John; Godman, Frederick DuCane; Hampson, Sir George Francis; McLachlan, Robert; Meldola, Raphael; Poulton, Edward Bagnall; Rothschild, Hon. Lionel Walter; Sharp, David; Tutt, James William; and Lord Walsingham. In the 'Year-Book,' which used to form part of 'Who's Who?' there is much information of a useful and general character, and this is conveniently arranged in tabular form.



Quail

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NOTES ON COSSIDÆ.

BY AMBROSE QUAIL, F.E.S.

(PLATE V.)

A LOCAL species of Lepidoptera discovered by Mr. Illidge was described as *Culama expressa* (Cossidæ) by Dr. Lucas, of Brisbane, Queensland,* some two years ago. I handed over a pair (male and female) of this species to the collections at South Kensington a few months since, and was informed "it is not a Cossid," but could not learn from the Museum officials why it is not, or what it is!

The present writer is not responsible for placing the species among Cossidæ, but has some sort of proprietary interest in the moth, having dealt with the habits and structure of its embryological stages in our paper "Australasian Wood-boring Cossidæ,"† and would be better pleased believing it to be a Cossid. I have been unable to look into the literature of the subject, involving the original diagnosis of the genus *Culama* (Walk.), but have examined by way of pastime some stray material of Cossidæ which was available, and trust my notes thereon will prove of interest to readers, even also of some slight value to systematists.

Having dealt already with the habits of Cossidæ so far as known to us in the above-mentioned paper, I will only say here that anyone knowing *C. cossus* would consider the larva of *Culama expressa* to be a Cossid, from its resemblance in shape, colour, and habits to the larva of *C. cossus* in its first year. At pupation *C. expressa* prepares a similar cocoon of silk and chips, but the pupa does not seem to bear out the resemblance to *cossus*.

Dr. Dyar,‡ on the classification of lepidopterous larvæ, says:—
"From a consideration of the first larval stage in conjunction

* Trans. Linn. Soc. N. S. W. 1902.

† Roy. Soc. Qnsld. Proc. 1903 (Illidge and Quail).

‡ New York Acad. Sci. Trans. 1894.

with the later stages, I believe that a series of superfamilies can be satisfactorily defined. This is as far as classification from the arrangement of the tubercles can be carried. . . . Superfamily Cossina (Micro-Lepidoptera): Tubercles with single seta, normal, fourth and fifth approximate or consolidated, the rest remote. Includes the families Adelidæ, Psychidæ, Cossidæ, Pyralidæ, Tortricidæ, Sesiidæ, Tineidæ, Orneodidæ, and Lacosomidæ”

The ovum of *C. cossus* has been described by Mr. J. W. Tutt, F.E.S. (Ent. Rec. xv. 333), and to Mr. A. Bacot, F.E.S., I am indebted for specimens of newly-hatched *C. cossus* larvæ; these are quite large animals, in length 3.5 mm. I believe the species has not hitherto been figured in this larval stage, and some remarks on the homology of the thoracic tubercle setæ with abdominal tubercle setæ are suggested by examination of these newly-hatched larvæ of *C. cossus*.

Looking further afield than Cossidæ, one notes that a fundamental arrangement of abdominal setæ, of newly-hatched larvæ especially, largely prevails throughout the Lepidoptera. Approximation and loss of certain tubercles is admitted to be specialization. In Hepialidæ, newly-hatched larvæ have this fundamental arrangement also on the thoracic segments—*i. e.* anterior first, posterior second, suprspiracular third, subspiraculars fourth and fifth, and basal—correspond in number and position with the abdominal tubercle setæ. It is here necessary to note that I refer only to the meso- and post-thoracic segments, the prothorax everywhere has a special arrangement of the setæ. In Hepialidæ * iii is applied to two setæ—in fact, iii *a*, *b*, the spiracle, and iv, v, tubercles, are curiously associated on one common area in the newly-hatched stage.

As indicated by Hepialidæ, no doubt the primitive arrangement of the tubercle setæ was alike on both thoracic and abdominal segments. Movement (noticeably approximation) of setal tubercles has taken place to a greater extent on the thoracic than on abdominal segments. Elimination of the spiracles—outward indication of internal modification in connection with wing development—has not affected the abdominals, but is probably the chief cause of the altered positions of the tubercles on thoracic segments.

In lateral descending order the abdominal tubercle setæ of newly-hatched *C. cossus* (figs. 1 and 3) are i and ii normal in position single seta each, iii single seta.† I cannot trace iii *b*,

* Figure, Trans. Entom. Soc. Lond. 1900.

† Mr. Bacot believes he can detect iii *b* on *C. cossus*. [Not so! Mr. Quail uses iii *b* as denoting the second suprspiracular setæ on Hepialidæ larvæ. The tubercle I remarked on to Mr. Quail as being present on larvæ of *C. cossus* is a minute free spiracular point of very general, if not universal, occurrence on the abdominal segments of lepidopterous larvæ, and probably has no relation at all to iii *b* of Hepialidæ.—A. BACOT.]

iv and v approximate on one plate common to both, and basal setæ. Most of the setæ are typical, long, hollow, bristle-like, and pointed; but on the anterior trapezoidal and anterior subspiracular tubercles are short setæ with curious tips, which we will call trumpet-like. Immediately on noticing these curious setæ, I observed also that the thoracic segments had two exactly similar setæ (fig. 2). These were conspicuous on the specimens which I first examined. Mr. Bacot questioned the shape of the setæ, the specimens he had examined not apparently exhibiting the trumpet-like form of seta. I therefore gave further attention to the matter, and am satisfied that the two setæ on the thoracic segments are exactly similar to the two on the abdominals. The figure (4) of an abdominal anterior trapezoidal seta was drawn from one of Mr. Bacot's slides; on that specimen are other more or less trumpet-like setæ, the curve of the seta is probably due to pressure of the cover-glass. Although not absolutely certain, I believe we have here a functional seta of a remarkable kind *which can open and shut*; when open at the tip the seta is trumpet-like, closed it loses this appearance.

The position of all the tubercle setæ on the thoracic segments differs from that of the abdominals. On *C. cossus*, in addition to the displacement of thoracic setæ from spiracular reasons above referred to, one note iii B has been eliminated, resulting in the approximation of iii and the anterior subspiracular tubercle, and, moreover, the movement of this to a position above iii. The homologues appear to be in lateral descending order on the thoracic segments: i, ii approximate, subspiracular seta moved up; then iii; single subspiracular below and basal.

It is unfortunate that I cannot carry these observations further as regards *C. cossus*. The nearest material I have being adult *Zeuzera pyrini*, which is not really of value to compare with *C. cossus* newly-hatched. On the thoracic segments of *Z. pyrini* adult larva (fig. 5): i, ii are separate; iii *a*, *b* approximate—I do not think the subspiracular seta is here moved up, iii *a*,* *b* exists definitely on the abdominal segments; iv, v are curiously *above* what is perhaps a scar of the eliminated spiracle, and, moreover, the setæ are on separate tubercles—such spiracle scars exist in all *Zeuzerinae* I have seen; vi is below, and on the base of legs another single seta.

The abdominal tubercle setæ of *Z. pyrini* (fig. 6): i, ii remote normal; iii *a*,* *b*; iv, v approximate; vi posterior; and three basal setæ. A minute, subdorsal, anterior seta may also be noted; this, like the spiracular scar, persists on all species allied to *Zeuzera*.

As the result of criticism, Dr. Dyar admits that the tubercle setæ of the thorax are homologous with those of the abdominal

* See my note, foot of p. 94.—A. B.

segments, and should bear corresponding identification numbers. I do not know where or in what form Dr. Hofmann's criticism was published, and am unacquainted with his arguments, with which mine should be more or less in accord.

When the imaginal wings of a lepidopteron are examined under a high power, it is seen that veins pass through the nervures (fig. 9), sending forth smaller veins from either side, and still smaller veins, until they pass into the whole wing area. These veins are of course easily seen in the wings of the very large foreign Cossids, but if looked for can always be demonstrated. These veins are not identical with the nervures—the latter act merely as hollow protecting tubes; nor are the veins confined to the nervures—they may be observed, for instance, on the inner area of the fore wing between the anal nervure and inner margin. These veins, if functional in connection with wing expansion, may also be functional throughout the existence of the insect, the wing being unquestionably a "live" organ. Are the erect wing-bristles and the nervule "discs" of Dr. Chapman associated with the veins? I know nothing about the matter, but it appears to be one of interest; perhaps some abler microscopist, or someone who knows where to refer for information, will tell us something about the matter, which I believe would interest others as well as myself.

We are concerned, however, with the remarkable constancy of the nervures in maintaining definite positions on the wings, thus affording assistance in classification.

In the pattern of wing-neuration of *Cossus cossus* (fig. 7) some of the radial nervules of the fore wings are forked. *Zeuzera pyrini* shows this more definitely than, at any rate, the specimen of *C. cossus* from which this figure was drawn; and Professor Comstock's American type of Cossidæ—*Prionoxystus robinæ*—is very definitely forked. Although I have only this material to hand, speaking from memory of other species which I have seen, the forking of the fore wing radial nervules is characteristic of the group. Now, comparing (*Culama?*) *expressa*, which I have enlarged (fig. 8), for that purpose (the insect expands 28 mm. to 38 mm.), one notes there is no forking of the radial nervules, but the hind wings of *cossus* and *expressa* are almost identical. The wing-pattern of the Tortricidæ is very similar to that of *C. expressa*, of fore and hind wings also.

The imaginal antenna of *Zeuzera pyrini*, male, is a partially bipectinate and rather pretty form, the pectination gradually increasing, then decreasing in length droop with gentle curve, forming a convexity with thread-like terminal of unpectinate segments. The antenna is devoid of scales, except on a few basal segments, which have slight dorsal scaling, but none on the dorsa of pectinations.

Phragmatæcina arundinis male antenna (fig. 12) is not unlike

that of *Z. pyriti*, but of less pronounced convexity. The dorsum of shaft is covered with numerous scales arranged in irregular rows across each segment; there are scales also on the dorsa of pectinations and numerous ventral sense-hairs. Three segments are transitional between the bipectinate and the terminal segments. These have a ventral appendage, with sense-cones, sense-hairs, and bristles; the short lateral extensions are of the appendage, not of the shaft itself.

The female antenna of *Z. pyriti*, *C. cossus*, and of *C. expressa* are without pectination, and bear ventral extension with anterior sense-cones, sense-hairs, and bristles. Comparing the male unpectinate terminal segments of *Z. pyriti* with the female antennal segments, and remembering the transitional segments of *P. arundinis*, one concludes that ventral extension preceded bipectination among these insects.

Thus, I should say, *P. robinie* is a higher—more recent—species than *Z. pyriti*, as in the former species both sexes are bipectinate. The male pectination being slender, smooth, devoid of scales, without scaling on the shaft, and very like *Z. pyriti*, except that the segments are bipectinate to tip of antenna. The female segments (fig. 15) have stout bipectination to the tip, and one row of scales per segment on shaft.

It is interesting to find that the male antennal segments of *C. cossus* have simply a tongue-like ventral appendage, which, viewed in section, is almost round (figs. 13, 14); two rows of scaling per segment are represented by somewhat diminutive scales on the dorsum of shaft. The female antenna has cones on the anterior surface of the appendage.

C. expressa male antenna (fig. 10) approaches that of *P. arundinis* more nearly than either of the Cossids in regard to scaling. The dorsum of shaft very closely covered with scales, two rows per segment, and the dorsa of the pectinations are likewise covered very closely with scales to the tips. The female antenna (fig. 11) has a close resemblance to the Cossid antenna, the dorsum of shaft having two rows of scales per segment.

From the foregoing it is evident *C. expressa* is not a Cossid; still, it has Cossid affinities, and if in other respects it is a Tortricid, it must be rather low in that family. There is also some reason to suggest that *Zeuzera* and *Cossus* are not such near relatives as is sometimes supposed, but more material in the newly-hatched larval stage must be examined.

EXPLANATION OF PLATE V.

FIG.

1. *Cossus cossus*, First larval stage, dorsal aspect of thorax, and first abdominal segments, $\times 80$.
2. " " " " " mesothorax laterally, $\times 80$.
3. " " " " " third abdominal segment, $\times 80$.
4. " " Anterior trapezoidal third abdominal seta, $\times 400$.
5. *Zeuzera pyrini*, Adult larva, mesothorax, enlarged.
6. " " " " " third abdominal segment, enlarged.
7. *Cossus cossus*, Imaginal wing neuration, nat. size.
8. *Culama expressa*, " " " enlarged.
9. " " Fore wing anal nervure about one-third from base, showing enclosed vein and subsidiary veins which ramify through the wings, $\times 400$.
10. " " ♂ antennal segment, $\times 200$.
11. " " ♀ " " " $\times 400$.
12. *Phragmataecina arundinis*, ♂ transitional antennal segment, $\times 400$.
13. *Cossus cossus*, ♂ transitional antennal segment, laterally, $\times 80$.
14. " " ♂ " " " " transverse, $\times 80$.
15. *Prionoxystus robiniae* ♀ transitional antennal segment, $\times 200$.

Note.—Fig. 8 has really somewhat stouter nervures than should be the case. Tortricids are very fine, and difficult to examine therefore; also the two inner anal nervures of the hind wings should be a little wider spaced.

CURRENT NOTES.

BY G. W. KIRKALDY.

(Continued from p. 73.)

F. M. Webster concludes (1) that "Lucrative prices for dairy products stimulate dairying; this increases the area of timothy meadows, and tends to their continuance for a series of consecutive years. This increases the abundance of" *Blissus leucopterus* [Rhynchota] and *Sphenophorus parvulus* [Coleoptera], "and consequently the magnitude of their ravages." The same author deals (2) with the diffusion of North American insects, principally Lepidoptera and Coleoptera. L. Bruner makes a powerful plea (3) for the protection of birds, not only from a humane point of view, but as a contribution to economic entomology. He calculates that the estimated 75 millions of birds in Nebraska require, at a very low estimate, 1875 millions of insects for each day's rations—that is, roughly, 15,625 bushels of insects. "Birds, like all other animals, feed upon that food which

is most readily obtained, hence the insectivorous kinds destroy those insects which are most numerous—the injurious species.” T. W. Kirk (4) relates experiments on Coccidæ, and notices of the wharf borer (the Coleopteron *Naccerdes melanura*), the rest of the extensive report being occupied with fungous diseases, &c. W. W. Froggatt (5) notices the weevils and moths that damage foodstuffs. The paper of N. A. Cobb (6) is concerned principally with fungous diseases, but refers to the exciting causes of Stigmomonose, &c., being the punctures of Coccidæ, Aphidæ, Thysanoptera, &c. (pp. 694–704).

De la Torre Bueno (7) has presented us with the first modern account of the metamorphoses and habits of a Naucorid; he finds that the oval instar lasts about twenty-four days, the five nymphal about fifty, while the adult may under favourable conditions live for over a year; oviposition seems to be continuous during the summer. The paper is a distinct advance in our knowledge. W. W. Froggatt (8) gives descriptions and notices of the habits, &c., of the Australian Cicadidæ, with a bibliography of the literature. This, like all Froggatt’s papers, is of high value, but he is the victim of his publishers in the detestable manner in which his papers are presented. The original source of the present contribution is ‘Agricultural Gazette of New South Wales,’ xiv. pp. 334–41, and 418–25, published in April and May respectively of this year. It is republished, however, as a miscellaneous publication “of the Department of Agriculture, N. S. Wales,” pp. 1–15, without any proper indication of its original source. The plates and woodcuts also are never numbered. It is to be hoped that Mr. Froggatt will use his influence to have these publications brought into line with modern methods.

When discussing Miss Nawa’s paper on “A Parasitic Moth” (Entom. xxxvi. 130), I was unaware of Dyar’s notice of a lepidopterous larva on a leafhopper (9). This larva was found firmly attached to the dorsal surface of the abdomen, under the wings, of a species of *Issus* (near *auroreus*, Uhler) from New Mexico. Nawa’s paper was further discussed by Dyar (10), who thought that *Epiphyrops* might be a true parasite after all.

Reh gives the first two instalments (11) of what promises to be a valuable contribution to our knowledge of the Coccidæ of the northern and central portions of Europe. To Coquillett (12) we are indebted for “an attempt to settle the type species of each North American and European genus of Empididæ, and to bring some kind of system out of the present confused condition into which the genera of this family have fallen.” The well-known genus *Mantipeza* is replaced by *Chelifera*, *Rhamphomyia* by *Macrostomus*, *Sciodromia* by *Helcodromia*, *Syneches* by *Acromyia*, and *Cyrtoma* by *Bicellaria*. Endlich (13) discusses, with copious bibliographical references, the fight against Texas fever and the Tsetse sickness. Börner (14) describes a new genus of

Sciaridæ from Sicily, in which the female is without wings and halteres; the segmentation of the abdomen in female Diptera is also discussed at some length.

Geest (15) describes aberrations of a number of butterflies, with figures of aberrations of *Melitæa cinxia*, *Argynnis aglaia*, *Acronycta rumicis*, *Apatura clytie*, and *Argynnis levana*. Bachmetjev (16) gives an account of the number of "eyes" on the under side of the hind wings in a quantity of *Epinephele jurtina* captured in Sophia. Fischer provides (17) the third part of his experiments on temperature variations, dealing in this principally with the Vanessines. Ulmer notes the occurrence of claws on the tarsi of trichopterous pupæ (18).

Friese (19) describes a colony of mason-bees, with a figure of a mass of rock with about one hundred and eighty nests of the species in question; while Wasmann deals with the guests of the Doryline ants (20).

Stockman (21) reports on a plague of *Acrydium succinctum* and *æruginosum* in the Central Provinces of India, methods taken for the protection of the crops, experiments with fungi, hatching observations, &c.; Caudell (22) criticises the recent papers of Rehn and Krauss, and correctly—in final effect through scarcely in detail of working—declares *orientalis* to be the type of *Blatta*; *Blattella* is proposed instead of the preoccupied *Phyllodromia* for *germanica*.

Busck contributes notes (23) on the tineid types of Clemens, based on the discovery of a box found in the Academy of Natural Sciences at Philadelphia; one hundred and ninety-two out of the two hundred species of Clemens have now been identified, and five more are known with certainty from the descriptions, leaving only three at present unknown.

Lea (24) is convinced that, although the San José scale was first officially reported from Tasmania two years ago, it is not now, and never will be probably, a serious pest in Tasmania. Froggatt contributes a "Nature Study" on *Termes lacteus* (25).

Zehntner discusses at some length the life-history of the coffee-borer (*Zeuzera*), a pest to cacao in Java, its metamorphoses, habits, and enemies; also of another lepidopterous cacao pest, *Orthocraspeda trima*. Figures in all stages are given of these two forms (26). The dentition of the Diptera is discussed by Harris (27); the anatomy and development of the larva of *Ephydra*, a dipteron, is considered at some length by Trägårdh (28). Schouteden supplements (29) his list of aphid galls already noticed in the 'Entomologist' (1903, pp. 287 and 262).

(To be continued.)

DESCRIPTIONS OF TWO NEW CETONID BEETLES
FROM BRITISH EAST AFRICA.

By E. A. HEATH, M.D., F.L.S.

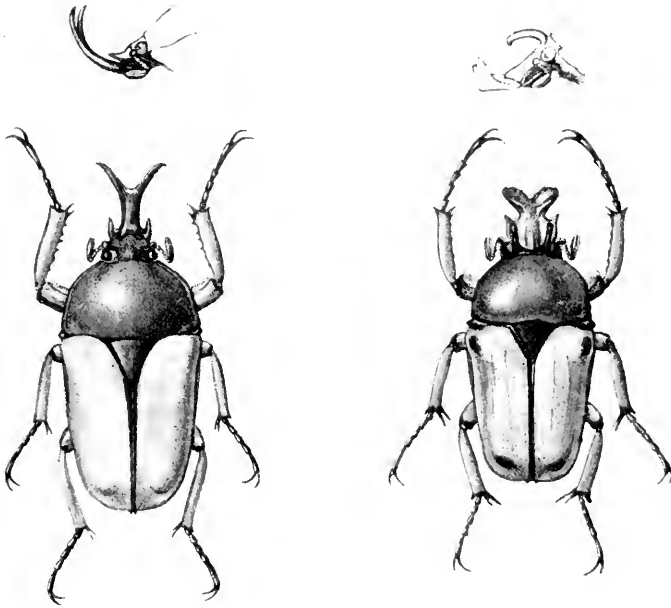


Fig. 1.

Fig. 2.

CÆLORRHINA CORNUTA, sp. n. (fig. 2).

Head and frontal horn red. Pronotum and scutellum shining brown-green, iridescent; lateral and anterior margins of pronotum, lateral, posterior, and sutural margins of elytra raised, piceous. The head is anteriorly prolonged into an oblong channel-like process, with a lateral tooth on each side, and a terminal bilobed ear-shaped process turned upward. Length of head and horn, $4\frac{1}{2}$ lines. At the base of the head are two lateral, curved horns, pointing forward and downwards, $2\frac{1}{2}$ lines in length. The elytra are shining, pale yellowish brown; at the base and apex of each elytron near external margin is a dark brown spot. Elytra, scutellum, and thorax finely punctured. Body beneath dark olivaceous green, somewhat coarsely punctured. Abdomen with an obscure central longitudinal reddish-brown fascia. Legs reddish brown; apices of femora and the tarsi black; a thick fringe of light brown hair on the under side of front femora, a fringe of light brown hair on the posterior tibiæ, and on the yellowish pygidium. Long. 16 lines; max. lat. 7 lines.

Hab. Uganda, British East Africa.

EUDICELLA IMMACULATA, sp. n. (fig. 1).

Basal half of head, pronotum, scutellum, epimera of mesothorax, and pygidium dark olive-green, thickly and finely punctured; lateral margins of pronotum raised, smooth, and shining. The head is prolonged into three shining mahogany-coloured horns, the central horn being bifurcate, pointed, 6 lines in length, curving upward; the lateral horns about $1\frac{1}{2}$ lines. The elytra are shining, pale yellowish brown, and spotless. The sutural margins and body beneath are of the same dark green colour, the last finely punctured. The mesosternum sparingly covered with light yellow hair; the upper part of sternal process thickly covered with yellow hair. The legs are bright shining mahogany coloured; the tarsi bright shining black; the front femora has a thick fringe of light brown hair on the under side; there is also a slight fringe of the same coloured hair on the pygidium. The front tibiæ in the male are smooth on the outer side, but have seven or eight teeth on the inner side. The female is the same in every respect, except the horns and the front tibia, which are smooth on the inner side, but have three teeth on the outer side. Long. 17 lines; max. lat. 10 lines.

Hab. Uganda, British East Africa.

Closely allied to *E. smithi*, but differing in having a more finely punctured thorax and elytra, the pygidium green, and the elytra spotless; the pygidium in *smithi* is red.

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TWELVE MONTHS' WORK AMONG THE DRAGON-FLIES OF SURREY AND HAMPSHIRE.

BY H. T. DOBSON, F.E.S.

FINDING Lepidoptera very scarce during the summer of 1902, I decided to try my fortune among the Odonata, with the result that I captured, between September, 1902, and September, 1903, no less than twenty-six species out of the thirty-nine given for Great Britain by Mr. J. W. Lucas in his excellent work on 'British Dragonflies,' published in 1900.

Thinking there must be many readers of the 'Entomologist' who, like myself, are deeply interested in this important and splendid group of the Neuroptera, I venture to offer the following notes.

I shall consider the species according to the classified order used by Mr. Lucas, quite disregarding the rotation of my captures. Of the five species belonging to the genus *Sympetrum*, I took but two, viz. *striolatum* and *scoticum*. My first capture of the former was on August 8th, at the Black Pond, Esher, and I continued during 1903 to take it until the middle of October. I

also found the species in fine condition in the New Forest on September 30th, but the best dark forms I took in September, 1902, at Freshwater.

It was at the Black Pond, Esher, that I first captured *S. scoticum*; it was fluttering about in the immature state on July 21st. A series quickly fell to my net. I found it, however, a far more difficult insect to take in the New Forest on September 30th, when it was in a perfect condition; I also saw it flying in company with *S. striolatum* at Wisley late in October.

With regard to the genus *Libellula*, I took or saw both *depressa* and *quadrimaculata* at Esher on June 1st; of the former I captured a splendid long series at Rhinefield on June 8th. Although the latter species was also common near Brockenhurst, yet my best success came from Esher, where on June 29th I took a beautifully suffused variety.

The commonest dragonfly to be seen in the New Forest during the second week in June, 1903, was *Orthetrum cærulescens*; it flew in thousands on the heaths in the vicinity of the bogs.

Of the beautiful *Cordulia ænea*, I captured a male and female in the hot sunshine on June 1st. A week later I found the species flying commonly close to Brockenhurst, but, although many specimens were netted, I only succeeded in taking one female.

Of the somewhat rare *Gomphus vulgatissimus*, I took three males, the result of searching for it in the New Forest on June 8th and 9th. On the first of these dates I also caught flying in company with it two males of *Cordulegaster annulatus*; I may add that I took a female of the latter species on September 17th, 1903, at Sidmouth, which appears to be much later than any date recorded for the insect.

A grander and more powerful dragonfly than *C. annulatus* is *Anax imperator*; this was flying commonly in the New Forest early in June. When the sun was shining it was certainly difficult to catch, but on the dull days (and we had plenty) my son and I caught between forty and fifty, from which I selected what I required, and then gave the others their liberty. While engaged in this interesting amusement my son took an example of *Brachytron pratense* flying round a pond.

I now pass on to the genus *Æschna*. Of the six British species comprised in this group, I have taken *mixta*, *cyanea*, and *grandis*. *Mixta*, although much smaller than either of the other two, is far more difficult to catch. After trying for several days at Freshwater, I succeeded, on September 18th, 1902, in taking two males. A couple of days later I saw another of these lovely flies, but could not capture it: I have not seen the species since. A much larger insect is *Æ. cyanea*. I look upon it as the commonest representative of the genus, and comparatively easy to capture. It made its appearance at New Malden towards

the end of July in 1903, but I took the species perfectly fresh at Yarmouth, Isle of Wight, on September 3rd. I also captured nine males flying over a pond in a brickfield at Brockenhurst on September 26th; three of these were splendid brown forms (no doubt due to age). All were taken between half-past four and five o'clock, when the lengthening shadows from the trees had almost covered the water; still there was one corner where the sun could be seen, and here I had no trouble in securing *cyanea*. Although *A. grandis* flies late in the day, and is often very busy during a shower, yet I have never found it fall so easy a victim to the net as *cyanea*. I first saw *grandis* last year at Esher on July 21st; later on I took several there, and also secured the species upon two occasions at Byfleet Canal.

I now wish to refer to those two brilliant dragonflies that belong to the genus *Calopteryx*. It was my pleasure to get both *virgo* and *splendens*; *virgo* was flying commonly in Brockenhurst and surrounding neighbourhood when I was there in June, but lovely *splendens* was not to be seen in the locality. I first took the last named species at Guildford on June 18th, but, as it was only just emerging, I waited till July 10th, which was about the hottest day we had last year; then, having made my way to Byfleet Station, I walked about two miles to a little stream. Here I secured a nice series, flying along the edge of a cornfield; one of the females shews no signs of possessing the usual pterostigma.

Of the remaining twelve species of the Agrionidæ, I succeeded in securing eleven, *Lestes dryas* being the one that eluded my search. However, to take them in order, I obtained a series of *L. sponsa* in the New Forest in July. I caught but a single specimen of *Platycnemis pennipes* on Ockham Common on July 10th. I also met with *Erythromma najas* upon one occasion only, when I took a few flying over the Byfleet Canal on July 25th.

The two crimson-bodied dragonflies which belong to the genus *Pyrrosoma* were to be taken throughout June, July, and part of August at the Black Pond, Esher; but as I suppose entomologists must have met these many times, I will pass on to the rare *Ischnura pumilio*. I am glad to report that I took this on June 6th at a bog in the New Forest. It was Mr. Lucas's capital work that enabled me to identify this from the commoner species *I. elegans*, which I caught at the same time and in the same place. I should add that I found *elegans* in many districts, but perhaps nowhere was it so common as in Richmond Park, a light red variety being almost as numerous as the type. On July 4th I put one of this variety in a glass-top box with a normal coloured specimen. On the following morning the typical *elegans* was very frisky, but the whole of the body of the variety had vanished, the survivor having devoured it.

Although I captured our three species of *Agrion*, yet I only

obtained single examples of *pulchellum* and *mercuriale*, the former from the banks of the Byfleet Canal on July 25th, and the latter at Brockenhurst in the early part of June. I found *puella* commonly in the New Forest on June 8th; I also took it in the neighbourhood of Byfleet on July 10th.

I have now but one more species to say a few words about, viz. *Enallagma cyathigerum*, and I imagine that this beautiful blue-bodied dragonfly is the commonest of the Agrionidæ. It was in great evidence at the Black Pond, Esher, on June 1st, and I found plenty of them each time I visited the locality up to September. I could also have taken any quantity at the lakes in Richmond Park in July. Adverting to the question of preserving the colours of this and species of the genus *Agrion*, I have certainly not yet succeeded to my satisfaction. I have tried several methods, and shall continue to try, for if there could only be obtained results as good as I have had with the larger species, I think no one need say, "I do not collect dragonflies because they lose their colours."

Ivy House, New Malden, Surrey: Feb. 13th, 1904.

A "BUTTERFLY SUMMER" IN ASIA MINOR.

BY MARGARET E. FOUNTAINE, F.E.S.

(Continued from p. 84.)

But I do not think on the whole I had much to complain of; the climate was as near perfection as anything could well be; for without that intense arid heat of the more southern countries I have visited, every morning in June, almost without exception, was gloriously fine, and the violent thunderstorms and heavy rain, which not infrequently came on in the afternoon, were as soon over as they were violent while they lasted, and a calm starlit night, with summer lightning quivering over the distant mountains, would invariably be succeeded by the dawning of another day, bringing with it that miracle of loveliness—a summer morning in the south; while, in consequence of these occasional downpours, the country remained fresh and green, and fruit of every kind was in the most amazing abundance everywhere.

On July 10th I left Amasia for Tokat, two days' journey farther inland. It was on my way there that I met with the only really unpleasant experience I ever did during all the time I was in Asia Minor. This was with some Circassians in a wayside khan. "The Circassians are all robbers!" was the verdict I had heard passed upon them, and I suppose they thought a lady

travelling alone with her courier would be an easy prey. But in this they found they were mistaken. There were some five or six of them, and the driver of my yiley (a brute I would like to have kicked many a time had I been a man) was evidently in league with these Circassians. Bersa behaved splendidly, as he always did, and I instinctively felt that the principal thing was to show no fear; neither did I feel any, for I knew they were cowards—all Circassians are—and to be met with courage, especially in a woman, would be the only way to get the better of them. But it was not till Bersa, at my bidding, had given them to understand that, as I was related to the British Consul at Constantinople, they would get into more serious trouble than they perhaps anticipated, that they gave in, sneaking away one after the other, till I was allowed to go on my way unmolested, without having relieved my purse of so much as one metelik.

The weather was now intensely hot, and during this journey I slept on the roofs of the khans, amongst the storks' nests, with nothing above me but star-strewn sky, and in the pale dawn it was wonderful to wake up, maybe to see the dark outline of a stork close by, standing on one leg beside his nest, or to hear the muffled, measured tread and clanging bells of a long line of heavily-laden camels passing along the dusty road below. I once counted one hundred and fifteen of these animals in one drove, to say nothing of the diminutive donkey at intervals, who leads each detachment, generally ridden by one of the drivers. We passed many of these caravans of camels, laden with grain and other produce, on their way from the interior to the coast, and sometimes it would be a long line of some thirty or forty bullock-waggons, frequently drawn by big patient buffaloes, who always looked hot and thirsty, and as if they were longing to be lying down in some stream or river-bed, as they so loved to do whenever they got the chance. The wheels of these waggons were apparently never oiled, so that as each one creaked on a different note, the discordant and almost deafening noise they produced is better imagined than heard, and I often knew when a troop of the clumsy vehicles was coming by these fearful sounds at some considerable distance off.

I soon found out that it was difficult to work the neighbourhood of Tokat: the mountains were high, and for the most part barren; there were very few of those lovely sunny glades and flower-strewn valleys which made the neighbourhood of Amasia so delightful. Also the country was by no means so safe as round that much favoured vicinity; indeed, for a long expedition I was obliged to take a zaptieh, which was however, I believe, quite a necessary evil. There was a lovely pine forest three or four hours' ride from where I was staying, through which wound the Old Sivas Road, but I never saw such apparently splendid collecting-ground in the month of July with so little to be got

there. It is true that I found here the only *Erebia* I ever saw in Asia Minor, but it was nothing but a fine form of *E. æthiops*,—I suppose var. *melusina*, which appeared to me to be almost typical. I had much hoped to come across *Chrysophanus thetis*, which does not occur at Amasia, but this is an insect which has always evaded me, and at Tokat it did so again. I never saw a sign of it. This place was at least a month behind Amasia, though the difference of altitude was insignificant, but I was told by my hostess (a German lady married to an Armenian) that strong winds blew here constantly throughout the summer, and this year they seemed to have had an unusual amount of rain during the month of June, so perhaps that in some measure accounted for my finding *Lycæna loëwii* and *L. damone* var. *carmon* still in perfect condition, whereas both these species had been practically over at Amasia before the middle of June. *L.* var. *menalcas* was only just beginning, and *L. hopfferi* did not appear at all.

At the end of a week my kind hostess had, I am sorry to say, been taken so seriously ill that I felt myself obliged to leave, so I returned to Amasia to await *Satyrus geyeri*. I got back in two days; this time without any adventures. The second day I travelled in company with a Turkish gentleman, who was travelling on a tour of inspection. He had many plans for the future respecting his native country, and was most sanguine that, in a year or two at most, the road from Sivas to Samsoun would be in such an improved condition, and with all the bridges in such a high state of preservation, that a diligence would be able to perform the journey thither in two days, instead of six or seven as at present. May his hopes be realized; but the Turkish Government is not encouraging to these progressive spirits, who must exist greatly to their own perpetual sorrow and constant mortification when born in Turkey.

I first caught *Satyrus geyeri*, July 25th, on the rock-strewn plateau on the top of the Lokman: here it soon became extremely abundant, and with Bersa's assistance I easily captured altogether from one hundred and fifty to two hundred specimens; for Bersa had become quite an expert in the use of the net, and collected admirably, also showing some considerable ability in learning to distinguish the different species. One can never be too thankful to have escaped being mixed up with anything of the nature of a fool!

As soon as August was in I could feel that the season was on the wane. The green flowery valleys were now dried up, and full of prickly grass-stalks and seeds; and the tired earth, no longer throbbing and palpitating with the supreme effort to reproduce, now lay parched and languid beneath the scorching rays of the August sun; "bad specimens" became all too common amongst the Lycænidæ, the *Satyrus*, even *geyeri*, were

getting more and more chipped and worn, and though the second brood of *Chrysophanus ochimus* was just beginning, I began to feel at last that I could not put up with living "à la Turca" any longer.

So I hired one yiley and one saddle-horse and started for the coast. This proved to be a capital arrangement, as when I got tired of the jog-trot of the horse I retired into the yiley for an hour or two; and when the jolting of the yiley became unbearable, Bersa dismounted and I rode the horse again.

Towards the end of August and beginning of September I spent another fortnight at Broussa, hoping to make the ascent of Mount Olympus, which I attempted, but the weather was so hopelessly bad that day, that after reaching the second plateau I was obliged to retrace my steps, having seen nothing but dense clouds of vapour, and having got nothing except being drenched to the skin.

And thus ended my summer in Asia Minor, a country of vast possibilities, not only for the collector of butterflies, but in many other ways as well, too numerous to mention.

(To be continued.)

NOTES ON THE OVA AND EARLY STAGE OF THE LARVA OF *ACIDALIA EMUTARIA*.

BY ALFRED SICH, F.E.S.

In the Isle of Purbeck, on August 28th, 1901, I took a female *Acidalia emutaria* on or close to a plant of *Galium palustre*. During the next two days she laid several eggs, mostly in small groups, on the sides of the chip-box in which she was confined. In shape the ovum may be likened to an elongated barrel, standing upright. The long (micropylar) axis measures 0.9 mm.; the horizontal axes being about 0.4 mm., both being about equal. There are about two dozen ribs running up the walls of the egg, but they decrease, by concurrence, to about one dozen at the micropylar area. The interspaces, about double the width of the ribs, are broken up into oblong cells. The micropyle consists of about seven smaller and rounder cells lying below the points of the ribs, which terminate mostly just before reaching the micropylar area. In colour the ova were pale ochreous for the first twenty-four hours; afterwards, to the unaided eye, they assumed a pink tinge. By aid of a strong lens this tint was seen to be due to the appearance of numerous crimson rings and blotches.

On September 10th I noticed the ova were lead-coloured, and the next day two larvæ hatched. The bulk came out on the

12th, and the remainder on the 13th. The larvæ were very long and slender, and must have rested in the egg coiled like a wire-spring. I had no opportunity of making a description of them, but noticed the very curious thick club-shaped hairs with which many of the tubercles were furnished. Having no marsh-bedstraw (*Galium palustre*) at hand, I fed the larvæ on knotgrass. This, strange to say, they preferred quite fresh, in contrast to most other *Acidalia* larvæ, which seem to have a liking for rather dry food. I suggest that one of the natural food-plants of this species is the above mentioned *Galium*. None of this brood were reared, as I believe it was kept in too dry a condition.

Corney House, Chiswick, Middlesex: March 5th, 1904.

ON SOME NEW GENERA AND SPECIES OF HYMENOPTERA.

BY P. CAMERON.

CHALCIDIDÆ.

OXYCORYHPUS, gen. nov.

Antennæ longish, the scape long; on the lower (almost) half it becomes gradually dilated, the end of the dilated part abrupt, forming a large sharply pointed tooth; the apical part becomes gradually, but not much, dilated; the pedicel longer than broad; the third joint distinctly longer than the fourth. Malar space as long as the eyes. Frontal depression narrow and widely distant from the ocelli. Temples very narrow, almost obsolete on the outer side. Mandibles bidentate. Scutellum large, as long as the mesonotum, narrowed towards the apex, which is narrowed, slightly incised in the centre, and projecting over the metanotum, which is irregularly reticulated, and has two stout keels in the centre, forming a large area, extending from the base to the apex. Abdomen short, the basal segment nearly as long as the other segments united, sessile. Hind femora swollen, indistinctly toothed. Submarginal vein long and narrow; the subcostal vein long and narrow; the costa and radius short, thick, and forming almost one vein. The prothorax is nearly as long as the mesonotum; the sides of the metapleuræ near the apex project; the base of the middle femora is broadly and much narrowed, compared with the apex, which has spurs. The antennæ are eleven-jointed; the last joint is as long as the preceding. On the base of the hinder femora, on the under side, is a broad rounded projection. The apical two joints of the antennæ are closely united; the pedicel is bare, narrowed.

The peculiar structure of the antennal scape makes the male of this genus easily recognized. Comes near to *Stomatoceras*, Kirby.

OXYCORYHPUS PILOSELLUS, sp. nov.

Black, densely covered with silvery pubescence; the hinder femora, the greater part of the four anterior and their tibiæ, and the middle tarsi rufous; the wings hyaline, the nervures fuscous, blackish at the apex. ♂. Length, $2\frac{1}{2}$ mm.

Hab. Deesa (*Nurse*).

Antennæ nearly as long as the head and thorax united, the scape bare and shining, the flagellum opaque. Vertex and sides of front closely and distinctly punctured; the frontal depression smooth; the vertex only sparsely pilose; the rest of the head covered with long silvery hair, which hides the surface. Pro-, mesonotum, and scutellum closely and rather strongly punctured, the scutellum more strongly than the mesonotum. Metanotum irregularly reticulated; the base with a central area of equal width, about three times longer than broad. Pleuræ rugose; the apex of the meso- closely and distinctly striated. The second dorsal segment of the abdomen at the sides and the rest all over rather strongly punctured. Legs thickly covered with white pubescence.

CÆLOCHALCIS, gen. nov.

Antennæ situated half-way between the lower part of the eyes and the mouth. Front deeply and widely excavated to the front ocellus, the sides of the depression sharply keeled, and to a less extent above. Lower outer orbits sharply margined. Antennal scape short, not reaching to the ocelli; of equal width throughout; the pedicle not longer than broad, pilose; the other joints long; the last longer than the penultimate, which is shorter than the preceding. Parapsidal furrows distinct, curved. Scutellum obtusely bidentate at the apex. Metanotum reticulated. Posterior femora not greatly dilated, not so thick as the coxæ; below without teeth; the middle coxæ spined. Abdomen sessile. Subcostal vein long, reaching close to the middle of the wing; the costal short, about four times longer than wide, the radius very short, broader than long. Mandibles shortly bidentate. The abdomen is shorter than the thorax; its basal segment is as long as the other segments united; the sides of the median segment are not spined or toothed; in its centre are two stout longitudinal keels; the hinder femora are stoutly bordered on the apical half beneath. The antennæ are shorter than the body; the scape of the antennæ is short, and does not reach to the ocelli; the pedicle is bare, broader than long; the first joint of the flagellum is slightly longer than the second.

This species, as regards the position of the antennæ, stands between *Halticella* and *Chalcis*, it being placed higher up than in the former, but not so high as in the latter. There are ten joints in the antennæ; the last is fully one-half longer than the ninth. It may be composed of more than one joint, but I cannot see any suture.

CÆLOCHALCIS CARINIFRONS, sp. nov.

Black, the mesonotum and scutellum covered with pale golden pubescence; the mandibles and palpi, the apex of the hinder coxæ,

the femora and tibiæ, red; the four anterior legs black, the apex of the femora, the base and apex of the tibiæ, and the tarsi rufo-testaceous; the wings hyaline, the nervures black; the tegulæ red. ♂. Length, 4 mm.

Hab. Sikkim.

The antennal tubercles and the scape smooth and shining; the flagellum opaque. Face roundly convex, smooth and shining; the malar space opaque, closely punctured, margined in front and behind. Centre of the frontal depression closely, transversely striated. Pro-, mesonotum, and scutellum closely, uniformly punctured. Metanotum irregularly reticulated and striated on the sides of the central area. The depressed base of the mesopleuræ striated; the rest irregularly, coarsely rugose; the metapleuræ irregularly reticulated. Third and following segments of the abdomen thickly covered with white pubescence.

(To be continued.)

NEW CULICIDÆ FROM THE FEDERATED MALAY STATES.

By FRED. V. THEOBALD, M.A.

(Continued from p. 78.)

DANIELSIA ALBOTÆNIATA, Leicester, n. sp.

“Thorax with the anterior half scaled shiny silvery white, remainder brown, a lateral brown spot on each side of the silvery anterior area. Abdomen brown, with basal white bands. Hind legs broadly pale-banded basally; fore and mid with indistinct pale bands to metatarsi and first tarsals.

“♀. Head black, with frosty tomentum; there is a bare line down the centre, with a few narrow-curved scales on either side of it; outside this behind, and in front between the eyes, the head is thickly clad with broad spatulate scales slightly brown-tinged; there is an oblong spot, parallel with the orbital margin, of broad black scales, laterally white flat scales, then another small spot of black scales; behind these are numerous upright forked scales, mostly black, with a few light brown ones. On the apex, between the eyes on either side, three bristles, light brown at the base, black at the apex, project forwards, more laterally there are three other bristles and then two. Antennæ with the basal joint muddy with a dusky hue, clad with white scales on its inner surface; second joint muddy at its base, black at the apex, clad with longish black scales; remaining joints black, pale at the nodes, verticillate hairs black; silky white hairs on the internodes. Palpi four-jointed; the two first joints round and small; the third joint somewhat swollen; the fourth longer than the third; fifth very minute and nipple-like, thickly covered with black scales with a few long black bristles. Proboscis covered with black scales, except for one-fourth its length in the middle, clad with creamy scales.

Clypeus rounded and black. Prothoracic lobes prominent, upper surface covered with broad white scales. Mesonotum dark brown; in front of the wing bases the mesonotum is entirely clad with long silky white scales, except for a small notch of bronzy scales on either side; the white scaling has much the appearance of an inverted Y with a very thick stem, and there are white scales on the lateral margin; at the root of the scutellum is a bare patch. On either side there are a few white narrow scales. The rest of the mesonotum is clad with bronzy narrow-curved scales. There are a row of bristles along the anterior margin of the mesonotum and over the roots of the wings. Scutellum yellowish-brown; central lobe clad with white and black narrow-curved scales; lateral lobes with white-curved scales. Scutellum bristles ochraceous. Metanotum dark brown. Wings of *Culex* type, clad with dark brown scales; the median scales rather long and narrow, lateral scales long and narrow with square ends. Fork-cells moderately long; first submarginal longer but scarcely narrower than second posterior, its base nearer base of wing; the stem about two-thirds the length of the cell. Supernumerary and mid cross-veins meet at an angle. Posterior cross-vein about three times its own length from mid cross-vein; fringe scales black. Pleuræ with seven patches of silvery white broad scales, arranged in two rows of three and one patch above the middle coxa. Metanotum dark amber brown. Legs with the coxæ creamy, fore and mid legs pale yellowish covered with black spatulate scales, except the under surface of the femora which shows a line of white scales, the under side of the base of the tibia, the apex of the tibia, which is ringed with creamy yellow scales in the fore leg, and the base of the metatarsus, and the first tarsal joint which in both legs show a white band; hind femora covered with black scales; a ring of white scales, about one-third of the total length, extends round the whole circumference save for a narrow line on the dorsum; on the under surface of the apex some creamy yellow scale and a minute ring of the same placed just before the apex. Knee spot and under surface of tibia white scaled; a broad white band at the base of the metatarsus and first three tarsal joints. Fore and mid ungues equal and uniserrate. There are some pale golden bristles on all the tibiae. Abdomen covered with black scales with basal white bands which expand laterally into broad spots, especially large on the seventh and eighth segments. Segments beneath brown scaled, basally white banded.

“♂. Head black, frosted, clad almost entirely with broad white flat scales parted in the centre over the occiput, leaving a bare line of the black head showing broadest in front; laterally there is an oblong patch of black scales which may almost disappear if the head shrinks much in drying; more laterally still a round patch of black scales. Between the edge of the first patch and the orbital margin is a row of white narrow-curved scales; there are other narrow-curved scales on either side of the middle line just above the occipital foramen and a few on the vertex between the eyes. There are a moderate number of upright forked scales behind and a few inserted among the black scales of the most median of the two black patches; they are dark brown in colour; there are five brown bristles on either side projecting forwards; in some specimens the median bristles are pale

golden and white, and inwards more laterally there are three to five others. Antennæ 15-jointed; the two last joints long and thin; basal joint dusky dark brown in the depression; a few narrow-white scales on its internal face; remaining joints banded dark brown and white; the plumes dark silky brown tipped with white, except on segments seven to ten, where the plumes are pale yellowish brown. Proboscis black scaled. Palpi scarcely longer than the proboscis, black scaled, the two last joints clad with pale glistening white hairs; the brown lateral spots on the thorax smaller than the female. Wings scaly, less dense lateral scales being very few in number. Markings on the legs are similar to the female. Fore and mid ungues unequal, larger tooth biserrate. Dorsum of the eighth segment of the abdomen covered with pearly white scales, pale golden hairs dense laterally on all the segments."—(Leicester). Length 4·5 mm.

Time of capture.—April.

Habitat.—Kuala Lumpur, in bamboo jungle, Chang Road, five and three-quarter miles from town. Bred from larvæ.

Observations.—This species resembles *Stegomyia nivea*, Ludlow, but can be at once told by the leg banding and by the squamose characters as not being a *Stegomyia*. The female specimen has three border-bristles to the mid lobe of the scutellum, a character chiefly noticeable in *Ædinæ*.—F. V. T.

(To be continued.)

NOTES AND OBSERVATIONS.

Nymphs of *CORDULEGASTER ANNULATUS*.—The Rev. J. E. Tarbat has sent me an empty nymph-case of the dragonfly *Cordulegaster annulatus*, of which he found a number last summer about one hundred feet above Lake Derwentwater. They were by the side of the road next to the fell, which rose steeply. The nymph-cases were on the earth at the bottom of the hill—not on rushes or grass. The nymphs must have travelled some distance before disclosing the imago, for the nearest water was a small pond some one hundred yards away, on the other side of the road.—W. J. LUCAS; Kingston-on-Thames.

BUTTERFLIES OF FRANCE.—I should be much obliged if collectors who have visited districts in France other than Alps (Savoy, Basses, and Maritimes), Pyrenees, and Riviera, would send me lists of butterflies (only), and dates if possible; or refer me to local lists, other than British. Any such information will be most acceptable, and I will willingly pay postage, and take care of and return any books or records submitted to me.—H. ROWLAND-BROWN; Oxhey Grove, Harrow Weald.

EPINEPHELE IDA var. ALBOMARGINATA, Fallou.—Mr. Verity's reference (*ante*, p. 56) to the aberrant example of *E. ida*, taken at Roquefavour in July, 1878, and described and figured by M. Fallou (*Ann. Soc. Ent. Fr.* 1883, p. 21, pl. i. figs. 2, *a, b*) reminds one of the parallel aberration

of *E. tithonus* taken by Mr. Spindler in Sussex in 1897 (Entom. xxx. 253, fig.).

NOTE ON *ZEUZERA EUCALYPTI*.—A little while since, on going into my study, I was surprised to see, hanging down from one end of the table, what appeared at first sight to be a large spider's web, but on closer examination proved to be a vast number of minute larvæ of this moth suspended by threads, which from their intermingling had formed a web. I was at a loss for some time to account for the strange occurrence, but on reflection remembered that there was a female moth on a setting-board in the drying-cage standing on the table, which had laid a vast number of eggs before becoming quiescent. The colour of the larvæ was dark fawn, head black, with a few hairs projecting along the sides, and a greater number on the anal segment. Length, 2 mm. They were extremely active, both when making progress on a level surface, and when suspended over the edge of the table and letting themselves down by threads. The larvæ live for some three years or more in the trunks of the various species of *Acacia* (wattles), and attain to a length of from four to six inches, and as thick as one's thumb; they are then of a rich cream-colour flushed with pink. By many bushmen they are considered a delicacy when roasted over a fire. It is unfortunate that *eucalypti* was chosen as the specific name, as the larvæ never tunnel in any species of *Eucalyptus*. Their tunnels commence some distance up the trunk of a tree, and are pushed down towards the roots. Sometimes they extend below the surface of the ground. When a larva is ready to pupate, a large cocoon covered with sawdust-like fragments of wood is formed. When ready to emerge, the pupa works itself towards the opening of the tunnel by means of its strong deflected spines, then pushes itself half out of the burrow. The perfect insect then emerges, generally during the night. The female perhaps remains on the tree-trunk until a male comes along, when copulation takes place. The minute yellowish-white eggs are thrust, by means of the female's long rigid ovipositor, into nooks and crannies in the bark all over the tree. The damage done to the timber of the various species of *Acacia* is something enormous. It is hardly possible to find a tree that has outgrown the sapling stage without one or more—most frequently more—tunnels formed by the larvæ of this moth. The scarcity of natural enemies accounts for the ravages of these larvæ; there are no woodpeckers to lessen their numbers; parasitic flies and natural causes are practically the only enemies they have to contend against. Each female lays a prodigious number of eggs. — FRANK M. LITTLER; Launceston, Tasmania.

URTICATING EFFECTS OF LARVAL HAIRS.—I have read with much interest the notes that have appeared from time to time on this subject, but have never until quite recently had any ill-effects from the very many cocoons of all species of moths that I have handled. A few days since I had occasion to move some two or three dozen cocoons of the moth *Dacala acuta* (one of the Liparidæ) from one box to another. Not anticipating any ill-effects, I handled them as freely as is my usual custom. Shortly after I had finished my forearms began to smart and tingle; on rolling back my sleeves I found them, from

wrists to elbows, covered with small hard white lumps about $\frac{1}{4}$ in. in diameter, and highly inflamed all round. In a short while the pain was intense; eau de cologne was applied, but with no effect; vinegar was then tried, with the result that in a few hours the pain had given place to a feeling of irritation. Next day the lumps had subsided, and appeared as angry red spots beneath the skin. It was some days before they disappeared altogether. The only place I was affected on the hands was between the fingers; it is a great wonder to me that my face and neck escaped. As is perhaps well known, the larvæ of *D. acuta* are very hairy, the greater part of which hair finds its way to the surface of the cocoon; it is then brown in colour, and broken quite small, and at the slightest provocation flies like dust. Sometimes, after handling the cocoons of this moth, I have had my fingers covered with the short barb-like hairs sticking into the skin.—FRANK M. LITTLER; Launceston, Tasmania.

TWO QUESTIONS OF GENERIC HOMONYMY.—As the working out of exact dates of publication, on which hinges so much of our stability of nomenclature, is a somewhat laborious business, I hold it a duty to publish such results as one is able to reach. Two of the generic names brought forward in Heinemann's *Schmett. Deutsch.*, Band i., 1859, viz. *Luceria* (p. 442) and *Sora* (p. 459), had the misfortune to collide with the same names in Walker (*List, &c.*, xix. 853, and *Ann. Mag. Nat. Hist.* (3) iii. 259), both dating from the same year. *Sora*, by the way, is wrongly attributed to "White" in Marschall's 'Nomenclator.' I find that Heinemann's *Luceria* will be able to stand, which is fortunate, as it has been adopted by Staudinger and Rebel (*Catalog*, p. 190); but *Sora* will sink as a homonym. The dates, as nearly as I can ascertain, are as follows: *Sora*, Walk., April, 1859; *Sora* and *Luceria*, Heinem., Oct., 1859 (advertised in Brockhaus' *Monthly Catalogue* for Nov., 1859, p. 182); *Luceria*, Walk., after Nov. 12th, 1859 (date of preface).—LOUIS B. PROUT; 246, Richmond Road, N.E., Feb. 17th, 1904.

LYCÆNA ICARUS VAR. MELANOTOXA.—I have a small specimen of *L. icarus* which corresponds almost exactly with that referred to by Mr. Verity (*ante*, p. 58, pl. iv., fig. 14); also a similar aberration, but with the line crescent-shaped instead of a bar. These examples are from the Isle of Man.—T. H. SHEPHERD; 15, Hope View, Carr Lane, Shipley.

[The form of *L. icarus* referred to by Mr. Verity as var. *melantoxa*, Pincit., is pretty generally known to lepidopterists in this country. The union of the lower basal spot with the last of the marginal series, on under side of the fore wing, is a form of aberration not confined to *L. icarus*, but is found to occur in its British congeners *L. corydon* and *L. bellargus*; in the former of these two species perhaps more especially. The last spot of the marginal series is geminate, and in the early stages of the development of the aberration it is the upper portion of this double spot that generally becomes elongated in the direction of the lower basal spot. The complete junction of the two spots usually assumes the arched form (ab. *arcua*, Fav.), sometimes termed a "horseshoe-mark" by collectors, but it may be bar-like, as in *melantoxa*.—ED.]

THE GENERIC NAME *SYNTOMIS*, Ochs., a SYNONYM.—In vol. i. of his 'Catalogue of the Lepidoptera Phalænæ,' p. 59, Sir George Hampson cites *Syntomis*, Ochs. (type *phegea*) and *Amata*, Fab. (type *passalis*) as generic synonyms, giving the date of both as 1808; and he naturally gives preference to the more generally employed name. But, unfortunately, Zeller's citation of the date 1808 for vol. vi. of Illiger's 'Magazin,' in which Fabricius's *Amata* and other genera are published, is as indefensible as it is inexplicable; the title-page is dated 1807; this date is accepted by Zeller's collaborators in Agassiz's 'Nomenclator,' and even Zeller himself is not consistent, for he gives 1807 in at least one case (*Castnia*). On investigation, I find definite proof that the names in question were really published in 1807, for they are quite freely cited by an anonymous reviewer of Hübner's 'Sammlung Exotischer Schmetterlinge' in the Allg. Lit. Zeit. for Dec. 19th, 1807 (1807, Band ii., No. 303, pp. 1177-1181). *Amata*, Fab., is therefore certainly prior to *Syntomis*, Ochs.—LOUIS B. PROUT; 246, Richmond Road, N.E., Feb. 17th, 1904.

MIGRATORY FLIGHT OF *CRENIS BOISDUVALI*, Wall.—On Feb. 10th we were surprised by the above flying over the district of Verulam in such numbers that I shall not perhaps be exaggerating when I say millions passed over within an hour. The direction of the flight seemed to me at the time to be from S.W. to N.E. There was nothing unusual at the time as regards the temperature, unless it was a little hotter for the midday; but old residents of this place tell me they have on other occasions seen a white butterfly (I believe them to be referring to *Pieris alba*, Wall.) swarm around the flats for hours, the fowls, &c., following them up for food. *C. boisduvali*, though never so common as *P. alba*, is commonly found down the South Coast, where it feeds upon a shrub named in Medley-Wood's 'Natal Plants,' *Excacaria reticulata*, and known to the Kaffirs as "Hlya-im-punzi"; but there is no accounting for these flies putting in their periodical appearances in such numbers as mentioned. The larva is not gregarious, and can never be taken in dozens when collecting. Three years ago I made reference in this magazine (Entom. xxxiv. 98) to a butterfly migration when the regiment was stationed in Northern Natal.—H. W. BELL-MARLEY; Durban, Natal, Feb. 12th, 1904.

ABERRATIONS OF EUROPEAN BUTTERFLIES.—In the March number of the 'Entomologist,' Mr. Verity gives an account of several interesting varieties of butterflies from Tuscany, and inquires whether anyone else has met with similar forms. On p. 36 of my 'Butterflies of Switzerland,' &c., I have noted that *Polyommatus alexis* ab. *arcua* is the usual form around St. Triphon, and not uncommon elsewhere at the Vaudois end of the Rhone Valley. This form is identical with var. *melanotoxa*, Pincitore, as given in Mr. Verity's illustration. I described the form in the Ent. Rec. vol. xiv. p. 58, and inquired whether it was identical with *melanotoxa*. Not having received any answer to this query, I used the name current in the Rhone Valley, viz. *arcua*, Favre; this must evidently fall before Pincitore's name, which dates from 1879, Favre's name not having appeared in print (though previously current in conversation) until my mention of it in the Ent. Rec. as above. Colonel Agassiz, of Lausanne, has specimens of *Colias edusa* of much the same

size as those illustrated by Mr. Verity. I have compared them to-day. They are early spring specimens from the neighbourhood of Florence. With regard to the varieties of *Erebia neoridas*, is it really certain that the insects illustrated belong to that species at all? They lack the characteristic shape of the fore wings, which are usually very truncated. Another peculiarity of *E. neoridas*, even more universal, is that the inner edge of the rust-coloured band, upper side fore wing, is almost as straight and firm as if marked off with a ruler, and, although in the two upper side illustrations the band is broken off before its normal termination, yet there is more than enough remaining to show the strongly curved form of the inner edge of the band. If the illustrations are as good as they appear to be, I should have had no hesitation in referring all three to *Erebia euryale*. I have specimens from the Dent du Midi above Champéry, taken last August, which exactly correspond with the under side illustration, except that the light band is yellow instead of white. The deep tooth on the inner side of the band is very characteristic of *E. euryale*: that in *E. neoridas* is much slighter and less conspicuous. A specimen of *Chrysophanus phleas* ab. *schmidtii* was taken by Mr. Sloper at Martigny in August, 1901 (see 'Butterflies of Switzerland,' &c., p. 18).—GEORGE WHEELER; Montreux, March 17th.

RECENT BOOKS ON COCCIDÆ, OR SCALE INSECTS.—Those who are interested in this very important, but till lately much neglected, family of insects, may be glad to know that the study has been greatly facilitated during the last year or two, and is now receiving attention from many good practical observers both at home and abroad. Three large books on the subject may specially be mentioned:—

1. Robert Newstead, 'Monograph of the British Coccidæ.' Two vols. (Ray Society), 1901 and 1903. (Completed.)
2. Mrs. Maria E. Fernald, A.M., "A Catalogue of the Coccidæ of the World" (Special Bulletin, Hatch Experiment Station of the Massachusetts Agricultural College, Bulletin No. 88), 1903. (Completed.)
3. E. Ernest Green, 'The Coccidæ of Ceylon.' Parts 1-3, 1896, 1899, 1904. (In progress.)—W. F. KIRBY.

CAPTURES AND FIELD REPORTS.

MORIMUS FUNEREUS IN ENGLAND.—A specimen of the longicorn *Morimus funereus* was taken either in 1899 or 1900 in the East India Docks, I believe for the first time in England. For this reason it may perhaps be well to record it.—E. C. ANSORGE; 12, Addison Road, Bedford Park, W., March 17th, 1904.

NEUROPTERA FROM CHESHIRE.—The following species of Neuroptera were taken by Mr. R. South in 1895:—*Hemerobius subnebulosus*, Macclesfield. *Chrysopa flava*, Macclesfield. *Phryganea grandis*, *P. striata*, Macclesfield. *Limnophilus griseus*, *L. ignavus*, *L. lunatus*, *L. centralis*, Langley. *Asynarchus canosus*, Langley. *Micropterna lateralis*, Macclesfield. *Stenophylax stellatus*, Macclesfield. *Halesus radiatus*, Macclesfield. *Anabolia nervosa*, Macclesfield. *Plectrocnemia*

conspersa, Macclesfield. I should say that several of these were identified by Mr. McLachlan.—W. J. LUCAS.

LEUCOPHASIA SINAPIS, ab. — At Grange, last June, I captured an example of *L. sinapis* in which the black apical spot is absent; thus the fore wings are pure white. — T. H. SHEPHERD; 15, Hope View, Carr Lane, Shipley.

[The specimen referred to above seems to be an example of *ab. erysimi*. Dup., which is a form of the female sex only.—ED.]

UNUSUAL FIND OF SPHINGID LARVÆ. — I think that January 18th, 1904, will long remain a record day so far as concerns finding Sphingid larvæ. The day was dull and a fine rain was falling, and I was out from 10 a.m. till 1.30 p.m., and from 3.15 p.m. till 6 p.m. During that time I found, entirely by searching, no less than fifty-three larvæ and thirteen different species, made up as follows:—*Andriasia mutata*, very rare, one; *Lophostethus dumolinii*, very rare, two; *Macroglossa trochilus*, three; *Cephonodes hylas*, nine; *Aellopos hirundo* (new; Dr. K. Jordan, of Tring, will describe), five; *Teunora marginata*, ten; *T. murina* (new; Dr. K. Jordan will describe), two; *Polyptychus grayi*, five; *Cherocampa eson*, two; *Nephele accentifera*, five; *Euchloron megera*, rare, six; *Phlegethontius fulvinitata*, rare, two; *Manduca atropos*, one. The imago of *A. hirundo* has not been seen on the wing here since January, 1901, and is always very rare; larvæ were discovered by following up a female that was depositing ova on Saturday, 9th inst. *Teunora murina* is another very rare hawk-moth, and, although I found two or three larvæ last year, I did not preserve the same, as I wished to rear the moth. The *M. atropos* and *C. eson* larvæ I only took to make up two more species; both are very common, and I could have taken numbers more had I chosen to search for them. I may mention that, besides the hawk-caterpillars mentioned above, I took about fifty larvæ of other families of moths, but nothing out of the common, except two *Acripia poliotis*, a new and rare species.—GEO. F. LEIGH; Durban, Natal.

THREE WEEKS IN THE NEW FOREST, 1903.—My friend and co-collector Mr. H. G. Toye and myself decided to try the New Forest last year; being the first time we had ventured in that part of the country, we were greatly delighted with the scenery, and the insects to be taken. Considering the very bad season, I think we may congratulate ourselves on having done fairly well. A professional collector told us that it was the worst season for insects he could remember, a statement fully confirmed by several other collectors whom we met.

We arrived at Brockenhurst on June 26th. Amongst the captures during the daytime I may mention *Argynnis paphia*, in very good condition and in great numbers; the males were first seen on the 29th, and the females on July 7th: of the aberration *valesina* we took some twelve specimens and saw several others, mostly in very fair condition. We also took *A. adippe*, *Limenitis sibylla* (in great numbers and in very good condition during the first week of our stay), *A. selene* (one with bleached under wing), *Satyrus semele*, *Epinephele hyperanthus*, *E. tithonus*, *Thecla quercus* (one male on July 12th), *Pararge egeria* (poor), *Lycana ægon*, *Hesperia sylvanus*, *H. thaumas (linea)*, and a number of

larvæ of *Gonepteryx rhamni* from buckthorn (*Rhamnus frangula*), some young and some nearly full-grown, which pupated between July 9th and 18th, the first to emerge being a male on the 28th of the same month, males and females continuing to emerge until August 3rd. We also took larvæ of *Euchelia jacobæ* feeding on ragwort (*Senecio vulgaris*), together with several male and female examples of the perfect insect; *Gnophria rubricollis*, *Eucosmia undulata*, and one *Boarmia glabraria* on July 13th; I also obtained two larvæ of this local insect feeding on lichen on oak trees on July 4th, which pupated on the 23rd and 27th; the imagines emerged on August 5th and 8th respectively. On some of the moors I took fine series of *Euthemonia russula* (both sexes), *Fidonia atomaria*, *Lasiocampa quercus* (male), *Macrothylacia rubi* (male), *Anarta myrtili*, *Pseudoterpna cytisaria*, *Lithosia mesomella*, *Melanippe rivata*, and *Tephrosia extersaria*.

Sugaring was the worst I have known for years; though we sugared religiously every night, our take was very small, including *Leucania turca*, *Moma orion*, *Thyatira derasa*, *T. batis*, *Aplecta nebulosa*, *Euplexia lucipara*, *Dipterygia pinastri*, *Xylophasia hepatica*, *Caradrina morpheus*; we expected *Catocala sponsa* and *C. promissa*, but were disappointed. At dusk we were fairly successful—more in quantity, though, than in quality; *Melanthia albicillata*, *Cidaria fulvata*, *Boarmia roboraria*, *B. consortaria*, *Lithosia mesomella*, *Pseudoterpna cytisaria*, *Metrocampa margaritaria*, *Larentia pectinitaria*, *Aspilates strigularia*, *Ellopija fasciaria*, *Cabera pusaria*, *Ephyra trilinearia*, and *Hemithea thymiararia* were amongst our captures in this line.

We tried light, both with and without a sheet, also acetylene gas, but the result was far from satisfactory. By these means we took *Pericallia syringaria*, *Plusia chrysitis*, *Agrotis porphyrea*, *Notodonta camelina*, *Urapteryx sambucaria*, *Boarmia roboraria*, *Macaria alternata* (one), and *Halia raularia*. I also obtained from an oak tree a full-grown larva of *Liparis monacha*, which pupated on the 16th, and emerged a fine female on the 28th of July.

On June 30th we went to Ringwood, in the hope of taking *Eurydia cribrum*, but, though we tramped the heather there all day, we did not see a single specimen; possibly we were rather late for this insect. The only insect taken worthy of note was a good series of *Bupalus piniaria*, including both sexes, flying round pine trees. Having heard that *Gnophos obscurata* was being taken, and wishing for a series ourselves, I broached the matter to several professional collectors, but found this class of collector very shy on such subjects, and could get no information whatsoever as to the spot to find this insect. I was afterwards told by a gamekeeper of the Forest of a spot where he used to take the species twenty years previously. We found this spot, and by rattling with a stick in the rabbit-holes, and by raking about under ridges of the ground, we disturbed them from their hiding-places, from which they flew out by dozens, so that after a very short time we had as many as we could possibly wish for, all being of the dark form. I also took *Angerona prunaria* and *Pachycnemia hippocastanaria*. I may mention that during the three weeks of our stay at Brockenhurst we only had one really rainy day.—LAWRENCE S. HODSON; "Maisonnette," Palmer's Green, N.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*February 3rd, 1904.*—Professor E. B. Poulton, M.A., D.Sc., F.R.S., President, in the chair.—The President announced that he had nominated Dr. Thomas Algernon Chapman, M.D., F.Z.S.; Dr. Frederick Augustus Dixey, M.A., M.D.; and the Rev. Francis David Morice, M.A., as Vice-Presidents for the Session 1904-1905.—Mr. A. J. Chitty exhibited two specimens of *Ptinus tectus*, Boisd., taken by him in a granary in Holborn in the winter of 1892-93; also a complete series of the red Apions to compare with *A. sanguineum* from the late Frederick Smith's collection.—Mr. O. E. Janson exhibited specimens of *Papilio weiskei*, Ribbe, and *Troides meridionalis*, Rothschild, recently taken by Mr. A. S. Meek near the Aroa River in the interior of British New Guinea.—Mr. E. C. Bedwell exhibited the following species of Coleoptera taken by him in North Wales (on Snowdon) in the first week of August, 1903:—A fine series of *Chrysomela cerealis*, L., a pair of them being of the curious dull form, *Anthophagus alpinus*, Payk., *Acidota crenata*, F., *Arpedium brachypterum*, Grav., and *Quedius longicornis*, Kr., the latter taken close to the Llanberis Falls. There appears to be no previous record of this species occurring in Wales.—The Rev. F. D. Morice exhibited a series of lantern slides illustrating the structure of concealed ventral segments in males of the Hymenopterous genus *Colletes*. Mr. W. J. Kaye exhibited a Mullerian association of black and transparent species from the Potara Road, British Guiana, consisting of *Ithomiinae*: *Ithomia zarepha*, *Ithomia florula*, *Heterosais sylphis*, and *Napeogenes* n. sp.; *Erycinidae*: *Stalactis phædusa*, and *Stalactis erelina*; *Hypsidæ*: *Lauron partita*; *Geometridæ*, *Hyrmina*, n. sp. The whole of the specimens had been caught on one single forest-road, some 170 miles inland. Mr. Kaye called particular attention to the new species of *Napeogenes*, and said it was a most remarkable divergence from the usual coloration of the genus *Napeogenes* as a whole, where brown-yellow and black were the prevailing colours, while the present insect was black and transparent only, and conformed in a wonderful way with many true members of the genus *Ithomia*.—The President exhibited a male and female of *Papilio dardanus*, captured *in coitu* by Mr. George F. Leigh at Durban in 1902, and examples of the offspring reared from the eggs laid by the female. The latter was of the *cenea* form, as were the great majority of the female offspring; three, however, were of the black and white *hippocoon* form. More recently, in 1903, Mr. Leigh had captured a female of the rare *trophonius* form, and had bred from the seven eggs laid by it five butterflies, of which the two females were both of the commonest *cenea* form. The female *trophonius* was also exhibited, together with the five offspring.—Capt. C. E. Williams read a paper upon "The Life-history and Habits of *Gongylus gongyloides*, a Mantis of the tribe Erupasides, and a Floral Simulator," and exhibited a living female in the nymph stage, together with coloured drawings, photographs, and lantern-slides, showing both the adult and immature insect in various positions. The chief features of interest in the exhibitions lay in the peculiar modifications of shape and colouring by which this Mantis conceals itself and attacks the Lepidoptera and Diptera which constitute its prey.

The female exhibited was the sole survivor of twenty-one brought to England in June, 1903, from Rangoon. It was hatched during January, and had passed through eleven ecdyses, but failed to effect the last change to the imago stage in October, 1903.—Mr. G. A. J. Rothney communicated "Descriptions of New Species of *Cryptona* from the Khasia Hills, Assam, and a New Species of *Bembex*," by Peter Cameron.—Mr. Malcolm Burr contributed "Systematic Observations upon the *Dermatoptera*."—Dr. T. A. Chapman read a paper "On a New Species of *Heterogynis*," and exhibited specimens of this and other allied species.—Mr. Roland Trimén, F.R.S., read a paper "On some New or Imperfectly-known Forms of South African Butterflies," and exhibited, among other specimens illustrating his remarks, typical and aberrational forms of *Acraea rahira*, *Zeritis felthami* (a new species), *Z. molome*, Trim., and *Z. damarensis*, Trim.; typical *Colias electra*, L., from Natal, and a remarkable melanic aberration of the same species; also *Kedestas tucusa*, a very rare and unfigured Hesperiid, male and female, from the neighbourhood of Johannesburg.

March 2nd.—The President in the chair.—Mr. L. C. H. Young, of 1, Rampart Row, Bombay, was elected a Fellow of the Society.—Commander J. J. Walker, R.N., exhibited *Hecatesia fenestrata*, Bdv., an interesting Australian moth, the male possessed of a very marked power of stridulation, the stridulating organ being on the longitudinal transparent bar on fore wing, known in N. S. Wales as the "whistling moth;" *Dodonidia helmsi*, Butler, a rare Satyrid butterfly from New Zealand; and a gigantic species of the Thysanurid genus *Japyx*, found at Picton, New Zealand.—Mr. C. O. Waterhouse exhibited and commented upon a diagram of the mouth of one of the Mallophaga, *Læmbothrium titan*.—Mr. G. C. Champion exhibited specimens of two species of *Dorcadion* found during his recent journey in Spain—*D. almarzense*, Esc.?, from the summit of Moncayo, and *D. neilense*, Esc., from the Sierra de Logroño. He also exhibited numerous examples of *Pyropsyche moncaunella*, Chapm., found by Dr. Chapman and himself on Moncayo.—Mr. A. J. Chitty, Mr. F. B. Jennings, and other Fellows, exhibited specimens of the genus *Triopiphorus*, which seemed to show that *T. tomentosus* and *T. obtusus* were in reality one and the same species.—The President exhibited a specimen of a beetle, *Glenea pulchella* (Thoms.), one of the three individuals of the species taken on June 25th of last year, near Barwood, in the Nilgiris, by Mr. Leslie Andrewes, which clearly mimics a large ichneumon fly. He said that when the whole genus *Glenea* is examined, the marked conspicuousness of some of the species suggests that the mimetic resemblance displayed by others is Müllerian or Synaposematic, rather than Batesian or Pseudaposematic.—Mr. L. B. Prout exhibited, on behalf of Mr. A. Bacot, long bred series of *Triphana comes*, Hb., the result of breeding for two generations from a wild female of the *curtisii* form, taken near Forres. In the first generation, rather more than half the progeny followed, to a certain extent, the parent female, though varying from rich deep red to almost black. Pairings of these dark specimens resulted in a brood in which the percentage of ab. *curtisii* was slightly increased, although the type-forms were still well represented; but it was noticeable that in every specimen the orbicular stigma was filled up with the darker or melanic colour.—Dr. F. A. Dixey read a note on the "Bugong" moth, which is used for

food by some Australian natives in New South Wales. He pointed out that it was not a *Euplea*, as supposed by Kirby in his 'Bridgewater Treatise,' but a *Eurooa*; and not a butterfly, as further stated by Westwood.—Mr. Arthur M. Lea communicated "Notes on Australian and Tasmanian Cryptocephalides, with descriptions of New Species."—Mr. Gilbert J. Arrow communicated "A Revision of the subfamily Pelidnotinæ of the Coleopterous family Rutelidæ, with descriptions of New Genera and Species," by the late Frederick Bates.—Colonel Charles Swinhoe, M.A., F.L.S., read a paper "On some New Species of Eastern Australian and African Moths in the British Museum."—Mr. George Charles Champion, F.Z.S., read a paper on "An Entomological Excursion to Moncayo, Spain, with some remarks on the Habits of *Xyleborus dispar*, Fabr., by Dr. Thomas Algernon Chapman, M.D."—Mr. Kenneth J. Morton communicated "Further Notes on Hydroptilidæ belonging to the European Fauna, with descriptions of New Species," and Mr. W. C. R. Shelford, M.A., communicated "A Note on *Elymnias borneensis*, Wallace."—A discussion on "What is a Species?" was opened by the Rev. F. D. Morice, in which Mr. H. J. Elwes, Dr. F. A. Dixey, Mr. A. J. Chitty, Mr. W. E. Sharp, the President, and other Fellows joined.—H. ROWLAND-BROWN, *Hon. Sec.*

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 11th, 1904.*—Mr. A. Sich, F.E.S., President, in the chair.—Mr. Montgomery exhibited a curious malformation of the wings which had occurred in a brood of *Ocneria dispar*. A pair of the malformed specimens were selected, and from them was bred a brood, nearly the whole of which had the same peculiarity, *viz.* a large semicircular portion of the apical part of the hind wings being undeveloped.—Mr. South, albino and xanthic aberrations of *Epinephele tithonus*, taken by Mr. G. M. Russell, on the chalk downs in South Hampshire, in 1898, 1899, and 1900.—Mr. Kaye, photographs of the Potara River, British Guiana, where he had spent some months in entomological collecting. Mr. R. Adkin, series of *Leucoma (Liparis) salicis* reared from pupæ collected at Herne Bay last year, and made remarks on the scarcity and abundance of the species for some years past.—Mr. Newberry, several conspicuous species of Indian Coleoptera, and a very large species of water-bug.—Mr. West (Greenwich), an example of the rare Coleopteron, *Gynandrophthalma affinis*, from Wychwood, Oxford, where it was discovered in 1899.—Mr. H. Moore, specimens of Coleoptera and Orthoptera, from Natal.—Dr. Chapman, brilliant but dwarf specimens of *Cyaniris argiolus*, and bred examples of *Arctia fasciata*, one of the most gorgeous of Continental "tigers," from Moncayo, Spain, together with a bred series of *Chrysophanus amphidamus*.—Mr. Sich read a paper, "Notes on the genus *Coleophora*," dealing chiefly with the life-history of *C. fuscedinella*, with description of its egg, and with the method of constructing and enlarging its case.

February 25th.—The President in the chair.—Mr. Edwards exhibited a striking variety of *Hypena rostralis*, having a broad light-brown costa, and other unusual markings of the same colour.—Mr. Colthrup (1), a very light aberration of *Abraxas grossulariata*, having only a few black dots and marks on the disc and margins, with a narrow yellow band and base; (2), a blotched form of *Argynnis*

(*Brenthis euphrosyne*; and (3), a series of photographs of varieties of *Bryophila muralis*, *B. perla*, *Polia chi*, and *Psilura monacha*.—Mr. Manger, an example of *Halicopsis cupido* from Demarara, which was of a beautiful light ground colour, with more or less suppressed and diminished dark markings, together with the typical form from Brazil, for comparison.—Mr. Sich, a specimen of *Bedellia somnulentella*, with its pupa-case, which closely resembled that of a Pierid in miniature.—Mr. Montgomery, long and varied bred series of *Pieris napi*, largely from Ireland, and contributed notes.—A large number of lantern-slides were exhibited by Messrs. Tonge, Warne, Lucas, Hamm, Dennis, Harrison, Goulton, Main, and Clark. The objects represented were larvæ and ova of Lepidoptera, protective resemblance in insects, orchids, plants in their haunts, studies of trees, diatoms, and foraminifera.—HY. J. TURNER, *Hon. Rep. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY. — *February 15th, 1904.* — *Annual Meeting.*—Mr. R. C. Bradley, Vice-President, in the chair.—The various Annual Reports were read, and Officers and Council elected for the ensuing year.—Mr. G. W. Wynn exhibited a boxful of varieties of various Lepidoptera, including, amongst others, the following:—*Argynnis valesina*, Esp., from the New Forest; pale *Vanessa urticae*, L., from Teignmouth; *Spilosoma lubricipeda*, L. ab. *zantina*, Cr.; black *Hadena monoglypha*, Hufn., from Hampton-in-Arden; *Agrotis exclamationis*, L., from Wyre, with spots confluent; a beautiful variegated var. of *A. corticea*, Hüb., from Lapworth; *A. cinerea*, Hüb. var. *obscura*, from Wyre Forest; and *Mamestra pisi*, L., with the white markings lengthened out across the wing, from Sutton Park.—Mr. J. T. Fountain showed a series of *Larentia autumnalis*, Ström. (*impluviata*, Hb.) bred from sallow-bloom, from the Wye Valley. The larvæ were found in the old blossoms of the female trees, which still remained attached to the stems in June. There were but a few larvæ, but the resulting imagines showed almost the whole range of variation—unicolorous black, barred forms, dark marbled ones, light marbled ones nearly all green, and some with ochreous ground colour.—Mr. H. Willoughby Ellis showed his collection of the Geodephaga, and gave a general account of the division and a running account of the species and their local occurrence, &c.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE AND MANCHESTER ENTOMOLOGICAL SOCIETIES. —The first ordinary gathering of the current session took the form of a joint meeting of the two societies, which, by the kind invitation of Dr. Hoyle, was held in the Museum, Owens College, Manchester, on Feb. 15th, 1904. The President of the Manchester Society, Dr. W. E. Hoyle, presided over a large assembly of members. On the invitation of the chairman, Mr. J. Cosmo Melvill, M.A. (Manchester), extended a hearty welcome to the visiting Society, alluding in the course of his remarks to his having first taken up the study of entomology when in Liverpool, and first collected on the Wallasey sandhills with the late Messrs. Ben Cooke, Gregson, Roxburgh and others, prior to settling in Manchester in 1871. Having congratulated Mr. G. O. Day on his new List of Local Lepidoptera, he referred to his pending departure from Lancashire. Dr. Hoyle intimated that the Manchester Society hoped shortly to issue a List of the Lepidoptera of the District.

Letters having been read from Mr. S. L. Capper, F.E.S., President of the Lancashire and Cheshire Entomological Society, and Major Ronald Ross, C.B., F.R.S., the chairman called on Mr. F. N. Pierce, F.E.S., who communicated an excellent paper "On the Structure of the Lepidoptera," which was illustrated by the author's preparations thrown on the screen by a new micro-lantern, shown by Mr. Greenwood. The lecturer dealt in an interesting and instructive manner with the structure of the wings, legs, and other organs of the Lepidoptera, and, by the aid of a long series of most beautiful slides, showed the undoubted relationship existing between certain species and groups of moths as exhibited by the genitalia. A hearty vote of thanks having been accorded the reader, an adjournment was made for refreshments, kindly provided by Dr. Hoyle, after which the following exhibits, amongst others, were shown:—*Nonagria geminipuncta*, from the Isle of Wight, by Mr. R. Tait, Junr., who mentioned the fact of its attacking the reeds where they are more scattered, such as in the bordering hedges, rather than where they grow more closely in the centre of the marshes where it is found. He also showed two very fine dark forms of *Boarmia abietaria*.—Mr. B. H. Crabtree exhibited *Melitaa aurinia* from various English and Irish localities, the latter possessing clearer and more defined markings than the English specimens, which have a browner tinge.—Mr. J. Collins exhibited a valuable representative collection of Crambidae.—Mr. L. Krah, fine specimens of *Caligula japonica* and *Rhodia fugax*, bred in England from Japanese ova, in exhibiting which he gave some interesting details regarding their food-plants, and stated that the cocoon of the former, consisting of a fine network, was usually attached, either to a piece of stick, or to folded leaves.—Mr. J. Kidson Taylor's British Coleoptera contained, amongst many other rarities, *Melœ brevicollis* (Millersdale), *Cryptocephalus coryli* (Sherwood), and *C. sexpunctatus* (St. Osyth's), *Heptaulacus villosus*, *Osphya bipunctata* (Cheltenham), and *Silpha reticulata* (Barmouth).—Mr. J. Ray Hardy's extensive collection of the Rhyncophora of the world found many admirers. He also exhibited three specimens of the very rare *Raphidia notata*, captured in Sherwood Forest; and gave some interesting introductory remarks anent the well-known Reston Collection of British Coleoptera, which, through the kindness of Dr. Hoyle and Mr. Hardy, was also on view. *Cynthia crota*, *Papilio epius*, and other exotic moths, were shown mounted between slips of glass, with the object of facilitating the examination of either side.—E. J. B. SOPP and R. J. WIGELSWORTH, *Hon. Secretaries*.

THE ENTOMOLOGICAL CLUB.—On Tuesday, March 15th, a meeting was held at Wellfield, Lingards Road, Lewisham, the residence of Mr. Robert Adkin, the chairman and host of the evening. Five of the six existing members and eleven honorary members and friends were present. After supper, Professor E. B. Poulton and Mr. A. J. Chitty, who had been appointed honorary members at Mr. Verrall's meeting, held at the Holborn Restaurant on Jan. 19th last, were elected members of the Club. The membership of eight is therefore now complete. A meeting was also held on March 23rd at 58, Kensington Mansions, South Kensington, when Mr. H. St. J. Donisthorpe entertained fifteen visitors, four of whom were members of the Club.

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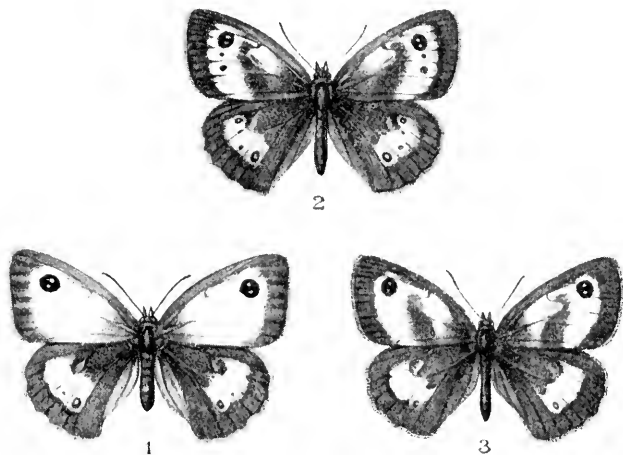
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ON A SERIES OF ABERRATIONS OF *EPINEPHELE TITHONUS*.

By G. M. RUSSELL, B.Sc.



IN the 'Entomologist' for 1898 (xxx. p. 293), I recorded the capture, on the chalk downs of the south of Hampshire, of an aberrant specimen of *E. tithonus*, in which the normal ground colour was replaced by yellow. Since that time I have obtained other zanthic and also albino specimens from the same locality, with the result that I now possess a series of nine varieties in which the usual brownish orange ground colour is replaced by yellow in some specimens, and by white in others. This series of varieties seems to deserve special notice on account of the whole of them having been taken within a very limited area; one occasionally sees records of captures of odd specimens of

yellow varieties, but I am not aware that any other single locality has produced a number. Besides the insect taken in 1898, referred to above, two of the specimens were taken in 1899, and no less than six in 1900. In addition to these, a yellow male was taken in 1897, and another fine yellow male was seen on August 12th, 1903. In connection with the larger number taken in 1900, it may be mentioned that *E. tithonus* was exceptionally abundant in that year in the South Hampshire locality where the varieties were obtained; and this abundance probably extended to other districts, for the large numbers in which the species appeared at Christchurch and the New Forest were the subject of a note by Mr. W. J. Lucas in the 'Entomologist' (xxxiii. p. 350).

With the exception of two white females (one of which is figured, fig. 1), all the specimens are males. Although two or three of the yellow specimens are much alike as regards ground colour, the whole series shows a gradation in colour from a specimen which has partial normal colouring, through intermediate chrome-yellow specimens, to the three white ones. The beautiful specimen shown in fig. 2 differs from the normal not only in having a clear yellow ground colour, but also in possessing additional spots on all the wings, the upper spot on the hind wings being white-centred.

The whole of the varieties were taken at spots within a mile of each other, and about a mile or so from the sea. Three of the specimens were taken, in different years, at spots only a few yards apart, but any conjecture as regards the transmission of the variant character from parent to offspring is, of course, useless until a direct appeal is made to experiment. All the specimens were taken on chalk hills, and it is interesting, and perhaps suggestive, to note that the white male, fig. 3, was most difficult to capture on account of its matching so closely the lights and shades of the chalky soil of the field in which it was taken. Although only a feeble flier, some half-dozen unsuccessful attempts at capture were made, and at each attempt the insect at once left the grass-bordered hedgerow and made for the cultivated part of the field. Its absolute and sudden disappearance as it passed over the edge of the broken-up ground was most astonishing, and one could only wait for its return to the hedge, where in a few moments it was again found some yards off.

I may mention that the form, called by Tutt ('British Butterflies') *ab. excessa*, which possesses one or two additional black spots but has normal colouring, is not uncommon in the South Hampshire locality where I have collected, thus supporting Barrett's statement ('Lepidoptera of the British Islands') that this variety occurs in the immediate neighbourhood of the sea. It would be interesting to learn in what localities the albino

specimens figured and described by Barrett were taken. The one or two records which I have seen of the captures of yellow and white specimens seem to indicate that these varieties also are found only in the vicinity of the coast. The yellow specimens seem to be similar to the form described by Seebold under the name var. *mincki* (Berliner Entom. Zeitschrift, xxxvi. 1891, p. 467). The yellowish white form, *subalbida*, Verity (*ante*, p. 56), appears to be intermediate between var. *mincki* and my white specimens. I therefore propose the name *albida* for the white form (figs., 1, ♀; 3, ♂).

On looking at this series one can hardly help speculating as to the possible cause of the albinism. The question is essentially one for experiment, and the observations which appear to give a clue to the answer are those of Standfuss, who showed that the majority of aberrations were caused by the effect of abnormal temperature conditions on the pupa. He showed, moreover, that the general effect of treating the pupa as in his "heat" experiments was to produce aberrations in which the colours were paler than the normal. Numbers of aberrations similar to those actually occurring in nature were produced in this way, but I am not aware that *tithonus* was one of the species treated.

LEPIDOPTERA IN JERSEY, 1903.

BY G. B. CONEY.

THE following is a list of moths taken and reared during the past year in Jersey, with dates of capture of the more interesting species. From July 6th to 31st, being away, I did no collecting in the island:—

- Sphinx convolvuli*, August 25th to October 14th.
Smerinthus populi, June 27th.
Macroglossa stellatarum, March 26th.
Hylophila prasinana, July 1st.
Nola cristulalis, May 31st.
Lithosia complanula. *L. caniola*, August 17th to September 24th.
Euchelia jacobææ.
Callimorpha hera, August 25th.
Nemeophila russula, June 27th.
Arctia caia. *A. villica* (reared).
Spilosoma fuliginosa, August 12th. *S. mendica*, May 23rd and 24th. *S. lubricipeda*. *S. menthastris*.
Cossus ligniperda (reared).
Porthesia chrysorrhæa (reared).
Liparis auriflua, August 8th to 12th.
Dasychira pudibunda, June 26th.

- Lasiocampa quercus*. *L. trifolii*, September 24th.
Odonestis potatoaria.
Drepana hamula, August 19th.
Cilix spinula, June 3rd to 27th, and August 2nd to 11th.
Lophopteryx camelina, May 21st to 30th, and August 9th to 30th.
Notodonta dictæa, May 25th. *N. dictæoides* (reared). *N. ziczac* (reared).
Petasia cassinea, December 10th.
Phalera bucephala, August 26th.
Diloba cæruleocephala (reared).
Thyatira batis, August 20th to September 3rd.
Cymatophora ocularis, June 26th to July 1st.
Bryophila glandifera, August 12th.
Acronycta psi. *A. megacephala*, July 4th. *A. rumicis*.
Leucania vitellina, October 3rd. *L. lithargyria*. *L. albipuncta*, August 19th to October 17th. *L. putrescens*, August 12th to September 1st. *L. l-album*, September 8th to November 2nd.
L. pallens.
Gortyna flavago, September 20th.
Axylia putris, May 30th to July 4th.
Xylophasia lithoxylea. *X. polyodon*.
Aporophyla australis, September 24th to 26th.
Heliophobus hispidus, September 8th to October 3rd.
Cerigo cytherea, August 12th to 27th.
Luperina testacea, August 28th to September 14th.
Mamestra brassicæ.
Apamea basilinea, May 28th. *A. oculoa*.
Miana strigilis. *M. furuncula*, August 6th.
Grammesia trilinea, May 30th to June 17th.
Stilbia anomala, September 15th to 18th.
Caradrina morpheus, May 31st to June 30th. *C. alsines*, July 2nd and September 9th. *C. ambigua*, June 9th to July 5th, and August 28th. *C. cubicularis*, September 9th to November 3rd.
Rusina tenebrosa, May 31st to June 27th.
Agrotis puta, August 12th to November 13th. *A. suffusa*, October 28th to November 2nd. *A. saucia*, August 22nd to November 9th. *A. segetum*. *A. exclamationis*. *A. corticea*, July 2nd and August 22nd. *A. nigricans*, August 12th to 19th. *A. tritici*, August 19th to September 12th. *A. porphyrea*, August 2nd.
Noctua glaucosa, September 29th to October 28th. *N. plecta*, May 27th to June 17th, and August 2nd to September 12th. *N. c-nigrum*, June 9th and 17th, and August 17th to 30th. *N. triangulum*, July 2nd. *N. festiva*, June 9th to 26th. *N. rubi*, June 1st and August 9th to 30th. *N. xanthographa*, August 12th to October 14th.
Triphena ianthina, August 6th to 30th. *T. fimbria*, September 4th to 20th. *T. orbona*. *T. pronuba*.
Amphipyra pyramidea, August 8th to September 17th. *A. tra-gopogonis*, August 12th to September 6th.

- Mania typica*, August 12th. *M. maura*.
Tœniocampa gothica, May 27th. *T. instabilis*, March 8th.
T. stabilis, March 9th to April 24th.
Orthosia upsilon (reared). *O. lota*, October 20th to November 13th. *O. macilenta*, October 20th to 28th.
Anchocelis rufina, September 30th to November 4th. *A. pistacina*. *A. lunosa*, September 29th.
Cerastis vaccinii, October 17th to 28th. *C. ligula*, October 17th to November 9th.
Scopelosoma satellitia, March 12th.
Xanthia silago, October 20th. *X. ferruginea*, October 3rd to November 2nd.
Calymnia trapezina, September 1st. *C. affinis*, August 12th.
Dianthorcia conspersa, May 19th to July 5th. *D. capsincola*, May 13th to June 27th, and August 21st.
Hecatera serena, June 27th to 29th.
Polia flavicincta, September 23rd to October 23rd.
Epunda lichenea, October 20th to 29th. *E. nigra*, October 7th to November 13th.
Miselia oxyacanthæ, October 12th to November 2nd.
Agriopsis aprilina, October 3rd to November 2nd.
Phlogophora meticulosa.
Trigonophora empyrea, September 30th to November 4th.
Euplexia lucipara, May 22nd to June 17th.
Hadena dentina, June 8th. *H. chenopodii*, August 11th to September 5th. *H. oleracea*. *H. pisi*, June 2nd to 17th.
Cucullia verbasci, May 20th to 30th.
Habrostola urticæ, May 21st to June 27th. *H. triplasia*, September 20th to 24th.
Plusia chrysitis, June 27th to July 4th, and August 26th. *P. gamma*.
Acontia luctuosa, July 1st.
Erastria fusculea, May 31st to June 27th.
Phytometra ænea, June 17th.
Catocala nupta, August 22nd to October 20th.
Uropteryx sambucata.
Rumia cratægata.
Venilia macularia, June 12th.
Metrocampa margaritaria.
Eurymene dolobraria, June 25th to 30th.
Selenia illunaria. *S. lunaria*, May 28th to June 1st, and August 22nd.
Odontopera bidentata, May 13th to June 15th.
Crocallis elinguaris, August 15th to 22nd.
Ennomos alniaria, August 2nd to September 23rd. *E. erosaria*, August 27th to September 15th.
Himera pennaria, October 30th to November 23rd.
Phigalia pedaria, February 26th.

- Amphidasys betularia* (reared).
Hemerophila abruptaria, May 19th to June 11th.
Cleora lichenaria, August 1st.
Boarmia repandata. *B. rhomboidaria*. *B. consortaria*, May 28th.
Nemoria viridata, June 27th.
Iodis lactiaria.
Hemithea thymiaria.
Ephyra porata, August 26th. *E. punctaria*, May 24th and August 12th.
Acidalia rubricata, August 13th. *A. scutulata*, June 30th and September 1st to 16th. *A. incanaria*, May 28th to June 16th.
A. promutata, August 15th to September 25th. *A. imitaria*.
A. aversata.
Timandra amataria.
Cabera exanthemata.
Bapta temerata, July 1st to 5th.
Macaria alternata, June 17th.
Panagra petraria.
Selidosema plumaria, August 6th to 13th.
Ematurga atomaria.
Aspilates citraria, May 10th to 25th, and August 13th to September 23rd.
Abraxas grossulariata.
Lomaspilis marginata, June 28th to July 5th.
Hybernina rupicapraria, February 12th. *H. marginaria*, March 11th to April 6th. *H. defoliaria*, December 20th.
Cheimatobia brumata, January 20th to 26th.
Oporabia dilutata, November 9th to 23rd.
Larentia pectinitaria.
Emmelesia albulata, June 9th. *E. decolorata*, May 28th to June 17th.
Eupithecia oblongata. *E. subfulvata*, August 25th to September 22nd.
Lobophora viretata, June 6th.
Melanthia ocellata.
Melanippe subtristata. *M. galiata*, June 1st to July 2nd, and August 1st. *M. fluctuata*.
Anticlea rubidata, June 4th to July 5th. *A. derivata*, May 11th.
Coremia propugnata, August 12th to 27th. *C. ferrugata*.
C. unidentaria.
Camptogramma bilincata.
Cidaria psittacata, October 28th to November 3rd. *C. corylata*, May 30th to June 27th. *C. russata*. *C. suffumata*, April 24th to June 8th. *C. testata*, August 21st to September 30th.
C. pyrallata, June 26th to July 1st.
Pelurga comitata, August 2nd to 18th.
Anaitis plagiata, June 17th to 27th, and September 22nd.

Aventia flexula, July 1st.

Other species of the genera *Eupithecia* were taken, but are at present unidentified.

A few notes on the best captures may be of interest. *Sphinx convolvuli* was abundant at tobacco plants, thirteen specimens being taken, and many more seen. Ten specimens of *Lithosia caniola* were taken at a lamp placed in the window of a room overlooking the seashore. One *Leucania vitellina* at sugar. *L. albipuncta* was common. *L. putrescens*, eight specimens at sugar and light. Eight *L. l-album* at sugar. Nine *Heliophobus hispidus* (all males) at light. Nine *Epunda lichenea* at light and ivy. *Trigonophora empyrea*, very plentiful at sugar. The specimens of *Selenia lunaria*, taken in August, were very much smaller than the early brood. *Ennomos erosaria*, two specimens at light. Five *Acidalia rubricata* on sandhills by day; these varied in colour from drab to dull crimson. *Aspilates citraria* was found commonly, and *Melanippe galiata* swarming. Though searched for on several nights, I only obtained four specimens of *Cidaria psittacata*, and two of these were chipped. The only butterflies worth mentioning are a fine series of *Melitea cinxia*, reared from larvæ found on the sandhills in April.

Glen Vale, St. Martins, Jersey.

ON NEW SPECIES OF BUTTERFLIES FROM EQUATORIAL AFRICA.

BY EMILY MARY SHARPE.

MR. A. H. HARRISON has entrusted me with the determination of a very large collection of Lepidoptera which he made in various districts of Equatorial Africa, such as Nandi, Nairobi, Nyangori, Kamagombo, &c.

I have found the collection to be one of great interest, and have described several new species, amongst which is a very fine *Charaxcs*.

I have not given a detailed list of the species collected by Mr. Harrison, but the following will give some idea of the number procured by him:—Danaidæ, 12; Satyridæ, 26; Acraeidæ, 41; Nymphalidæ, 91; Lycænidæ, 56; Pieridæ, 81; Papilionidæ, 20; Hesperidæ, 36; Heterocera, 29.

Mr. S. A. Neave has seen and examined some of the specimens in this collection, when working at Mr. Wiggins's series of Lepidoptera from the same region, in the 'Novitates Zoologicae,' vol. xi. p. 323, 1904. He has helped me considerably in my determination of Mr. Harrison's collection. I must also thank

Prof. Poulton, F.R.S., for the help and advice he gave me when I visited the Hope Museum.

Family ACRÆIDÆ.

ACRÆA HARRISONI, sp. n.

Closely allied to *A. egina*, Cram., but distinguished from that species by the bright red streaks between the nervules of the fore wing.

♂. Fore wing: Ground colour smoky black, rather more transparent towards the apical area. The brilliant red patch on the inner margin extends slightly more to the base, and the black spots, although situated exactly as in *A. egina*, are somewhat larger. Hind wing very similar to that of *A. egina*. The under side, although brighter and having the spots and markings more pronounced, agrees in other respects with that of the above mentioned species. Expanse, 3 in.

Hab. Nyangori. (Type in A. H. Harrison coll.)

♀. Differs somewhat from that of *A. egina*, the apical band on the fore wing in this species being yellowish buff instead of white. The black spots on the hind wing are also rather smaller. Fore wing: Ground colour smoky brown, with a light suffusion of red; two spots, one in the cell situated between two black spots, and the other near the posterior angle, also red and brighter in colour; red streaks between the nervules also indicated as in the male. The yellowish-white band near the apical area not so white as in the female of *A. egina*. Hind wing: General colour bright red, the costal and inner margins deep yellow; the basal area suffused with brown, and the black spots much reduced in size. The under side of both wings does not differ from that of *A. egina* and *A. areca*, Mabille. Expanse, 3 in.

Hab. Nyangori. (Type in A. H. Harrison coll.)

This species may turn out to be only a local form, but, as a fair number have passed through my hands, I venture to give it a name. Besides the types above described, Mr. Harrison has in his collection a male from Nairobi (October 17th, 1903), a male from Nandi, and a female from Nyangori.

Family NYMPHALIDÆ.

EUPHÆDRA PARADOXA, Neave, Nov. Zool. xi. p. 333, 1904.

♂. Fore wing: Costal margin, apical area, and hind margin glossy greenish black, the apical area relieved by an oblique creamy-white band; the base and central portion of wing of a much brighter green tone. Hind wing: Ground colour of bright glossy green colour, with a narrow hind marginal border of greenish black, relieved by internervular spots of paler green. The under side, with the exception of being a pale uniform green, does not differ from the description given by Mr. Neave of the female. Expanse, 2·3 in.

Hab. Nairobi, March 17th, 1903. (Type in A. H. Harrison coll.)

Both sexes are represented in Mr. Harrison's collection, of which there are two pairs; all taken at Nairobi, March 17th, 1903.

CHARAXES HARRISONI, sp. n.

Allied to *C. epijasius*, Reiche, and the European species *C. jason*, Linn., but differs from the former species in having a distinct submarginal row of orange-buff spots on the fore wing. The blue on the hind wing is more restricted than in the former species, although more strongly marked than in *C. jason*.

♂. Fore wing: The whole of the basal area chestnut-brown; discal area brownish black, relieved by a transverse line of chestnut spots from the costa to as far as the inner margin, and situated between the nervules; a second row of orange-buff spots also strongly indicated, but not extending beyond the first median nervule. The orange-buff border on the hind margin agrees with that of *C. epijasius*, but is decidedly narrower. Hind wing: Ground colour brownish black, suffused near the base with dull chestnut; about the centre of the costal margin is a very distinct white patch suffused with chestnut; the lower portion (which becomes somewhat narrower) bright chestnut-brown, and terminating above the radial nervure. The submarginal line of blue deeper in colour, but narrower than in *C. epijasius*. The orange-buff hind marginal border not so broad. The under side is similar to that of *C. epijasius*. Expanse, 3.1 in.

Hab. Kamagombo, January 24th, 1903. (Type in A. H. Harrison coll.)

Family LYCÆNIDÆ.

SPINDASIS NAIROBIENSIS, sp. n.

Allied to *S. victoriae*, Butl., and *S. mozambica*, Bertol, but is distinguished from both species by having the bands on the under side of both wings bright chestnut-brown.

Fore wing: The extent of the orange-yellow area on the apical portion somewhat larger than in *S. victoriae*, the two spots in the cell being also tinged with yellow. Hind wing similar to that of the species mentioned above, but exhibiting a little more red on the anal angle. Fringe of both wings reddish yellow. Under side nearest to that of *S. victoriae*, but has the ground colour of both wings yellowish white; the silver lines heavily outlined by chestnut-brown. Expanse, 1 in.

Hab. Nairobi, March 17th, 1903. (Type in A. H. Harrison coll.)

Family PIERIDÆ.

TERACOLUS XANTHOLEUCA, sp. n.

Allied to *T. evenina*, Wallengren, but differs in wanting the black border on the inner side of the orange apical patch on the fore wing.

♂. Fore wing: The whole of the central area creamy white, faintly dusted with grey on the inner margin near the base; the apical area bright orange-yellow, narrowly edged with black on the costal

and hind margins to as far as the first median nervule. Hind wing : Ground colour creamy white ; the nervules terminating in black spots on the hind margin ; the costal margin greyish black ; a slight dusting of grey visible at the base of the wing. Under side : Central area of the fore wing white, the apical area orange-yellow, but paler than on the upper side ; black nervules relieving the orange patch, but not extending beyond the second median nervule. Inner margin blackish grey, but not continued for the whole length. Hind wing : Ground colour white, all the nervules indicated in black, a faint indication of a brownish band across the discal area just visible, although more strongly marked in some of the other specimens. Expanse, 1.4 in.

Hab. Kavirondo, January, 1900. (Type in F. J. Jackson coll.)

The female resembles those of *T. carteri*, Butl., and *T. isaura*, Lucas.

♀. Fore wing : Central area creamy white ; the basal area rather thickly dusted with greyish black ; the apical area brownish black, relieved by five orange spots of a somewhat pale tint ; a faint line of this pale orange colour being also visible on the inner edge of the dark apical patch. Near the posterior angle, on the inner margin, is a dusky grey spot, a thin dusky line uniting it to the dark apical area. Hind wing : Central area white, the base dusted with grey, hind marginal border brownish black, rather heavily marked ; a broken transverse discal line of brownish black also shown on the costal margin, and again across the median nervules, almost uniting with the hind marginal border. Under side : Ground colour white ; on the apical area an oblique band of orange, with a smoky suffusion of brown, the latter extending to the posterior spot ; the apex pale sulphur-yellow ; the costa and nervules near the hind margin smoky brown. Hind wing : Ground colour greenish white, the nervules strongly emphasized as brown lines ; the reddish-brown discal band well pronounced, but broken between the third median and radial nervule ; the usual orange streak present along the costal margin. Expanse, 1.5 in.

Hab. Kavirondo, January, 1900. (Type in F. J. Jackson coll.)

Some of the females vary somewhat, the yellow spots on the apical area of the fore wing being replaced by white ones. This is an interesting little species, and I shall figure it shortly in my 'Monograph of the genus *Teracolus*.' It seems to have a fairly wide distribution, as specimens are in Mr. Harrison's collection from Nairobi, Nyangori, and Kamagombo.

In the Hope Museum at Oxford are specimens sent by Mr. Wiggins from Lake Victoria Nyanza, north-east shore, 3800 ft., South Kavirondo, Ugaia to Kisingiri ; all collected January 1st-14th, 1903.

A "BUTTERFLY SUMMER" IN ASIA MINOR.

BY MARGARET E. FOUNTAINE, F.E.S.

(Continued from p. 108.)

The following is a list of my captures:—

Papilio podalirius, L.—Generally distributed; very common at Broussa in April and May. Some of the specimens of the summer brood at Amasia had an inclination, more or less, for var. *zanclæus*, Z.

P. machaon, L.—Not so common as the preceding.

Thais cerisyi, B.—I took some magnificent males at Broussa, at the end of April and in May; they did not differ from the typical form, except in being rather larger. At Amasia, at the end of May, this butterfly was over, but I collected a good quantity of the larvæ, which I found feeding on a small-leaved dwarf aristolochia, from which I have about thirty healthy pupæ, so that I hope in the spring to obtain some var. *deyrollei*, Oberth.

T. polyxena var. *cassandra*, Hüb.—Two specimens only from Broussa in April and May.

Doritis apollinus, Hbst.—Common locally near Broussa towards the end of April. The specimens are larger and finer than those I have from Syria; but though the females are much darker, and generally more or less suffused with red on all the wings, the small red marks which are present on the fore wings of the males in all my Syrian specimens, are either entirely, or almost entirely, absent in everyone I took at Broussa. At Amasia this butterfly was completely over, and the larvæ, even on the Lokman (4000 ft.) already nearly full-fed.

Aporia cratægi, L.—A splendid form, common at Broussa in May.

Pieris brassicæ, L.—Not very common; all the specimens I saw were typical.

P. rapæ, L.—Not common anywhere; I only observed it occasionally, and seem to have but one specimen, which I took at Broussa in September.

P. napi, L.—Also not common. I have one typical specimen from Broussa in May.

P. daphidice, L.—Abundant at Amasia. The females were large, and broadly marked, whereas the males were for the most part small and undersized.

P. chloridice, Hüb.—The summer brood appeared at Amasia about the second week in June. Up a side valley, with a dried-up water-course, off the north side of the Kerasdere, it flew abundantly, but the males were extremely difficult to catch. It was also not uncommon in the Tshirtshir Valley, fresh specimens being easily met with throughout July.

Anthocharis belia var. *ausonia*, Hüb.—Common on the plateau at the top of the Caraman on June 16th.

A. cardamines, L.—Common at Broussa in April.

Zegris menestho, Mén.—Over at Amasia when I got there at the end of May; I only took one good female on the 30th of that month, and two more females early in June; but neither of these were really

fresh, and the few males still left were almost past recognition. I hoped to find the larva, but did not succeed in doing so.

Leucophasia sinapis, L.—Common at Broussa in April and May.

L. duponcheli var. *astiva*, Stgr.—Very common at Amasia in June and July.

Colias edusa, F., and *C. hyale*, L.—I took no other *Colias* but these two species. The former was common everywhere; the latter rather less so.

Gonepteryx rhamni var. *farinosa*, Z.—All at Amasia were of this variety, and when compared with the type are quite distinct, the lower wings in the males being of a pale greenish yellow, and the upper wings also much suffused with the same tint towards the outer margins. The females, too, were slightly greener than the type. I saw two broods of this insect at Amasia; the first was out when I arrived at the end of May, and the second appeared towards the end of July and August.

Thecla spini, L.—Aggressively abundant in the Maidan, and other localities near Amasia in June.

T. ilicis, Esp.—Just coming out before I left Broussa in the middle of May.

T. quercus, L.—Two very fresh specimens (both males) in the pine forest, above the old Sivas Road, near Tokat, in July.

T. rubi, L.—Common at Broussa in April and May.

Thestor nogellii, H.S.—Fairly common on one spot near the top of the Caraman; also singly in the Maidan, and other places near Amasia, at the end of May and beginning of June. The orange patch on the fore wings, which is such a decided sexual distinction in *T. ballus*, was in this little butterfly not only by no means restricted to the females, but neither was it necessarily always present in that sex. Of the two female specimens I was able to procure, in one of them the orange patch is very large and conspicuous, whereas in the other it is, on the fore wing, almost invisible; and of the males I have a series gradually diverging from entirely dark, till the patch in at least two of them is very nearly as broad and distinct as in the one female.

Chrysophanus virgaureæ, L.—One very fine male taken near Tokat.

C. ochinus, H.S.—Bad specimens were not infrequent near Amasia, in the Maidan, &c., at the end of May and beginning of June. The second brood began the first week in August, but I did not stay late enough to get any females.

C. thersamon, Esp.—Extremely common at Broussa in August and September. I had also observed some few specimens there in the spring. It also occurred at Amasia and Tokat, but I took none belonging to the var. *omphale*, Klug.

C. asabius, H.S.—One rather damaged specimen on the Caraman in July. I saw no others.

C. rutilus, Wernb.—In the marshy meadows of the plain near Broussa; not uncommon, but rather the worse for wear when I first discovered it there early in September.

C. alciphron var. *melibæus*, Stgr.—One splendid female only, two days before I left Broussa (May 19th). The species was evidently only just beginning to come out, and at Amasia all I saw, which was not many, belonged to the var. *gorlius*, Sulz.

C. dorilis, Hub.—In May, and again in August, at Broussa. The females were dark, except for the orange band on both wings; but I have specimens equally so from Austria and Hungary.

C. phlaeas var. *eleus*, F.—A very good form of this variety occurred at Broussa in August and September. Bersa caught a fine male, in which the submarginal row of black spots on the under side of the fore wings were elongated into broad black bands, almost confluent.

Lycena batica, L.—Fairly common at Broussa in August and September.

L. telicanus, Lang.—Common in certain places on the plain near Broussa in September.

L. balcanica, Frr.—A succession of broods seemed to appear at Amasia throughout the summer. It also occurred singly at Broussa, spring and autumn. The specimens were smaller and darker, with more black spots on the upper side than those I took in Palestine two years ago. Possibly the latter were *L. theophrastus*, F. (?).

L. trochilus, Frr.—A brood was just out in the Maidan when I first got to Amasia at the very end of May. Later on another brood appeared in July, and I took a female on the Caraman, in which the ground colour is black instead of dark brown, and the orange bands above and below of a pale straw-colour, the freshness of the specimen entirely precluding any possibility of its being faded. At Broussa this species was rather rare.

L. aegon, S.V.—Very common on the top of the Lokman, near Amasia, in June.

L. loëwii, Z.—At Amasia early in June. The males were very common at Guelly, especially up a small narrow gorge, where a tiny stream was still trickling down through the rocks; later on this stream was quenched in the drought of summer, *Loëwii* was also common at Tokat, and both sexes were in fresh condition in the middle of July.

L. zephyrus, Frr.—One male taken at Mersivan, the end of May, and a few females at Amasia a little later.

L. eurypilus, Frr.—Very common all round Amasia in June and July, and it also occurred at Tokat. The females were sometimes only distinguishable from those of *L. loëwii* by the orange band being brighter and less suffused with black on the under side of the fore wings.

L. bavius, Ev.—Only two females caught in the Maidan, at the beginning of June, the species being nearly over, and I should imagine not common at any time.

L. baton, Berg.—At Broussa in April, and Amasia in June; not very common.

L. panagaa, H.S.—I have only two specimens of this little butterfly. One I took in the "Nogellii Gorge," on the Caraman, and the other in the Tschirtschir Valley; both in June, I think I ought to have taken more, but at a place like Amasia, with so many interesting species, mostly occurring in swarms, things of insignificant appearance are not uneasily overlooked.

L. astrarche, Bgst.—Common at Amasia throughout the summer.

CURRENT NOTES.

BY G. W. KIRKALDY.

(Continued from p. 100.)

1. A. E. SHIPLEY: "The Orders of Insects" (Zool. Anzeiger, xxvii. 259-62 (1904).
2. R. C. L. PERKINS: "Later Notes on Lantana Insects" (Proc. Hawaiian Live Stock Breeders' Association, 2nd Ann. Meeting, pp. 58-61 (1904)).
3. E. BERGROTH: "Neue Myrmecophile Hemipteren" (Wiener Ent. Zeitung, xxii. 253-6 (1903)).
4. J. D. ALFKEN: "Beitrag zur Insectenfauna der Hawaiischen und Neuseelandischen Inseln (Zool. Jahrb., Abth. für Syst. xix. 561-628. Plate 32 (double) (1903)).
5. A. J. TURNER: "Revision of Australian Lepidoptera" (Proc. Linnean Soc. New South Wales, xxviii. 42-92 (1903)).
6. F. W. GODING: "A Monograph of the Australian Membracidae" (*l.c.* 2-41; Plate 1 (1903)).

Shiple's arrangement of the orders of Insecta (1) is identical with that of D. Sharp (1898), except that the Panorpatae are separated as a distinct order; the opportunity, however, is taken to disturb several well-known names in order to have a uniform termination of "-ptera"; it is to be hoped that this somewhat childish mnemonic will not be followed. The sequence is as follows, a supposed new name being indicated by a star:—

| APTERYGOTA :— | OLD NAME. | SHIPLEY'S NAME. |
|-------------------|-------------------|------------------|
| | 1. Thysanura. | Aptera. |
| | 2. Collembola. | *Apontoptera. |
| ANAPTERYGOTA :— | | |
| | 3. Mallophaga. | *Lipoptera. |
| | 4. Anoplura. | *Ellipoptera. |
| | 5. Siphonaptera. | Aphaniptera. |
| EXOAPTERYGOTA :— | | |
| | 6. Orthoptera. | Orthoptera. |
| | 7. Perlidae. | Plecoptera. |
| | 8. Psocidae. | *Psocoptera. |
| | 9. Termitidae. | Isoptera. |
| | 10. Embiididae. | *Embioptera. |
| | 11. Ephemeridae. | *Ephemeroptera. |
| | 12. Odonata. | *Paraneuroptera. |
| | 13. Thysanoptera. | Thysanoptera. |
| | 14. Hemiptera. | Hemiptera. |
| ENDOAPTERYGOTA :— | | |
| | 15. Neuroptera. | Neuroptera. |
| | 16. Mecoptera. | Mecoptera. |
| | 17. Trichoptera. | Trichoptera. |
| | 18. Lepidoptera. | Lepidoptera. |
| | 19. Coleoptera. | Coleoptera. |
| | 20. Strepsiptera. | Strepsiptera. |
| | 21. Diptera. | Diptera. |
| | 22. Hymenoptera. | Hymenoptera. |

The correct fixation of the Linnean orders Apteræ and Neuroptera is a matter of very great difficulty, and should be very carefully worked out. The original spelling of the first order was *Thysanoura*. The fleas have a prior name, viz. *Suctoria*; while the correct name of the Orthoptera is, as pointed out by Westwood, undoubtedly *Dermaptera*. The prior name of Trichoptera is *Elinguia*. While keeping apart the Trichoptera, Siphonaptera, various "Neuropteroidea," &c., it is perhaps a little inconsistent not to recognize the earwigs as *Euplexoptera*. The Prociidæ have a prior ordinal name, viz. *Corrodentia*; and the Ephemeroptera* should be known as *Plectoptera*. While giving these recent names, what becomes then of the more ancient Pseudoneuroptera, Anisoptera, Megaloptera, Rhapsiptera, &c.?

Perkins (2) brings up to date the account of the insects that were imported into the Hawaiian Islands from Mexico, to check the growth of lantana. Although the difficulties of transportation were very great, five species of Lepidoptera have thoroughly established themselves, as have also two species of Diptera and one bug; "of the two species of flies, the success of the one was instant and phenomenal." With the exception of the imported bug, which has natural enemies in the shape of other bugs, all the other imported lantana insects are "at present practically free from attacks from other predaceous or parasitic insects; and it is quite certain that the parasites, which in Mexico destroy at least ninety per cent. of the individuals of the lantana-eating species, were entirely eliminated here before the latter was liberated. To this fact is due the astonishing rapidity of increase of some of the quicker-breeding insects in these islands, so that, after three months, from two or three dozen of the berry-eating fly originally liberated the progeny, had already run into many millions." This dipteron is as yet undetermined.

(To be continued.)

NOTES AND OBSERVATIONS.

HERTFORDSHIRE LEPIDOPTERA AND COLEOPTERA. — A meeting of the Hertfordshire Natural History Society was held at Watford on March 29th, Mr. B. Daydon Jackson, Secretary, Linn. Soc., President, in the chair, when Mr. A. E. Gibbs, Recorder of Insecta for the Society, presented his annual report. He remarked that it was satisfactory, at the close of a season which had proved so disappointing as 1903, to be able to announce the addition of nine species of Lepidoptera to the list of a county which had been so well worked as Hertfordshire. It was true that all these records could not be credited to 1903, but

* For it is stated that *Ephemeroptera* is a new name; it was, however, employed by J. B. Smith in 1896.

the majority of them were the result of last season's work. They were:—*Tapinostola hellmanni*, *Mamestra furva*, and *Agrotis aquilina*, all taken at light at Hitchin by Mr. A. H. Foster, of The Grange, Hitchin; *Noctua glaucosa*, captured on heather-bloom at Ashridge by Mr. A. H. Goodson, of Tring; *Dicycla oo*, taken at sugar in the garden by Miss Alice Dickinson, of New Farm, St. Albans; *Polia chi*, a very light specimen, from larva taken at Hitchin on monkshood when searching for pupæ of *Plusia moneta*; *Asthena sylvata*, taken in the same town at light; *Pyrausta aurata*, of which, after diligent search, two specimens were discovered near Tring by Mr. A. H. Goodson; and *Eriopsela fractifasciana*, beaten out of a hedge by Mr. Philip J. Barraud at Aldbury.

An interesting result of the work of the past few seasons had been the confirmation of several records made by F. J. Stephens, the well-known entomologist, in the earlier years of the nineteenth century, thus re-establishing in the county list species which it was feared had disappeared from Hertfordshire. Stephens, who was a clerk in the Admiralty, in the formation of his famous collections made frequent visits to many places in the vicinity of London, the neighbourhood of Hertford being a favourite hunting-ground. In his 'Illustrations of British Entomology' are given a large number of records of Lepidoptera, Coleoptera, Orthoptera, Hymenoptera, and Neuroptera from that locality, and these form the earliest, and in some cases the only, local lists. So far as the Lepidoptera are concerned, these have been collected together by Mr. John Hartley Durrant, F.E.S., and embodied in a valuable paper, which is printed in the 'Transactions of the Hertfordshire Natural History Society.' The Coleoptera noted by Stephens had been dealt with by Mr. E. Geo. Elliman in the first volume of the 'Victoria History of Hertfordshire,' and the comparatively few records of insects of other orders had been by himself (Mr. Gibbs) in the same work. In the 'Illustrations' Stephens mentions *Apatura iris* as occurring near Hertford in July, 1833, but from that time until the present no record of the presence of the insect in the county had, so far as he was aware, appeared. He was glad, however, to be able to state that it was almost certain that *A. iris* was still to be found in some of the larger woodlands. Mr. Foster, of Hitchin, had seen, but not taken, it, and the keepers in two woods stated that they had seen a beautiful purple butterfly settled on the dead animals in their "larders." This evidence, although perhaps not absolutely conclusive, was very suggestive, and he hoped another year would see *A. iris* definitely re-instated in the county list. Other records of Stephens's which after the lapse of many years had received confirmation were *Acontia luctuosa*, taken near Hitchin by Mr. Foster, and *Myelophila cribrella*, captured at light at Cheshunt by Mr. Boyd. The year 1903 was, he thought, generally regarded by entomologists as one of the worst seasons on record. The long-continued spell of cold wet weather was, he thought, the chief cause of the scarcity of insects. The bright interval in October appeared to have been the chief redeeming feature of a bad year. For a few evenings at that time he found sugar very attractive, one of the most abundant species in his garden being *Polia flavicincta*, of which insect and of *Hypena rostralis*, and one or two others, he exhibited a long and varied series. In Hertfordshire,

as elsewhere, *Vanessa cardui* appeared in thousands, and another butterfly which was in evidence in every garden was *V. atalanta*, which he found very partial to the overnight sugars. Some interesting reports from observers in various parts of Hertfordshire brought the paper to a close.

Mr. Gibbs subsequently read a second paper dealing with the species of Coleoptera which had been added to the county list during the year by Mr. E. Geo. Elliman, of Chesham. The number of species recorded by Mr. Elliman in the 'Victoria History' was 1542, and that gentleman now announced the discovery of thirteen other beetles, making a respectable total of 1555.—A. E. GIBBS.

VARIATION OF *TENIOCAMPA GRACILIS*.—From about forty larvæ of *Taniocampa gracilis* found in the Rannoch district on sweet-gale (*Myrica gale*), most of which were destroyed by ichneumons, I have bred six specimens, all of the soft bright red form. In four of these the stigmata are obscure, and the subterminal line is darker red. Two, however, are of a form I have not seen described. The subterminal line is bright pale green with no dark shading. The stigmata, including the claviform, are outlined with pale green clouding, a band of which joins the orbicular and the reniform. From the latter, rays of the same colour extend for a short distance along the nervures towards the subterminal line.—E. A. COCKAYNE; 6, Tapton House Road, Sheffield.

NOTE ON THE HYBERNATION OF *GONEPTERYX RHAMNI*.—January 17th, 1904, dawned extremely cold, no less than thirteen degrees of frost being registered. But the sun was shining brilliantly between ten and eleven, when I happened to notice a female *G. rhamni* sitting on a stem of *Jasminum nudiflorum* about a foot from the ground. Had she been in this position for any considerable time previously, I think I must have noticed her, as I pass the spot several times every day, seeing that it is between my front door and front gate. The jasmine clambers over an eastern wall, which is also partly covered with ivy, and my theory is that the butterfly had been previously sitting concealed in the ivy, but had been tempted by the bright sun to crawl out on to the jasmine, where her colour was in harmony with the multitudinous yellow flowers. The wall faces the east, and is built on Loddard's Hill, 161 ft. above sea-level. Thinking that under these bleak conditions she was not likely to remain in her seemingly ill-chosen position for very long, I observed her carefully, and took notes of the temperature for the next few days. But in spite of my anticipations to the contrary, there she remained until March 9th—a period of fifty-two days! During this time, through every possible vicissitude of weather (except deep snow), the insect never left the same stem, although she moved some two or three inches higher up it. One day I noticed that her antennæ were thickly covered with hoar-frost. The day when she took her departure, flying towards Maldon, was bright and warm, and a friend of mine residing some five miles off (in that direction) tells me he noticed a *rhamni* flying in his grounds on that day. "The same, or not the same, that is the question."—(Rev.) GILBERT H. RAYNOR; Hazeleigh Rectory, Maldon, April 5th, 1904.

PROBABLE EFFECT OF LAST SEASON ON THE OCCURRENCE OF INSECTS.—I believe it will be a matter of general interest if field entomologists will note, during the coming season, the scarcity or otherwise of day-flying moths, butterflies, and dragonflies. Especially with reference to butterflies and dragonflies there seems reason to expect a falling-off in the numbers of species, since the small amount of sunshine, low temperatures, frequent winds and rains must have necessarily interfered with their matrimonial alliances.—J. ARKLE; Chester.

ABERRATIONS OF EUROPEAN BUTTERFLIES.—I was somewhat surprised in reading Mr. Wheeler's observations (*ante*, p. 116) on my article, "New Forms and New Varieties of European Butterflies," or rather those in reference to my new variety *etrusca* of *Erebia neoridas*. Mr. Wheeler states he is not sure the specimens I figure belong to *E. neoridas* at all, saying true *neoridas* presents two constant characters that my specimens lack, *viz.* that the fore wings "are usually very truncated," and that "the inner edge of the rust-coloured band, upper side fore wing, is almost as straight and firm as if marked off with a ruler." An accurate examination of a series of specimens from the south of France has proved to me that the two characters mentioned by Mr. Wheeler are *not* constant; about ten per cent. of the specimens having the rust-coloured band nearly half as narrow in the middle as at the ends, and the borders consequently very concave: as to the shape of the fore wings, some have them much less truncated than the specimens I figure. If Tuscan specimens are considered, it is found they vary much more than the French ones, and that the inner edge of rust-coloured band is *very rarely* straight. What is still more strange is that Mr. Wheeler "should have no hesitation in referring all three specimens figured to *E. euryale*," since the first character that distinguishes this species and *E. ligea* from all the others is the chequered white and black fringe; whilst even in the plate the fringes of my specimens are clearly uniform brown. As to the tooth on inner edge of band on under side of hind wings, it is just as marked in many French specimens of *E. neoridas* as it is in the one that I figure. I may mention here that one of my specimens of this species from Tuscany has the rust-coloured band on upper side of fore wings so broken up as to look rather like *E. cassiope*, and that another has this band replaced by a greenish grey one; I do not think any other *Erebia* has bands of this colour. If Mr. Wheeler or other readers of the 'Entomologist' are interested in Tuscan *Erebia neoridas*, I will willingly send them specimens. — ROGER VERITY; 1, Via Leone Decimo, Florence, Italy.

A HINT TO COLLECTORS OF PARASITIC HYMENOPTERA.—Examine closely the younger larval instars of various leaf-hoppers, especially of *Liburnia* and its allies.—G. W. KIRKALDY; Honolulu.

ABERRATION OF ARGYNNIS PAPHIA.—When looking over back numbers of this Journal, I came upon a figure in vol. xxvi. p. 97, of an aberration of a female *Argynnis paphia*, which has pale spots on the fore wings similar to those found upon its variety *valesina*, and it struck me that I had a specimen—a male—not unlike it. On comparing it,

however, I found it to differ in some respects from the figure, my specimen having four smaller spots, one on each wing. Those on the fore wings are identical as regards position with the most prominent white markings of *valesina*, except that they are much smaller, round, and indented, like the effect produced by pressing the head of a pin upon paper. On the lower wings the spots, which coincide with those on the upper wings, have not the latter peculiarity. Still, the aberration strikes one as having been produced by something which had pressed heavily upon the wing-cases of the pupa of the insect. Mr. Frohawk (*l. c.*) tells us that specimens of *A. paphia*, mostly males, frequently have the white spots on each wing, as in this case, others on one wing only; whilst in other instances the primaries only are spotted. He adds that they seem to be found nowhere else but in the New Forest, whence I secured my example. Now, as there seems to my mind little doubt that the aberration of the latter was caused by accidental pressure upon part of the wing-cases of the pupa, may it not be possible that the occurrences of these spots in *A. paphia*, as well as of many of the other irregular forms of coloration in Lepidoptera generally, owe their origin to a like cause? If so, then the question arises, why should the aberration in the case of *A. paphia* be almost, if not altogether, confined to the New Forest?—F. G. BELLAMY; Ringwood, April 11th, 1904.

ABERRATIONS OF BUTTERFLIES.—In reply to Mr. Verity's queries (*ante*, p. 59), I have one female of *Lycana icarus* var. *melanotoxa*, taken on June 17th, 1895, and one example of the same sex, taken on September 12th, 1894. Both specimens are from Riddlesdown in Surrey, and that last mentioned also has the basi-costal spots of the hind wings confluent and strigated, and the superior basal spot of the fore wings geminate. Also three males taken in Malta on May 17th, 1902, June 14th, 1902, and July 19th, 1901. It is particularly to be noticed that these are all male specimens. Of *Eurymus croceus* (*Colias edusa*) ab. *minor*, Failla, I have two males, one taken in Malta on June 2nd, 1902, and the other at Plateali, in Greece, on February 7th, 1901.—THOS. BAINBRIGGE FLETCHER; H.M.S. 'Impregnable,' Devonport, April 8th, 1904.

CAPTURES AND FIELD REPORTS.

NOTES FROM WESTCLIFF-ON-SEA AND DISTRICT.—The season last year was a most wretched one here, as elsewhere, but, notwithstanding the almost continuous rains, I met with a few interesting species of Lepidoptera when the weather was kind enough to allow one an opportunity of doing a little field-work.

During April and May *Pygara pigra* (*reclusa*) emerged freely in my breeding-cages from larvæ found on aspen and sallow in September, 1902, near Eastwood. From other larvæ found at the same time and place, and also on the same food-plants, were bred odd specimens of *Dicranura bifida* and *Notodonta ziczac*; also a short series of *Eucosmia undulata* and half-a-dozen specimens of the scarce "knothorn," *Nephoteryx hostilis*, Steph., the latter from larvæ found on aspen only.

On June 1st the larvæ of *Geometra vernaria* were found not uncommonly on clematis near Southchurch, and during the month *Melanippe unanquolata* was beaten out of hedges here and there; the latter species appears to occur all over the district, but not commonly; a few *M. rivata* and one *Anticlea rubidata* were also taken, together with several *Eupithecia succentauriata*; *Phibalapteryx tersata* also occurred freely amongst clematis near Prittlewell.

I was unable to do any night-work until July, when Benfleet was visited on several occasions, and the palings, etc., near the railway were treacled, with very poor results; a few of the common Noctuæ which are out in July appeared, and four examples of *Mamestra abjecta* were taken; the commonest insect at the sugar was, strange to say, *Tortrix podana*, with several of the var. *fuscana*. A visit to a ditch full of reeds near was more interesting, as here I took one *Senta maritima* (*ulvæ*) at rest on a reed-stem, whilst *Chilo phragmitellus*, *Scoparia pallida*, and *Herminia cribralis* were flying over and amongst the reeds, and a fine *Phorodesma smaragdaria* was captured as it flew over an adjacent bank.

On July 15th, one of the few fine days we had last summer, I visited the woods near Hadleigh. *Eupithecia plumbeolata*, *Lithosia mesomella*, *Melanippe albicillata*, *Crambus pinellus*, *Rhodophaea consociella*, and *R. tumidella* were taken, with many other species. *Argynnis adippe* was seen in the woods, and *Melanargia galatea* was flying freely in the meadows near the woods; the latter butterfly I have never met with elsewhere in Essex, but in this district it is distributed, I am glad to say, over a wide area along the hills from Benfleet towards Leigh, and also inland, and it is also to be found on Canvey Island.

During August the larvæ of *Eupithecia isogrammaria* were in plenty feeding inside the buds of the clematis near Prittlewell, and on the coast the larvæ of *Chariclea umbra* (*marginata*) were not uncommon at the end of the month on the rest-harrow; whilst searching for the latter I took a single specimen of *Eremobia ochroleuca* at rest on a thistle-head. During this month also Tortrices were fairly abundant on the rough slopes facing the railway near Leigh, and the following species were netted in the course of two short afternoon visits to the locality:—*Dichrorampha politana*, *D. petiverella*, *Sphaleroptera ictericana*, and *Catoptria scopoliana*, all abundant, the last-named species particularly so; *C. cæcimaculana* (two only), and a few each of *Grapholitha nigromaculana*, *Conchylis francillana*, *Ephippiphora trigeminana*, and *Eupæcilia angustana*. At Shoeburyness, on September 20th, the larvæ of *Spilodes palealis* were found feeding in the seed-heads of *Daucus carota*, some nearly full-fed, others not half-grown.

There are still a few fields and hedgerows left between Westcliff and Leigh, although I am sorry to say the jerry builder is fast covering them with bricks and mortar. From September 24th to October 4th I sugared along one of these hedgerows on six occasions, and the following Noctuæ were seen or taken:—*Agrotis suffusa* (a series), *A. saucia* (two), *Phlogophora meticulosa* (abundant), *Noctua c-nigrum* (abundant), *Anchocelis pistacina* (abundant), *A. rufina* (one), *A. lunosa* (several), *A. litura* (two), *Xanthia fulvago* = *cerago* (several), *X. aurago* (six), *X. circellaris* (several), *Cirrhædia xerampelina* (one), *Epunda lutulenta* (one), and *Hadena protea* (three). I was rather surprised at

meeting several of the species named, *X. aurago* particularly, in open country, no woods being near; but I think their continued existence in the locality is due to the fact that many of the hedgerows hereabouts contain a varied growth of maple, oak, ash, and other forest trees and bushes, probably descendants of the original woodlands of the district; these hedgerows doubtless saved *X. aurago* and many other species from extinction when the woods were destroyed.

Although collecting in Essex, chiefly in the Epping Forest district, for the last twenty-five years, I have found a number of species here which I had not met with before in the county, and hope, with better weather during the coming season, to considerably extend the list.

In concluding these brief notes, I should like to express my great indebtedness to Mr. Whittle, of Southend, who has most kindly given me the benefit of his unrivalled knowledge of this locality.—G. HAROLD CONQUEST; "The Moorings," Westcliff-on-Sea, March 26th, 1904.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — *Wednesday, March 16th, 1904.*—Professor E. B. Poulton, M.A., D.Sc., F.R.S., President, in the chair.—Miss M. Maude Alderson, of Worksop, Notts; the Hon. Richard Orlando Beaconsfield Bridgeman, R.N., of Shifnal, Salop, and H.M.S. 'Clio,' Australian Station; Mr. W. A. Luff, of La Chaumière, Brock Road, Guernsey; Mr. Frank S. Mumford, of 10, Mountfield Gardens, Tunbridge Wells; Mr. Edward Harris, of 2, Chardmore Road, Upper Clapton, N.E.; Mr. Thomas Frederick Furnival, of Bushey Heath and Bishopstone, Sussex; and Mr. Geoffrey Mead-Waldo, of Edenbridge, Kent, and Magdalen College, Oxford, were elected Fellows of the Society.—Mr. G. T. Porritt exhibited a pair of *Æschna isoceles*, taken by him in the Norfolk Broads last summer. The species had been regarded as almost lost to the British list for many years.—Mr. J. E. Collin exhibited *Phora formicarum*, Verr., which is parasitic on the ant *Lasius niger*, obtained by sweeping the herbage in a paddock at Newmarket. Prof. Westwood, as long ago as 1840 (Intro. Mod. Classification Ins.) recorded having "repeatedly observed on disturbing the nest of the common brown garden ant a very minute species of *Phora* hovering over and flying upon the ants." This species has not been found or recognized by Continental dipterologists. He also exhibited *Phora* sp. found in a garden at Newmarket, running about at the entrance to a nest of a species of *Bombus*. Specimens received from Dr. Sharp, labelled "from *Bombus* nests," were also the same species.—Commander J. J. Walker exhibited a series of Buprestidæ from Sydney, N.S.W., and the adjoining district (including the nearest part of the Blue Mountains), comprising about a hundred and twenty species, of which seventy belonged to the genus *Stigmodera*. Also a dried specimen of *Angophora cordifolia*, Cav., a small tree of the natural order Myrtaceæ, the flowers of which are the great attraction in New South Wales for the Buprestidæ, as well as for many other Coleoptera; specimens of the "Bugong" moth, *Agrotis spina*, Guenée, from Jervis Bay, N.S.W. (referred to at the previous meeting); and

Carthæa saturnoides, Walk., a remarkable moth from Perth, W.A., now referred to the Geometrina, but possessing an extraordinary superficial resemblance to a Saturniid in aspect, though not to any of the known Australian species of that family.—Mr. A. J. Chitty exhibited a specimen of *Peribalus vernalis*, Wolff., a rare bug, of which only five or six specimens appear to have been taken, and pointed out that as the records in Saunders' 'Hemiptera' included Cumberland and Weston-super-Mare, and his own specimen was taken at Huntingfield, Kent, probably it had been overlooked. Mr. Claude Morley had also taken one specimen in Essex.—Dr. F. A. Dixey exhibited a remarkable pale form of *Mamestra brassica*, taken by Dr. G. B. Longstaff and himself at Morthoe, North Devon, on July 16th, 1903.—Mr. C. G. Barrett had examined the specimen, and pronounced it probably unique. Sir George Hampson had also seen it, and pointed out that it was provided with the spur on the anterior tibia, which is characteristic of *M. brassica* among the allied European species.—The President, Professor Poulton, read "Some Observations on the Gregarious Hybernation of certain Californian Insects," communicated by Professor Vernon L. Kellog, of the Leland Stanford Junior University, California. He also read a paper, "A Possible Explanation of Insect Swarms on Mountain-tops," and a discussion followed, in which Dr. Chapman, Mr. Chitty, Mr. Champion, Mr. Tutt, Colonel Swinhoe, and other Fellows joined.—Mr. O. E. Janson contributed, on behalf of Mr. F. P. Dodd, of Townsville, Queensland, a note upon "Maternal Instinct in Rhynchota;" and Mr. Rowland-Brown read a "Note on *Oncoptera intricata*," a moth extremely destructive to pastures in Tasmania, by Mr. F. M. Littler, M.A.O.U., of Launceston, Tasmania. He also exhibited examples of the imago and larva of the species.—H. ROWLAND-BROWN, *Hon. Sec.*

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*March 10th, 1904.*—Mr. A. Sich, F.E.S., President, in the chair.—Mr. Tonge exhibited (1) specimens of *Danaïs chrysippus* and *Anosia plexippus*, with other species of butterflies he had just received from Siam; (2) a photograph of a female *Lgcæna iolas*, bred by Dr. Chapman, showing its resting pose; (3) photograph of the ova of *Thera juniperata*, *in situ* on a juniper leaf, and also of the ova of *Hybernia rupicaprararia*. Mr. Moore, a living specimen of the locust, *Acridium agypticum*, found in Covent Garden Market in a basket of mimosa, and read notes on its habits.—Mr. Adkin (1), a female aberration of *Bupalus piniaria*, in which the usual dark markings were represented only by two small spots on the costa and a few spots on the fringes, the remainder being of a pale brown; (2) an aberration of *Callimorpha dominula* with the usual red colour of the hind wings replaced by yellow.—Mr. Sich, sketches of larvæ illustrating the main characters of the various lepidopterous groups.—Mr. McArthur, two specimens of the extraordinary South American owl-moth, *Thysania agrippina (striv.)*, one of which measured more than ten inches across the expanded wings.—Mr. Tutt gave an address entitled, "Some Modern Requirements in Oval and Larval Description," illustrating his remarks by blackboard sketches, and a large number of diagrams prepared by Mr. Bacot. A considerable discussion took place.

March 24th.—The President in the chair.—Mr. H. Rowland-Brown, F.E.S., of Harrow, was elected a member.—Mr. Main exhibited a collection of Coleoptera from Cape Colony, Hemiptera from West Africa, and a spider found in a cargo of sugar from Java.—Mr. Goulton, photographs of the ova of *Ptilophora plumigera* and *Eubolia cervinata*, with notes on their characteristics. He also showed photographs of various species of lepidopterous larvæ in their resting positions.—Mr. Mauger, a large Coleopteron, *Macrodontia cervicornis*, from Demerara.—Mr. West, an example of the rare British Longicorn, *Monohammus sutor*, taken on a doorstep at Great Yarmouth in 1903.—Mr. Malcolm Burr gave a very interesting address on his tour in Montenegro, and along the mountains on the eastern coast of the Adriatic; and illustrated his remarks with a large number of lantern slides, made from photographs taken by himself.—HY. J. TURNER, *Hon. Rep. Secretary*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The Second Ordinary Meeting of the Session was held in the Royal Institution, Liverpool, on March 21st, Mr. Robert Tait, Junr., presiding over a large attendance of members.—Mr. Wm. Mansbridge, F.E.S., Sefton Park, Liverpool, was elected a member of the Society.—A paper entitled "Notes of Captures, &c., near Simonswood Moss," was contributed by Dr. J. Cotton, F.E.S. After describing the situation and limits of the Moss, which is roughly a mile long by three-quarters of a mile broad, the lecturer entered into details of the best methods and most suitable nights for sugaring. He prefers to work with a sheet and acetyline lamp, manufacturing the gas on the spot by means of a simple and portable apparatus. The extent of ground to be covered makes a companion desirable, for the possibility of meeting with poachers is not a remote one. The only time a friend seems *de trop* is when single rarities such as *Acronycta alni* or black *A. leporina* turn up, and there comes the inevitable division of the spoil! The paper was largely devoted to a description of some twenty of the most noteworthy forms which occur on the Moss, including *Notodonta camelina*, *N. dictæoides*, *N. dromedarius*, *Hadena glauca*, *Triphana fimbria*, &c., with earliest and latest dates of capture. An enumeration of the Lepidoptera taken on this Moss shows a total of one hundred and fifty-six species, twelve of these being butterflies. A discussion was afterwards carried on by Major Ross and Messrs. R. Tait, Junr., R. Willing, F. N. Pierce, F. Birch, and E. J. B. Sopp; and it was generally accepted that all the evidence forthcoming corroborated the theory that dampness is the predominant factor in producing melanism. On the motion of Mr. R. Wilding, a hearty vote of thanks was accorded the lecturer.—Dr. G. W. Chaster exhibited all the species of the genus *Agathidium*, including the recent addition to the British list, *A. badium*.—Mr. C. E. Stott showed *Periplaneta australasiae*, a cockroach which has now become naturalised at Worsley (Lancs.).—Mr. F. N. Pierce, a specimen of *Cryptophagus acutangulus*, from Manchester.—Mr. J. J. Richardson, *Ptinus tectus*, from Liverpool; and Mr. Sopp, *Panchlora viridis* and *P. virescens*, from Liverpool, which had been kindly identified for him by Mr. Malcolm Burr.—E. J. B. Sopp and J. R. LE TOMLIN, *Hon. Secretaries*.

RECENT LITERATURE.

Catalogue of British Coleoptera. By T. HUDSON BEARE, B.Sc., F.R.S.E., F.E.S., and H. ST. J. K. DONISTHORPE, F.Z.S., F.E.S. 8vo. Pp. 51. London: O. E. Janson. 1904,

APPEARS to be a revised and extended edition of the Sharp-Fowler Catalogue, published in 1893. The species are numbered consecutively throughout, and with six mentioned in the addenda reach the respectable total of 3271. There are but few changes in the arrangement of families, and generic and specific nomenclature remain pretty much as they were. Lists of Introduced and of Doubtful Species are also given.

New Zealand Neuroptera: a Popular Introduction to the Life-Histories and Habits of May-flies, Dragonflies, Caddis-flies and allied Insects inhabiting New Zealand: including Notes on their Relation to Angling. With eleven Coloured Plates. By G. V. HUDSON, F.E.S. 8vo. Pp. i-viii and 1-102. London: West, Newman & Co. 1904.

IN this admirable little volume the author has entered pretty fully into details connected with the habits and life-histories of the more important and conspicuous neuropterous insects inhabiting the streams, rivers, and lakes in New Zealand.

Sharpe's arrangement of families has been adopted. These are eleven in number, but the Mallophaga and Psocidæ have been omitted, and of Embidæ and Panorpidæ no representative has been so far observed in the country. Altogether sixty-one species belonging to thirty-six genera are dealt with. Of these, twenty-four species belong to the Phryganeidæ, thirteen to the Ephemeridæ, ten to the Odonata, and seven to the Hemerobiidæ.

The plates, reproducing the author's own drawings, are exceedingly good.

Eighth Annual Report of the State Entomologist of Minnesota for the year 1903. Second Annual Report of F. L. Washburn. Pp. i-xvi and 1-184.

THIS volume is full of interesting matter connected with the occurrence of injurious insects in the State of Minnesota during 1903. The greatest loss to farmers during the year seems to have been caused by the chinch bug (*Blissus leucopterus*), whilst the Hessian fly (*Cecidomyia destructor*) has also been active, but not more so than in previous years. Forty-seven kinds of insects are mentioned as more or less destructive to apple-trees. Of these, eleven are beetles and twenty-three are moths.

Index Faunæ Novæ Zealandiæ. Edited by Captain F. W. HUTTON, F.R.S. Pp. i-viii and 1-372. London: Dulau & Co. 1904.

IN this exceedingly useful index to the animals of New Zealand the Insecta alone occupy one hundred and forty pages, eighty of which refer to Coleoptera and twenty-three to Lepidoptera. Synonymy, which would probably have greatly added to the size of the book, has been excluded, but references are given to the works where such particulars as well as descriptions can be found.



1.



2.



3.



4.

NYSSIA LAPPONARIA, *Boisd.*

Figs. 1 and 2, males at rest. Fig. 3, female at rest. Fig. 4, female depositing ova on a reed. All slightly enlarged.

From photographs taken by E. A. Cockayne.

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ON *NYSSIA LAPPONARIA*.

BY E. A. COCKAYNE.

PLATE VI.

LAST spring I had hoped to have published some observations on the habits of *Nyssia lapponaria*. Unfortunately, a bitter cold north-west wind raged the whole time I was in the Rannoch district, and I only saw a single male and four females. This season I have been more fortunate, and hope the following notes will be of interest.

The ova are laid during the day in any deep chink, in batches of 10 to 150. The female walks slowly up anything which grows in the marshy ground they inhabit, probing with her extremely long ovipositor until a suitable place is found. I have actually observed wild females laying in reeds between the stem and outer sheath, in a crack in a dead bracken stem, and under flakes of bark on fallen sallow twigs; but the most usual place is undoubtedly in the dry brown corollas of the cross-leaved heath (*Erica tetralix*).

This last, with bog-myrtle (*Myrica*), appears to be the favourite food of the larvæ, which hatch from May 20th to the 30th, and are full-grown at the beginning of July, a few lingering on to the end of the month, or even till the second week in August. The pupæ lie very near the surface, and are quite without cocoons. Out of doors they probably always remain two years in this state; but in the house many emerge after one winter, and can easily be recognized, since in them the insect is fully formed a month or two after pupation, and they become very dark in colour. They are very sensitive to changes of temperature, and a cold night will prevent any from emerging. This, and their power of remaining in the ground till a more favourable season, probably explains the extreme irregularity of their appearance.

During the day they sit on the top of the bell-heather and common ling, frequently paired or a male and female close together, or about half-way up the stem of a bog-myrtle, with

head pressed against a small outstanding twig. When paired, the male is usually upside down—the only time it assumes this position—and is consequently rather difficult to see. Both sexes also sit on posts or the trunks of birches, if these occur in their chosen haunt. The males are very fond of sunshine, and sometimes spread their wings and bask like a butterfly. We saw one male even flying in the sunlight, low down and very swiftly. Their true flight-time I did not discover, but probably it is at night, which is also the time of emergence. The insect appears to be very sluggish, clinging very tightly, and finally falling with legs drawn up, feigning death, the wings either tightly closed or held up over the back.

We never met with a really worn specimen, though they continue to emerge the whole of April. In captivity the first emerged on January 31st, and the last on May 7th, in 1902. The insect is very local, many apparently suitable spots being quite untenanted. In all cases, however, they were near a small stream, doubtless owing to the abundance of their food-plants in such a situation.

The males vary only slightly in depth of colour and thickness of the black bands, and in ground colour both of fore and hind wings, which is white or pale grey. One I obtained was so dark grey as to appear almost uniformly smoke-coloured. In two others the reverse occurred; the black bands had almost vanished, being represented only by two thin black lines and a black discal spot. The scales on thorax and abdomen were also much whitened.

The females vary in the amount of orange dusting. In some it is absent altogether; while in one I took it is so intense that the insect appears to have an orange ground colour. In two others dull yellow replaces all the orange, and the hair is very short. I also found a female in which the rudimentary flaps representing the fore wings were more than twice the usual length, the hind flaps being normal; doubtless a case of reversion.

I have one other remark to make. The scales on the under surface of both wings are present, very thin, and not overlapping, it is true, but no thinner than on the upper surface; certainly not totally absent, as Barrett has described in his recent work. To the naked eye, however, the under surface does appear smooth and shiny.

[*Nyssia lapponaria* was made known as a British insect in 1871, but only one specimen was then obtained. This example, a male, was taken in Perthshire by Mr. Warrington (Knaggs, Ent. Mo. Mag. vii. p. 282; Ent. Ann. 1872, p. 116; 1874, pl. i. fig. 2). About ten years ago Mr. William M. Christy obtained the species in Scotland; and in 1895 he sent ova to Mr. F. W. Frohawk, who was thus enabled to study the metamorphoses of *N. lapponaria*, and to describe and figure its stages from ovum to imago (Entom. xxviii. pp. 163, 237).—E.D.]

SOME RECURRENT PHASES OF VARIATION IN THE LARENTIIDÆ.

By LOUIS B. PROUT, F.E.S.

I SUPPOSE no lepidopterist can take up the systematic study of the variation in a particular family or genus, &c., without being struck with the parallel lines upon which it runs in the several species—a very evident suggestion, we may take it, of community of descent. To be sure, many of the most frequently recurrent phases of variation may almost as aptly be described as characteristic of the whole order of Lepidoptera, subject only to such limitations as are imposed by the nature of the general colour-scheme or pattern; and as some of these will be mentioned in the following tentative notes, I might, if I had not held a lengthy title inexpedient, have more accurately headed them “Some Recurrent Phases of Variation in the Lepidoptera, as especially exhibited in the Larentiidæ”; but it is none the less true that the *emphasis*, if one may so speak, of a particular type of variation is often restricted to a comparatively few families or genera, and that the student therefore gradually comes to associate such type rather with these than with the Lepidoptera *en masse*. Take, for instance, the characteristic costal darkening of *Apamea ophiogramma*, which appears again in one of the forms of the allied *A. secalis* (*didyma*), but is absolutely unknown in many other Noctuid genera, where it might conceivably have occurred; or, again, the pale costa which is apt to characterize certain forms of many Agrotids—*Triphæna pronuba*, *Peridroma saucia*, *Agrotis tritici*, *A. cursoria*, &c. And even some other variations, which appear in a wider range of unrelated genera than these—such, for instance, as the suppression of certain markings, or a variability in their position—are decidedly more prevalent in some groups than in others.

The distinctive types of marking of the Geometrides in general, and of the Larentiidæ in particular, seem to lend themselves to the following frequent phases of variation, amongst others:—melanism; a narrowing of the central area, by approximation of the first and second lines; a breaking up of a normal “central fascia” into lines, or, conversely, a consolidation of what are normally mere lines into a “central fascia”; and a suppression of markings in the basal and marginal areas, often accompanied by an intensification of them in the central. I want to call attention here to some of the principal Larentid species exhibiting these phases of variation, and I have called my notes “tentative” because I have not yet given adequate systematic attention to the matter, and am hoping, by writing on the subject, to obtain supplementary information from fellow-entomologists.

Melanism is, as is well known, of very wide occurrence in our fauna, but I think that even it can only be regarded as really *characteristic* of a comparatively limited number of groups. Confining our attention, for instance, to the Geometrides, we only find it at work to any large extent in two of the principal families, the Boarmiidae (sens. lat.) and the Larentiidae, although I admit that they are the two largest numerically; but even in the former of these the distribution of melanism seems somewhat partial and irregular. Thus the "thorns" (Ennominae), although occasional dark aberrations of *Ennomos quercinaria*, &c., show that they are capable at least of "melanochroism," cannot be said to markedly favour variation in this direction; whereas the Boarmiinae (the genera *Boarmia*, *Tephrosia*, &c.) show few British species indeed which are free from the tendency. The other principal geometrid families—the Acidaliidae or "Waves," the Geometridae or "Emeralds," the Orthostixidae, Ctenochromidae, Cyllopodidae, &c., of which we in England know so little—are practically a "negligeable quantity" when we are considering melanism; I am not forgetting a few isolated cases, such as a fine melanochroic specimen of *Acidalia aversata* bred by my friend Mr. W. G. Sheldon, but (with all deference to the Evolution Committee of the Royal Society) I cannot allow that the Linnean (banded) type of this species has any right to be included in the series of melanic forms. As to the absence of prominent melanism in the tropical families, &c., I can only say that, so far as is at present known, it seems to be mainly a phenomenon of the fauna of the holarctic region.

In the Larentiidae melanism is decidedly conspicuous. Several species of *Eupithecia*, &c., have very interesting black or blackish forms—e. g. *Chloroclystis rectangulata* (ab. *nigrosericeata*, Haw.), *Eupithecia albipunctata* (ab. *angelicata*, Barr.), *E. virgaureata* (? var. *altenaria*, Stgr., pro parte), *E. vulgata* (ab. *subfuscata*, Haw.), *E. denotata* = *campanulata* (? var. *atraria*, H.-S.), &c. The Shetland form of *E. venosata* (var. *fumosa*, Gregs. = *nubilata*, Bltsh.*) is likewise well on the road towards melanism, compared with the pale typical form of the species. In *Larentia* (in sens. Guen.) we get *L. multistrigaria* (ab. *nubilata*, Tutt), *L. caesiata* (ab. *glaciata*, Germ.), *L. flavicinctata* (Staudinger has recently named our dark Scotch race var. *obscurata*), and even *L. didymata* (ab. *nigra*, mihi, n. ab. = Barrett, Lep. Brit. viii. 176, pl. 346, fig. 2c). In *Hydriomena* (*Ypsipetes*), nothing could be much more extreme than some of the forms of *H. furcata* (*sordidata*). In *Thera*, *T. variata* var. *obliterata*, B. White

* I cannot trace the original reference to Gregson's overlooked varietal name, but it is certainly long prior to that of Bohatsch, for it appears in Robson & Gardner's list, 1886; probably it was a manuscript name before that date. I have to confess that I had also lost sight of Gregson's name for the Orkney var. of the same species—var. *ochracea*, Gregs. (Young Nat. vii. 128)—and renamed it *orcadensis* (Ent. Rec. xiii. 336).

(*scotica*, Stgr.), is sometimes intensely black. *Xanthorhoë*, *Epirrhoë*, &c. (*Melanippe*, Dup. et Gn., nom. præocc.*), furnish several interesting examples, especially as we get towards the north and east of their range—I imagine we must place North America to the northward from this point of view, as the connection seems to lie between Icelandic forms and those of Labrador, &c.; though I believe some run a long way south in the Rocky Mountains. Thus there are *X. fluctuata* var. *neapolisata*, frequent in Scotland, and the more extreme var. *thules* in Shetland; *E. alternata*, Müll. = *sociata*, Bkh., darkened in the Hebrides (var. *obscurata*, South); *Melanthia procellata*, almost melanic in Japan (var. *inquinata*, Butl.); *E. hastata* and *E. luctuata*, Schiff. (*lugubrata*, Stgr.), often extremely black in Labrador and the Rockies, &c. (var. *gothicata*, Gn., and var. *obductata*, Moesch., respectively; Petersen, Lep. Estl. 131, has recently added a “var. *borealis*” to the latter, occurring in Esthonia and in Northern Finland, and making a transition to the var. *obductata*). *E. hastata* is also darkened in Iceland, producing the curious “Darwinian species,” *thulearia*. In Guenée’s incongruous genus “*Melanthia*,” † melanism is well known in our interesting Scotch forms of *M. bicolorata*, and has even occurred in such an unlikely species as *M. albicillata* (ab. *suffusa*, Carrington). In *Perizoma*, Hb. (*Emmelesia*), it crops up in a very marked form in the Shetland var. *thules* of *P. albulata*; in *Oporabia*, in all the species; in *Venusia*, in the type-species *cambrica*. In “*Cidaria*,” as used by our British writers, there are several interesting examples, such as *C. suffumata* ab. *piccata*, *C. truncata* and *C. immanata*, *C. populata* ab. *musauaria*, *C. testata* var. *insulicola*, Stgr.—our Shetland form. Lastly, I must not omit to mention the wonderful Irish forms of *Camptogramma bilineata* dealt with by Mr. Kane (*vide* Irish Nat. v. 74–80, 1896; Entom. xxxi. 85, 1898), and unaccountably overlooked in Staudinger’s ‘Catalog.’ These are ab. *hibernica*, mihi, ‡ = *infuscata*, Kane nec Gmppbg., with almost unicolorous fuscous-brown fore wings, and the still more extreme var. *isolata*, Kane, with all the wings sooty black.

The next phase of typical variation to be considered in the family is the narrowing of the central area. This is, I suppose, liable to occur in any species which has the wings divided by

* I have endeavoured to use chiefly generic names familiar to British readers, but I cannot bring myself to perpetuate error by maintaining a homonym, against all canons of zoological nomenclature.

† Guenée’s *Melanthia* does not even retain the type of Duponchel’s genus of that name, which the author himself fixed as *procellata*; as *procellata* seems to be *sui generis* (*cf.* Tijd. Ent. xxxii. 207), it ought to be known as *Melanthia procellata*, not as *Plemyria*, Hb., as proposed by Snellen; the type of *Plemyria* is *bicolorata*, Hfn. (not “Hb.”), as stated by Hulst.

‡ The “Geometrides” in Mr. Tutt’s valuable “List of Species, Varieties, and Aberrations of Lepidoptera, so far only recorded from British Localities” were written up entirely by me (*i. e.* Ent. Rec. xiv. 202–204), although not so indicated.

transverse lines at all, and one meets with it occasionally in *Macrothylacia rubi*, in certain Noctuids, &c. But so far as my observation goes, it is nowhere else so persistently recurrent as in the Larentiidae. There are very few of our "carpet-moths" in which it is not recorded, and in many it has appeared repeatedly; so that most of our moderately large collections can boast some characteristic examples of it. When I was specially interesting myself, some ten or eleven years ago, in *Coremia ferrugata* and *C. unidentaria*, I obtained information of the existence of some half-dozen very striking examples of the extreme narrowing of the median band in the latter (ab. *coarctata*, mihi, ex Warr. MS.), and I have since heard of others, and of two or three in the allied "*ferrugata*" (rightly to be called *spadicearia*, Schiff.). In *C. designata*, my friend Mr. Goldthwait has bred some nice examples, and one of Mr. Sydney Webb's is figured in Barrett (pl. 343, fig. 2*b*); in *C. munitata* I have myself taken one in Aberdeenshire; whilst in such species as *Xanthorhoë fluctuata*, *X. montanata*, and *Epirrhoë alternata (sociata)*, quite a large number are known. Are our friends on the Continent less keen on these chance aberrations than we? I have a rather extreme, narrow-banded *X. montanata* from Hamburg, priced at sixpence (only six times the value of typical specimens), which seems to me strictly parallel to the extreme *Coremia unidentaria* ab. *coarctata*, a form that fetches about a sovereign at Stevens'. My specimen of *Melanthia ocellata*, figured by Barrett, plate 338, fig. 2*b*, was most generously presented to me by my old friend Dr. F. J. Buckell, who took it at Wimbledon on June 5th, 1890, and has been recorded by him. I have never yet seen nor heard of another to equal it, though specimens with the band narrowed to a less extreme degree turn up occasionally; but as the extreme form is always liable to recur, and most of the aberrations of this nature have received, or are receiving, distinctive names for convenience of recording, I propose to apply one in the present case as follows:—

Melanthia ocellata, L., ab. *coarctata*, mihi, n. ab. Median band extremely narrow, width hardly exceeding 2 mm. at the widest part, and the boundaries almost meeting at the narrowest. Type figure, Barrett's 'Lepidoptera of the British Islands,' vol. viii. pl. 338, fig. 2*b*.

In *Perizoma (Emmelesia)* I have a North Devon specimen of *P. teniata*, agreeing with Strand's recently described ab. *angustifasciata* (Arch. Math. og Nat. xxv. No. 9, p. 17, 1903)—"the dark median band so narrowed that its breadth is scarcely one-sixth of the wing-length." In *Anaitis plagiata*, the narrowing of the central area results in a very striking aberration, fairly well known to British entomologists, though, I think, unnamed as yet; for here, always and necessarily, we get what only extremely rarely happens in the forms with wider central area—that area

entirely filled in with dark colour, making a "central fascia," and rendering the popular name of "the treble bar" a misnomer.

It is very interesting to trace the still further reduction of the central area, resulting in the breaking up of the band into two separated portions, both of course very narrow; and finally in its almost reaching "vanishing point," a minute portion around the discal spot generally persisting. Of the former phase, *Epirrhoë alternata (sociata) ab. degenerata*, Haw., is a good example; *vide* Barrett, Lep. Brit., pl. 337, fig. 3 a, for an extreme development of it, and fig. 2 a for a similar thing in *E. rivata*. Mr. Embr. Strand, of Christiania, is to some extent following Mr. Cockerell's advice (Entom. xx. 151), by employing a uniform terminology for this variation, for he has already described it in several species as "ab. *constricta*." His *Larentia montanata ab. constricta* (Arch. Math. xv. No. 9, p. 19, 1903) is synonymous with my ab. *degenerata* (Ent. Rec. vii. 249, 1896), suggested on the analogy of Haworth's "*degenerata*" mentioned above. Of the latter phase (reduction of band almost to vanishing point) I can cite well-known examples in *Thera variata* (compare Barrett, pl. 366, fig. 3 b), in *Xanthorhoë fluctuata (ab. immaculata)*, Tutt, Ent. Rec. i. 322, et ab. *deleta*, Ckll., Ent. xxii. 100, *cfr.* Ent. Rec. viii. 103, 164), *X. montanata (ab. albicans)*, Strand, Nyt. Mag. Nat. xxxix. 59, 1901, compare Barrett, pl. 341, fig. 1 c), &c.

The third line of variation which I mentioned as characteristic of the family, was in the dissolution or consolidation of the central fascia. What I mean is, that several of the banded species show a tendency to break up into the "waved" or lineated type of markings, which was perhaps the more ancestral; while several of the waved occasionally develop a well-marked dark central band. Of the former class I may instance the species of *Coremia*, and notably *C. munitata var. algidata*, Mösch., from Lapland; *C. spadicearia (ferrugata)*, in some of the Scotch and Irish forms, &c.; and *C. quadrifasciata ab. dissolutaria*, Petersen (Lep. Estl. 127, 1902)—"*alis anticis fascia media in strigis dissoluta*." In the direction of consolidation I instance Mr. Sydney Webb's marvellous aberration of *Eucosmia undulata*, figured by Barrett, pl. 363, fig. 3 a; the well-known Rannoch forms of *Lobophora carpinata*; *Cheimatobia brumata ab. hyemata*, Huene, Berl. Ent. Zeit. 1901, pl. vi, fig. 3, Barrett, pl. 372, fig. 2 c; the corresponding *C. boreata ab. fasciata*, Petersen, Lep. Estl. 120; *Oporabia dilutata ab. latifasciata*, mihi, Entom. xxxiii. 60, pl. ii, fig. 12, = *bicinctata*, Fuchs, Jahrb. Nass. liii. 58; besides occasional aberrations of the variable *Camptogramma bilineata*, of *Venusia cambrica*, &c.

Finally, and perhaps closely connected with the last-mentioned massing of lines to form a dark central band, we get the not infrequent suppression of markings in the basal, and espe-

cially in the marginal areas, "often accompanied," as I said above, "by an intensification of them in the central." A perfect example of this is the exquisite *Cidaria suffumata* ab. *porrittii*, Robs. & Gard. (List Brit. Lep. 45), of the Huddersfield and Dover districts, probably well known to most of my readers, and well figured by Mosley (Var. Brit. Lep., *Cidaria*, pl. 3, fig. 4) and Barrett (Lep. Brit., pl. 359, fig. 1 *d*), with its beautifully clear creamy or even chalk-white wings marked only by the intense basal and central fasciæ and slight apical streak. But of course the existence of this aberration alone would not have warranted my inclusion of it in an article on "recurrent" phases of variation, and I must mention a few others. This is by no means difficult, and indeed some are hardly less striking than *C. suffumata* ab. *porrittii*. Iceland is famous for two of these—*Cidaria immanata* ab. *thingvallata*, Stgr., "al. ant. albid., basi fasciaque media atra vel fusca," and *Larentia cæsiata* ab. *gelata*, Germ.—diagnosed in nearly the same words; something very near the former has certainly been taken in Scotland. Of *Lobophora polycommata*, a very pretty form stands in our museum as ab. *hyemata*, Bkh., with just this same suppression of subordinate markings, leaving the central fascia in the boldest relief. Then, too, I have bred the same kind of thing in *Epirrhoë galiata* from Torquay; and very effective is the unusually dark central area on the clean, almost unmarked, chalk-white ground.* In *Eucosmia certata* Mr. Barrett figures, again from Mr. Sydney Webb's rich collection, an example which combines the narrowing of the central fascia with its darkening, and the disappearance of strigæ from other parts of the wings; it is certainly parallel to the cases we have been considering, although the fact that the ground colour is light brown instead of white renders its general effect somewhat less conspicuous.

I feel that I have by no means exhausted my subject, but I must have exhausted my readers' patience, and it is high time to close. In selecting the Larentiidae for these investigations, I cannot help feeling that I have made a happy choice, as their dominance in those regions where variability seems to reach its highest point, conduces hardly less to the furnishing of material than does the particular adaptability of their type of pattern; and I could only wish that a larger number of my fellow-entomologists would awaken to a more lively interest in them, instead of reserving nearly all their affection for "tigers" and "magpies."

* The usual Huddersfield form approaches this, but is decidedly less extreme.

A "BUTTERFLY SUMMER" IN ASIA MINOR.

BY MARGARET E. FOUNTAINE, F.E.S.

(Continued from p. 137.)

Lycena anteros, Fr.—Fairly common at Broussa the first fortnight in May; singly at Amasia and Tokat. My best specimens of this species I took in some sloping flowery meadows at Arnautkeñy, near Constantinople, in the middle of September. It was evidently an autumn brood. The females were easily distinguished from *L. astrarche* by the warm tone of the ground colour underneath; the males not unfrequently had orange spots on the lower margin of the hind wings on the upper side, and the inclination to this was more decided in the autumn brood.

L. eros var. *caudalus*, H.S.—Common round Amasia all the summer; the females were, however, rare and difficult to meet with, which was no doubt partly owing to their insignificant appearance.

L. icarus, Rott.—Common everywhere. A beautiful form in the female, shot with blue almost over the entire area of the wings, occurred not uncommonly at Amasia and Tokat. I caught one male at Amasia in July, almost without spots on the under side.

L. bellargus, Rott.—I did not see anything but typical specimens either at Broussa or Amasia.

L. corydon var. *corydonius*, H.S.—I took my first specimen of this lovely variety at Tokat, July 13th, but did not see any more till I returned to Amasia. It was not at all particularly common, and I only took two females, and some ten or twelve males, all told.

L. meleager var. *stevani*, Tr.—All the females belonged to this variety, both at Amasia and Tokat.

L. admetus, Esp.—Common at Amasia in June and July; principally the type, but there was an occasional inclination to var. *ripartii*, Fr., in some of the specimens.

L. mithridates, Stgr.—This was a very rare butterfly, and though I kept a sharp look-out for it, I only took one magnificent male at Amasia, in July, just before I left for Tokat; and afterwards, in August, one female, which, I think, is also *mithridates*.

L. dolas var. *menalcus*, Fr.—First specimen taken on June 20th, in Tschirtschir Valley, where it afterwards became extremely abundant, though the females were always much less common than the males. When flying, the male of this butterfly looks quite white; the ground colour of the under side varied from a dull drab to a pale fawn colour, and in the females the tone was much warmer.

L. hopfferi, H.S.—Also first captured on June 20th, in the Tschirtschir Valley, where it also became extremely abundant at the end of June and throughout July. The females were extremely difficult to distinguish from *L. poseidon*.

L. poseidon, Ld.—This most lovely "blue" was not nearly so common as the two preceding species. It flew at the same time, and in the same localities, but on the Caraman it was rather more common than either of them.

L. damone var. *carmon*, H.S.—This beautiful butterfly elucidated

the difficulty of distinguishing their females by appearing some ten days before the other closely-allied species; also she has the fringes of her wings white, instead of pale brown, as was the case with all the others. I first caught it on the Caraman on June 10th; but at Tokat, in the middle of July, it was apparently quite fresh out, and in fine condition, when every sign of it had long since disappeared at Amasia.

Var. *iphigenia*, H.S.—I took two examples of a paler blue at Tokat, which I suppose would be classed as belonging to this variety.

L. argiolus, L.—In the Kerasdere, &c., near Amasia, in June.

L. sebrus, B.—Fresh out on the Caraman and other places, end of May and beginning of June.

L. semiargus var. *bellis*, Frr.—A few very fine specimens at Broussa in May; one at Amasia in June; and a few, not very fresh, from the pine forest on the old Silva Road, near Tokat, in July.

L. cyllarus, Rott.—Common at Broussa in May.

L. iolas, O.—A remarkably fine form at Amasia in June, and Tokat in July. The specimens were fresher at Tokat, and I hoped for a second brood at Amasia, which, however, did not appear.

Libythea celtis, L.—Common at Amasia and Tokat.

Limenitis camilla, S.V.—At Broussa in May, and again in August and September. The autumn brood of this species was extremely plentiful. It also occurred at Amasia.

V. Grapta egea, Cr.—At Amasia in July, but rare.

V. G. c-album, L.—At Broussa in September. I took one specimen in which the dark marginal borders on all the wings were replaced by a pale greenish ochre, and the under side was a plain dull drab, with the markings much less distinct than is usual with this species, but the *c* mark is quite typical. The rest of the specimens from Broussa are of the form that is dark underneath. What is the rule (if there is one) about these light and dark “commas?” Of three I have from North Italy, one is light, one is inclining towards being dark, and the other is quite dark; they were all summer broods taken in the month of August, in different localities, the two first on the plains, the last-named in the mountains. One I have from Switzerland, in July, and another from Sicily, in June, are both light. One from Austria, and two from South-east Hungary, all in July, are decidedly inclined to be dark; therefore I cannot see that they can be said to be influenced by season or altitude, but I do not recollect ever having taken the two forms flying together at the same time and place.

Vanessa polychloros, L.—Fairly common round Amasia throughout the summer.

V. xanthomelas var. *fervida*, Stdg.—I took only one specimen on the Lokman, but saw several others; I did not observe it in the valleys. It seems to me to come nearer to *V. xanthomelas* than it does to *V. polychloros*, indeed I find it difficult to separate it from the former at all.

V. urticae var. *turcica*, Stgr.—I secured over a hundred “lesser tortoiseshell” larvæ at Broussa, in April; and after Bersa had endured having his fingers stung with nettles several mornings, procuring their food-plant, they all duly pupated. I had expected that a good percentage of them would also have been “stung” in a different way, but as this was the case with only one out of all the number I had, there was indeed more than enough when the butterflies began emerging in the

beginning of May. Some were almost typical, others inclined towards the variety, and a good many decidedly belonged to it, though scarcely any quite so much so as those I have (also bred) from the Cedar Mountain in the Lebanon.

V. io, L.—There were hibernated specimens at Broussa in April, but I did not see it again in the autumn.

V. antiopa, L.—Rare in the neighbourhood of Amasia. I only caught two, both in the Tschirtschir Valley in June, and saw no others, except a few hibernated specimens in the Kevasdere.

Pyrameis atalanta, L.—Generally distributed.

P. cardui, L.—Towards the end of July, when I first got back to Amasia from Tokat, a perfect plague of these insects was swarming everywhere; there were hundreds and thousands of them, from the top of the Lokman down into the hot valleys below. They were all in perfect condition, and had no doubt been reared on the dwarf yellow thistles, which grew everywhere, by the roadsides, up the valleys, and on the mountains. It was quite a nuisance; everything else seemed for the moment to be comparatively exterminated by this gigantic visitation of "painted ladies." For three or four days I was quite in despair over them; then all at once, to my intense relief, they suddenly disappeared, nothing but a stray specimen here and there was to be seen; evidently a huge migration had taken place, for which I felt I could not be too thankful.

Thaleperis ionia, Ev.—The first brood was practically over when I first got to Amasia, but I knew it would come again, so awaited reappearance with hope and patience. Guelly and the Kevasdeve were the two best localities for this most interesting butterfly, and at the end of June it was soon common enough, but difficult to catch, as it generally flew far out of reach, hovering over the upper branches of the *Celtis* shrubs, which unluckily grew here to the size of big trees. It resembled an *Apatura* in its predilection for one special twig, to which, if not seriously alarmed, it would return again and again with unerring persistency; alas, that this favoured twig should so often have been just out of reach of the net. However, I got a very good series of males, though only three females. One of these Bersa caught, settled on me. We were stalking it with great excitement, when I felt something suspiciously like a stroke from the "business end" of a butterfly-net across my shoulders, and immediately guessed what had happened. Another I took early in June, and she was evidently a belated specimen belonging to the first brood. I did not see this butterfly at Tokat, though there was plenty of *Celtis* there. I also searched, even at Amasia, in vain for the larva; the *Celtis* trees were too plentiful and too tall.

Melitæa aurinia var. *provincialis*, B.—A few specimens, mostly worn, on June 4th, at one particular place on the Lokman, shown to me by Professor Manissajian's old guide.

M. cinxia, L.—Common at Broussa in May; it also occurred at Amasia.

(To be continued.)

CURRENT NOTES.

BY G. W. KIRKALDY.

(Continued from p. 139.)

Bergroth (3) describes several new myrmecophil Rhynchota; among the Pyrrhocoridae [*Lygæidæ auctt.*], *Neoblissus parasitaster*, a new genus and species from Brazil allied to *Blissus*, living in the nests of *Solenopsis geminata* (Fabr.). Wasmann states that the aphoid appearance of the young larvæ and the investment of fine yellow hairs of the adults seem to point to a true guest-relation (myrmecoxeny); but Bergroth notes that *Blissus*, which is not myrmecophil, has similar larvæ and a similar pilosity. In the Reduviidæ is noted *Enicocephalus* (or, as Bergroth spells it, "*Henicocephalus*") *braunsii*, a new species from South Africa, which lives in the nests of *Rhoptromyrmex transversinodis*, Mayr, an ant very much smaller than its visitor. This is the first known myrmecophil Enicocephaline, and as this subfamily is insectivorous, the new form is probably myrmecophagous. In the Miridæ, *Lissocapsus wasmanni*, a new genus and species very near *Systellonotus*, Fieber. This is from Madagascar, and lives in the nests of *Cremastogaster ranavolonis*, Forel. Bergroth also mentions the occurrence of *Triphleps niger*, Wolff, in the nests of *Lasius flavus* in Germany.

Alfken (4) gives lists and descriptions of the insects collected by Schauinsland in the Hawaiian Isles, Laysan, New Zealand, and Chatham Island, during 1896 and 1897. The double plate contains six beautifully coloured figures of *Pyrameis gonerilla* and *itea* [Lep.] and ten plain figures of Orthoptera.

Turner (5) has commenced a revision of Australian Lepidoptera, beginning with the Notodontidæ and Yponomeutidæ; in these families seven genera and seventeen species are described as new.

The historian of the American Membracinæ has now given us [6] a monograph of the Australian forms; fourteen genera and thirty-two species are noted—surely a small proportion of the entire membracine fauna of Australia. Some of the species of *Tragopa* live in the ground in the nests of ants.

Among other recent publications may be noted:—

7. C. BÖRNER: "Zur Klärung der Benigliederung der Atelocereren" (Zool. Anzeiger, xxvii. 226-43; text-figs. 1-5 (1904)): a Survey of Limb Articulation in the Arthropoda.
8. E. H. SELLARDS: "Discovery of Fossil Insects in the Permian of Kansas" (American Journ. Science (4) 16, pp. 323-4 (Blattidæ) (1903)).
9. H. GADEAU DE KERVILLE: "L'accouplement des Forficulides" (Bull. Soc. Ent. France, 85-7; 1 text-fig. (1903)).

10. G. DE ROCQUINY-ADANSON: "Accouplement de Névroptères" (*l. c.* 227 (1903)).
11. J. E. GUTHRIE: "The Collembola of Minnesota" *Geol. & Nat. Hist. Survey Minn., Zool. no. 4, pp. 1-110, 16 plates (1903) [18 new species]*.
12. T. GARBOWSKI: "Parthogenese bei *Porthesia*" (*Zool. Anzeiger, xxvii. 212-14 [Lepid.] (1904)*).
13. W. P. COCKERELL: "A Trip to the Truchas Peaks, New Mexico" (1903 [pub. 1904?]). *American Nat. xxxvii. 887-91*. Several insects recorded, with a new var. of *Bombus* [Hymen.].
14. W. W. FROGGATT: "Notes on the Genus *Psychopsis*, Newman, with descriptions of new species" (*Proc. Linn. Soc. New South Wales, xxviii. 453-6, pl. 21 (1903) [Neuroptera]*).
15. G. D'UTRA: "Contra os inimigos do fumo" (*Bol. da Agricultura Sao Paulo, iv. 111-22; 3 text-figs. (1903)*). Notices of a number of enemies of the tobacco plant.
16. ADOLPH HEMPEL: "Notas sobre alguns insectos nocivos" (*l. c. iii. 237-55 (1902)*). Notes on some of the insect pests of S. Paulo, containing detailed descriptions of several Brazilian Coccidæ and Aleyrodidæ.

(To be continued.)

ON SOME NEW GENERA AND SPECIES OF HYMENOPTERA.

BY P. CAMERON.

CHALCIDIDÆ.

(Continued from p. 111.)

ONCOCHALCIS, gen. nov.

Antennæ short, thick, eleven-jointed, the scape not reaching to the ocelli; they are widely separated from the mouth. Mandibles 3-dentate; the teeth small, the central smaller than the others, almost obsolete. Temples short; the occiput transverse. Parapsidal furrows distinct, curved. Scutellum large, its apex broadly rounded, with a short projecting border. Metanotum short, reticulated, its apex with a steep slope. Abdominal petiole sessile, the ovipositor short. Hind femora largely thickened, beneath minutely dentate. Middle tibiæ spined. Submarginal vein twice the length of the marginal, the post-marginal half the length of the marginal, the stigmal vein short, about twice longer than broad. The mandibular teeth are small and indistinctly separated; the first abdominal segment is about one-third shorter than the others united; the scape of the antennæ is half the length of the flagellum; the femoral teeth in one species are distinct, in another indistinct.

ONCOCHALCIS MARGINATA, sp. nov.

Black; the tegulæ, apical third of anterior, apical fourth of four posterior femora, and the tibiæ and tarsi bright luteous; the four front tibiæ with a dark fuscous band on the basal half; the hinder femora with five stout teeth on the apical half, the apical two close together, the others more widely separated; the base indistinctly toothed; the apex of clypeus with a distinct projecting border, which is widest in the middle; the median segment coarsely and distinctly reticulated, the base with a row of areæ, of which the middle two are the wider. Wings hyaline, the nervures black. ♀. Length, 5-6 mm.

Hab. India.

Scape of antennæ shining, covered with a microscopic down; the flagellum opaque, covered thickly with a pale pile; the third and fourth joints equal in length, the last pale and hollowed on the apex in the centre. Front and vertex rather strongly punctured; the lower part of the front, the sides, and to a less extent the centre of the face, thickly covered with longish silvery pubescence. In the centre of the face is a smooth, shining, raised plate, which is obliquely narrowed above; the lower part slightly narrower and roundly incised laterally. Clypeus smooth, punctured closely in the centre. Apex of mandibles broadly piceous, the base opaque, closely punctured. Pro- and mesonotum closely punctured, the centre of the latter more strongly than the sides; the sides of the former indistinctly bordered at the base; the parapsidal furrows curved, shallow. The areæ on the metanotum are irregularly striated; the central basal is sharply, obliquely narrowed at the base. Propleuræ irregularly striated in the centre; the upper part of the meso- smooth, and with a row of large round foveæ; the lower coarsely, irregularly longitudinally striated and reticulated; the rest smooth, with the upper two-thirds irregularly striated. Metapleuræ closely, irregularly rugosely reticulated. The third and following segments of the abdomen are thickly covered with white pubescence; the penultimate segment closely and strongly punctured, and thickly covered with long silvery pubescence. The lower part of the outer orbits are distinctly margined, as is also, less strongly, the lower part of the malar space, the border on the latter being shining; the inner side has also a shining margin, which is continued obliquely upwards below the eye.

May be known from *O. deesæ* by the stronger femoral teeth, by the more strongly developed temples, and by its more robust form.

ICHNEUMONIDÆ.

CÆLOJOPPA, gen. nov.

Scutellum not much raised, its sides distinctly keeled to near the apex. Median segment completely areolated; the areola large, transverse at the apex; the basal half obliquely narrowed, with the centre at the base rounded; the segment is large; its apex has an oblique slope, and is toothed above laterally. Head large, the temples large, roundly narrowed; the occiput roundly and deeply incised, margined above. Face and clypeus flat, not separated; the apex of clypeus

broady transverse. Labrum hidden. The upper tooth of mandibles much longer than the lower. Palpi longer than usual. Areolet 4-angled, the nervures uniting above; there is a short stump of a nervure on the disco-cubital; the transverse basal nervure is interstitial. Petiole long, the post-petiole not much widened. Gastrocœli shallow, widely separated. Legs moderately long; the tarsi much longer than the tibiæ and sparsely spined. Antennæ long, distinctly dilated towards the apex. Eyes large, parallel, reaching below the middle of the face, the malar space being less than the length of the scape of the antennæ.

Comes near to *Charitojoppa* and *Xenjojoppa*.

(To be continued.)

NEW CULICIDÆ FROM THE FEDERATED MALAY STATES.

BY FRED. V. THEOBALD, M.A.

(Continued from p. 113.)

Genus HULECOETEOMYIA, n. gen.

Head mostly covered with flat scales, but there is a pronounced median area of narrow-curved scales, which also exist along the nape and around the eyes. Palpi short in the female; in the male the palpi are long, but *shorter than the proboscis*, thin and devoid of hair-tufts; the apical joint about half the length of the penultimate. Scutellum with a rosette of flat and somewhat spindle-shaped scales to mid-lobe, scattered ones of similar form on lateral lobes; prothoracic lobes with small flat scales; fork-cells small.

This genus can at once be told by the cephalic characters, and by the scutellar scales, which, as pointed out by Dr. Leicester, differ entirely from those in *Stegomyia*. I have not yet detected any scales in the *Culicina* like those of the scutellum in this genus; they are somewhat difficult to make out in form, but apparently are all rounded apically, not pointed as in true spindle-shaped scales.

A single species has so far only been taken. They might easily be mistaken for *Stegomyias* unless microscopically examined.

HULECOETEOMYIA TRILINEATA, Leicester, n. sp.

“Thorax rich brown, with three narrow golden lines, the median one entire, the lateral broken before the roots of the wings. Abdomen black, with pearly white lateral basal spots in the female, with narrow white bands in the male. Legs black, basally pale-banded, most prominently on the hind legs. Fork-cells short. Male palpi about four-fifths the length of the proboscis.

“♀. Head black, clothed with flat black scales and numerous upright black forked scales; there is a line of narrow-curved scales,

creamy yellow in colour, running down the centre and along the orbital margins, and behind over the nape, scattered among the flat black scales, are a few white narrow-curved ones; laterally there is a patch of white flat scales succeeded by black scales, which are followed again by white scales; on the vertex, projecting forwards between the eyes, is a tuft of pale golden bristles; there are other bristles along the orbital margins which are black at the base and pale at the tip. Antennæ with the basal joint dusky black, with small black spindle-shaped scales on its inner face (in some specimens this joint is ferruginous), remaining joints black; second joint black-scaled; verticillate hairs black; all the joints after second clothed with short silky white hairs. Clypeus black, frosted. Palpi yellowish-brown, four-jointed; first joint constricted in the middle; fourth joint very small, clothed with black spatulate scales except towards the tip, which is white-scaled. The amount of this white scaling varies. In one specimen it includes little more than the last joint, in another one it includes half the penultimate joint. Proboscis yellowish-brown, black-scaled dorsally and laterally; beneath it is white-scaled; about half way white scales appear laterally, and may even go right round, forming a complete band. Prothoracic lobes simple, prominent, white-scaled. Mesonotum dark brown, clothed with narrow-curved scales, black under a hand lens, but under a two-thirds power the tips appear pale golden; there is a central line of pale golden scales which forks in front of the scutellum, enclosing an unscaled area; on either side there is another line which runs back about one-third the total distance; placed a little further out is another line running forwards from the scutellum and ending just a little to one side of the anterior lateral line; there is another golden line over the roots of the wings, and on the anterior margin, just above the prothoracic lobes, are scattered white scales; there are numerous black bristles arranged in lines. The scutellum is fawny brown; on the central lobe there is a patch of black almost spindle-shaped scales arranged in a rosette, with a central line of creamy white scales which become narrow-curved scales at the apex of the scutellum; the lateral lobes have a few black narrow-curved scales. The scutellum is not heavily scaled, and the scales are quite unlike those of an ordinary *Stegomyia*; there are four to six bristles on the central lobe, two of which are pale golden, four black. Pleuræ dark brown, with patches of broad white scales. Wings clad with black scales; median scales rather long and narrow spatulate-shaped; lateral scales lanceolate; some white scales on the costa at its base. Fork-cells of moderate length; first submarginal longer and narrower than second posterior, its base nearer the base of the wing, the cell longer than its stem. Supernumerary and mid cross-veins meeting at an angle; posterior cross-vein twice its own length from mid cross-vein. Legs with the coxæ creamy yellow; femora of fore and mid legs black-scaled dorsally and laterally, white-scaled beneath; a ring of golden brown spines around the apex; tibiæ the same as femora minus the spines, except that the extreme apex is clothed with a few creamy yellow scales; metatarsus and first tarsal joint basally banded with creamy yellow, the remainder black-scaled; ungues equal and uniserrate; hind femora scaled as the others, except for a patch of white scales about the middle of the anterior and posterior surfaces;

knee spot creamy; tibia entirely black-scaled, with four lines of short white spines running down its whole length; metatarsus basally banded; first two tarsal joints very broadly basally banded with creamy white. Ungues equal and simple. Metanotum dark chestnut-brown. Halteres with black-scaled stems and white-scaled knobs. Abdomen black-scaled; a few white scales at the bases of the segments after the second, but scarcely amounting to basal banding in some specimens; laterally there are triangular patches of white scales, and ventrally the segments are basally banded white.

“♂. Head as in the female; the antennæ have pale internodes and dark nodes; the two last joints are very long; verticillate hairs long and black; palpi about four-fifths the length of the proboscis, dirty white, black-scaled; a naked area in the middle of second joint which shows white under a lens; white scales, which may or may not form a complete band, at the apex of the second and third joints; these scales may involve both sides of the joint—they are variable. Proboscis long, black-scaled, with a narrow band of white scales about its centre. The thoracic scaling is the same as in the female, and the leg scaling also. Wing scaling similar but not so heavy. Abdominal banding more marked, all the segments showing fairly broad basal white bands and large lateral spots. The penultimate segment shows a dorsal patch of white scales with a pearly lustre. The fore and mid unguis large, unequal, larger tooth biserrate. Length, female, 5 mm.; male, 4 mm.”

Time of capture.—April.

Habitat.—Kuala Lumpur.

(To be continued.)

NOTES AND OBSERVATIONS.

BRITISH DIPTERA WANTED.—I should be much obliged if anybody would send me fresh or recent specimens, for examination and description, of:—

Xylomyia varia, Meig. (male and female), and *X. marginata*, Meig. (female).

Beris geniculata, Hal. I know the female of the species, which is distinct from *B. fuscipes*, but I have not seen a male.

Sargus. Any yellow-legged species except *S. flavipes*; also *S. nubiculosus* (male), if such a thing exists.

Pachygaster minutissima, Zett.

Stratiomys furcata, Fall. I cannot distinguish what I have seen from *S. riparia*.

Odontomyia. Any species except *O. ornata*, *tigrina*, and *viridula*. I expect three or four species unknown to me occur in Britain.

Orycera dives, Lw. (female), and *O. falleni*, Staeg.

Nemotelus brevisrostris, Meig. I fear all ours are *N. nototus*, Zett.

Leptis conspicua, Meig. Said to be common in some places, but although I can distinguish *Syrphus ribesii* and *vitripennis* by the naked

eye at half a dozen yards' distance, I cannot distinguish *L. conspicua* yet even with the aid of a microscope.

L. strigosa, Meig. I have never seen any British specimens at all like this.

L. sp. ? One or two large species of *Leptis* occur in Britain which have no yellowish markings. I want to see more of them.

L. annulata, De G. I have never seen this from Britain.

Symphoromyia melana, Meig.

Spania nigra, Meig. (female).

Xylophagus cinctus, De G.

Hæmatopota italica, Meig. (male). The species probably occurs freely at the mouth of the Thames Valley.

Tabanus glaucopsis, Meig. (male).

Chrysops sepulchralis, Fabr.

Anthrax. Any clear-winged species except *A. paniscus*. I believe at least three others occur in Britain.

Bombylius. Any clear-winged species.

Psilocephala ardea, Fabr.

Oncodes pallipes, Latr., and *O. varius*, Latr.

Dioctria linearis, Fabr., as distinguished from *D. flavipes*, Meig.

Asilus. Several species unknown to me ought to occur in Britain belonging to the old genus *Asilus*, especially such as *Antipalus varipes*, Meig., *Neoitanus socius*, Lw., *Dysmachus* sp. ?, &c.

Eutolmus rufibarbis, Meig.

Scenopinus niger, De G., and *S. glabrifrons*, Meig. (male).

Or anything else apparently unrecorded as British in the above families.—G. H. VERRALL ; SUSSEX LODGE, NEWMARKET, MAY, 1904.

WINTER TREATMENT OF PUPÆ.—It might be interesting to others, as well as myself, if we could have a short discussion on the best method of keeping pupæ through the winter. The Rev. J. Greene, in his very practical book, mentions that he never "damps" his pupæ, and certainly I know personally that he has been very successful in rearing them. On the other hand, other entomological luminaries give elaborate directions for "damping" pupæ, and presumably are successful also. And to come to my own small experiences, I have found that if I keep pupæ without moisture they as a rule dry up, so that not one in ten emerges; while if I damp them a larger proportion emerge, but a good many grow mouldy. It seems reasonable to suppose that some moisture would be beneficial, but probably the mode of application is the difficulty. As I hope that others will give their experiences, may I begin with one of my own? I once had a brood of forty *Tæniocampa opima*, which I reared in two very large flower-pots half full of earth, into which in due course they retired and pupated in autumn. I left them strictly untouched, but once a month I gave the earth a good soaking from a watering-pot, and in the end the whole forty emerged, without a single cripple or failure of any sort. Now, I should like to combine this question with that of "forcing." And what I wish to know about this is: is forcing likely to be successful with all pupæ, or are there some to which it is simply destructive? Again, I should like to narrate the system I have been trying during the past winter. I took a large wooden box and balanced

it on the hot water-pipes of a small greenhouse, which are kept hot day and night. In the box I placed a tin tray full of moss so as to retain water and so keep the moss always damp; on top of the moss reposes a smaller wooden box, in which are the pupæ on silver-sand, some with cocoons and some without, and covered over with gauze; finally, the outer box is covered by sheets of glass. The total result of all this is that the pupæ, without touching any damp substance themselves, are kept in a moist atmosphere of about eighty degrees F. This treatment I do not begin before January 1st, as I think the pupæ do not respond before the turn of the year. In some cases the result of it is startling. Thus *Cucullia verbasci*, *Hadena psi*, *Hylophila prasinana*, and a few others, come bolting out of their cocoons within a few days of the warmth being applied. *Cidaria picata* takes about a month; *C. asteris* and *Spilodes palealis* have only just begun to show up after nearly five months' treatment—*i. e.* at nearly the time they would be due naturally; and some, which ought to have been out very early, notably *Endromis versicolor* and *Nyssia lapponaria*, have not put in an appearance at all, but I fear are dead. Is it then possible that the above described arrangement is, in some cases, simply an apparatus for the extensive slaughtering of pupæ? And if so, can anyone say what class of pupæ should not be placed in it? I should be particularly grateful for information as to *N. lapponaria*, and the best way of carrying them through the winter. Being a northern insect, perhaps some exposure to frost would be good for them, followed by a turn in the hot-water machine. It seems to me that a ventilation of ideas on these subjects would be of use to collectors at least (I do not say entomologists!), the object in view being of course to get one's bred insects safely out of the way before the rush of summer collecting begins. In any case opinions as to the best way of keeping pupæ through the winter cannot fail to be interesting and instructive.—W. CLAXTON; Navestock Vicarage, Romford.

CAPTURES AND FIELD REPORTS.

CLYTUS ARCUATUS, L., IN NORTH LONDON.—A specimen of this beetle, very rare so far as this country is concerned, was sent to me last year for identification by Mr. J. O. Braithwaite, of Chingford, Essex. It was captured by the warehouseman in Messrs. Bush & Co.'s Stores in Ash Grove, Hackney. On my writing for further particulars, the sender wrote:—"At that time we were having a lot of raspberries up from Welling, in Kent. It was in July, 1903. The man saw this beetle, and thought it was a kind of wasp, and stuck his pen into it before bringing it to me. We had had a recent consignment of chemicals from Germany. It may be that the 'fly' was imported in them, but I am more inclined to think he came with the raspberries." J. W. WILLIAMS; 128, Mansfield Road, Haverstock Hill, N.W.

BUTTERFLIES AT CULLIFORD TREE, DORSET.—It has occurred to me that, although a very large number of entomologists find their way annually to Weymouth, mainly for the purpose of being near Lulworth

for *Adopaa (Hesperia) actaon*, yet very few of them know of a little spot called Culliford Tree, which is a very El Dorado for entomologists. Several years ago, when a boy at school, I visited this place, and on every visit was eminently successful, but I very rarely heard of anyone else who knew of the locality. Culliford Tree is reached from Weymouth by going along the Preston Road until one is a few yards past the second milestone, and then bearing sharply to the left, and again to the right after a yard or two along Littlemoor Road, one gets into Chalbury Vale. Chalbury is hardly known to entomologists, but here one finds *Lycena corydon* and *L. bellargus (adonis)* in very large numbers. *Zygana filipendulæ* is also very common here. Continuing up Charlbury valley for about a mile and a half, Culliford Tree is at length reached, and here I obtained last summer several specimens of *Argynnis paphia*, and *A. aglaia* swarmed. Earlier in the year *A. selene* is very common, and *Thanaos (Nisoniades) tages* and *Hesperia (Syrichthus) malvæ* are in great numbers. Of the Lycænidae, *L. astrarche*, *L. corydon*, *L. alexis*, *L. adonis*, and *L. alsus* are found, the latter being very common in July and August. *Colias edusa* and *Gonepteryx rhamnii* are found there, but not commonly. Of the Vanessidae, *Vanessa io*, *Pyrameis atalanta*, *P. cardui*, and *V. urticæ* are common. Of the "browns," *Epinephele tithonus* and *E. ianira* swarm, *Satyrus semele* is fairly common, and *Aphantopus hyperanthus* is common in the wood at the side early in the summer. *Pararge egeria* is also common in the wood, and as for *Melanargia galatæa* it is found in every part of the field. I also got a very fine female of *Argynnis paphia* var. *valesina*, and a friend of mine captured another a day or two after I had found mine. I captured a remarkable variety of *L. corydon* here, which showed peculiar melanism on the under side, the markings on all four wings differing one from the other. Altogether, I think Culliford Tree one of the most delightful spots I have ever been to for entomology, and it is not lacking in choice botanical specimens, which may perhaps account for the large variety of butterflies. If you think this worthy of insertion in the pages of the 'Entomologist,' I shall be glad, as I think it very desirable that entomologists should have a knowledge of where to go when in a strange neighbourhood.—W. A. BOGUE; Spring Cottage, Shepton Mallet, Somerset, May 6th, 1904.

DEILEPHILA LIVORNICA AT BOURNEMOUTH—A fine specimen of *Deilephila livornica* was brought to me alive to-day. It was found on a plant in a garden, and had evidently freshly emerged from the pupa, as it is in perfect condition.—G. E. J. CRALLAN; Bodorgan Manor, Bournemouth, May 22nd, 1904.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—April 20th, 1904.—Dr. F. A. Dixey, M.A., M.D., Vice-President, in the chair.—M. Jules Bourgeois, St. Marie-aux-Mines [Markirch], Germany; Mr. James E. Black, Nethercroft, Peebles, N.B.; Mr. Maurice Frederic Bliss, "Coningsburgh," Montpelier Road, Ealing, W.; Mr. Edward F. S. Tylecote, M.A., Durham House, Lansdowne Road, Bournemouth; Mr. Francis

Gilliat, B.A., of Lloyds', E.C., and Forest Dene, Worth, Sussex, were elected Fellows of the Society.—Mr. M. Jacoby exhibited a male specimen of the beetle *Sagra senegalensis* with female characters, received from Mr. Barker in Natal, who had taken it *in cop.*—Dr. Norman Joy exhibited *Orochares angustata*, Ev., taken at Bradfield, Berks, in December, 1903—the second recorded British specimen; a species of *Tychius*, which he said might be a variety of *Tychius polylineatus*, Germ. (not now included in the British list), or, more probably, a new species closely allied to it, taken near Streatley, Berks, last year; and two specimens of *Pselaphus dresdensis*, Herbst, taken near Newbury this year. — Mr. C. O. Waterhouse exhibited an unnamed species of *Nemoptera* from Asia Minor, resembling *Nemoptera hutttii* from Australia. — Mr. F. Enock, F.L.S., read a paper on “Nature’s Protection of Insect Life, illustrated by Colour Photography,” and exhibited a number of lantern-slides.—Mr. P. I. Lathy, F.Z.S., communicated a paper on “New Species of South American Erycinidæ.”—A discussion followed on specimens of the dipterous families Stratiomyidæ to Cyrtidæ, opened by Mr. G. H. Verrall, who exhibited specimens, and said the object of the discussion was to determine as far as possible the number and distribution of the British species comprised in these families. The total number of species was but small, as there were only from 130 to 150 species in Britain, but the extreme difficulty consisted in finding out the correct names for them. Col. J. W. Yerbury said that on behalf of Professor E. B. Poulton, F.R.S., he had been asked to exhibit some specimens, mainly interesting on account of the specific names used, which names were useful as showing the nomenclature employed by a past school of dipterologists, and might give a clue to the manner in which some reputed species have found their way into the British list. Dr. F. A. Dixey and other Fellows joined in the discussion. — H. ROWLAND BROWN, *Hon. Sec.*

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*April 14th, 1904.*—Mr. A. Sich, F.E.S., President, in the chair.—Mr. Tonge exhibited a series of photographs of the ova of Lepidoptera, including *Pamphila comma*, *Anticlea badiata*, *Biston hirtaria*, *Hoporina croceago*, *Cerastis vaccinii*, and *Hybernia marginaria*. — Mr. B. Adkin, examples of *Pachygastris (Bombyx) trifolii* showing the two extreme variations of the species in England, together with intermediate forms. The pale form ab. *flava* were from Kent, while the dark forms ab. *rufa* were from the Scilly Islands. — Mr. Main, photographs of *Gonepteryx cleopatra* (bred, from Cannes) and *Nyssia hispidaria* in their resting position, and also of the larvæ of *Selenia bilunaria*. He also exhibited ova of *Colias edusa* var. *helice*, laid by a female specimen sent to him from Hyères by Dr. Chapman; they were deposited upright on a glutinous, pellucid base, singly or in small batches.

April 28th.—The President in the chair.—Mr. Tonge exhibited an album of photographs of a further series of the ova of Lepidoptera, including *Teniocampa munda*, *T. instabilis*, *T. cruda*, *T. populeti*, *Asphalia flavicornis*, *Pachnobia rubricosa*, *Asteroscopus nubeculosa*, &c. As several members expressed the difficulty they experienced in breeding the last-named species, Mr. Adkin said that he had been very successful, no doubt from the care he had taken, first, in well washing the

food before giving it to the larvæ; secondly, by giving sufficient friable earth for the larvæ to pupate in; and, thirdly, by never disturbing the pupæ.—Rev. H. Wood exhibited a number of spiders to illustrate his paper, including *Epeira angulata*, *E. gibbosa*, *E. diademata*, *E. cucurbitina*, and others, obtained by Mr. Carr in the New Forest, with living examples of *Argyroneta aquatica*.—Mr. Carr, a specimen of the rare beetle *Elater pomorum*, taken from a birch stump in the New Forest.—Mr. Garrett, ova of *Brephos parthenias* deposited by a female specimen taken on Wimbledon Common, and placed in a glass shade with twigs of birch in the sunshine.—Mr. Tonge showed photographs of the ova of this species.—Mr. Manger, a very perfect example of the elephant beetle, *Megasoma elephas*, from Venezuela.—Mr. Edwards, specimens of *Papilio neptunus* from the Malay, *P. karna* from Java, *P. andræmon* from South America, and *Morpho anaxibia*, male and female, from Brazil.—Mr. H. J. Turner, living larvæ of (1) *Coleophora livella*, with the larva-case, which was made of pieces of grass-leaves; (2) *C. conyzæ*, with the case made from the hairy cuticle of *Inula conyza*; and (3) *C. troglodytella*, with the smooth case made of silk. All the material was received from Mr. Eustace Bankes, of Corfe Castle, who obtained it in the Isle of Purbeck, and to whom he was indebted for many details of the life-history of the species.—Mr. Sich, a short series of *Crambus chrysonnecheilus* from the chalk-hills east of Guildford, with males and females; also cases of *Taleporia tabulosa* (*pseudo-bombycella*).—Mr. Wood read a paper entitled "Notes on *Argyroneta aquatica* and other Spiders," and a considerable discussion ensued.—HY. J. TURNER, *Hon. Rep. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The Third Ordinary Meeting was held in the Society's Rooms, Royal Institution, Liverpool, on Monday, April 18th, 1904; Mr. Richard Wilding, Vice-President, in the chair. Messrs. William Clitheroe, F.L.S., Ashton-on-Ribble; Thomas Dewhurst, Preston; Walter Rimmer Teare, Birkenhead; and Thos. Temple Morgan, Liverpool, were elected members of the Society. Donations to the Library were announced from Mr. H. St. John K. Donisthorpe, F.Z.S., and the Council of the Manchester Entomological Society. Communications were read by the Secretary from Major Ronald Ross, C.B., F.R.S., inviting the Society to hold its next meeting, on May 16th, in the Johnston Tropical Laboratory, University of Liverpool, and from the Manchester Entomological Society, accepting the invitation to visit Liverpool in October next. On the motion of Mr. J. R. le B. Tomlin, M.A., seconded from the chair, it was unanimously resolved that Rule IV. be reconstructed, to permit of the election of a certain number of persons, residing outside the counties of Lancashire and Cheshire, as corresponding members of the Society, at half the ordinary subscription, such members to enjoy all the privileges of ordinary members. Mr. E. J. B. Sopp, F.R.Met.S., communicated a note "On the Callipers of Earwigs."—Mr. F. N. Pierce, F.E.S., read a paper "On the Minor Structure of the Lepidoptera," in which, by the aid of a long and beautiful series of his preparations shown by the micro-lantern, he was able to show the undoubted general likeness to one another exhibited by the genitalia in certain groups of the order, which was in many cases very marked.

A cordial vote of thanks was accorded the lecturer, on the motion of Mr. Wilding, seconded by Mr. Willoughby Gardner, F.L.S., who congratulated Mr. Pierce on the excellence of his slides, and referred to the interest of the subject, as instanced, for example, in *Agrotis ashworthii*, which was shown by the genitalia to be a *Noctua*. Amongst the exhibits were the following:—By Mr. F. N. Pierce, *Cucullia scrophularia*, *C. verbasci* and *C. lychnitis*, *Acronycta venosa* and *A. alborensa*.—Mr. Willoughby Gardner, specimens of the carpenter bee, *Xylocopa violacea*, from Northern Italy, with diagrams of its burrows in pine-wood, in showing which he gave some interesting facts of its life-history; also living examples of *Nyssia zonaria*, taken near the mouth of the Conway, North Wales.—Mr. J. J. Richardson, a case of South American, East Indian, and Mayalan hawk-moths.—Mr. J. R. le Brockton Tomlin, long series of the red Elaters, *E. lythropterus*, *E. pomona*, *E. elongatulus*, and *E. sanguinolentus*, from Wimbledon, Sherwood, and the New Forest.—Mr. W. Mallinson, ova of *Teniocampa opima*, in natural position on branches of *Rosa spinosissima*, from Wallasey.—Mr. E. J. B. Sopp, a pair of the largest of the European grasshopper, *Aceridium ægyptium*, captured in Southport during 1903. For comparison he also exhibited *Aceridium cristatum* from British Guiana, one of the largest of the genus, and *Locusta viridissima*, the largest of our British grasshoppers, from Freshwater Bay, Isle of Wight.—E. J. B. Sopp and J. R. LE B. TOMLIN, *Honorary Secretaries*.

MANCHESTER ENTOMOLOGICAL SOCIETY.—At the Manchester Museum, Owens College, on March 2nd, 1904, Mr. C. F. Johnson presided. A paper entitled "Sounds produced by Insects" was read by Mr. R. Brauer. Dealing in the first place with Coleoptera, one of the simplest cases is that of the *Anobium*, which produces the noise by the tapping of its body, and, if imitated, will again repeat the sound. Certain Longicorn beetles carry on their hind legs a small file, on which Landois has counted not less than 238 ribs, and this, coming in contact with the body, acts as the stridulating organ. Mr. Brauer also dealt with instances relating to British Curculionidæ, *Necrophorus*, and *Dytiscus marginalis*. In Lepidoptera *Acherontia atropos*, a well-known example, produces the sound, it is said, by rubbing the palpi against the base of the proboscis. *Angeronia feronia*, a South American insect, makes a peculiar clicking, which can be heard for a distance of several yards. In the tropics, the Cicadas become a positive nuisance in places where they abound, on account of the noises produced; to this Darwin, in his 'Descent of Man,' makes special reference. Some scientists believe that a horny scale or drum is responsible for this. Mention was made of *Gryllus campestris*, *G. domesticus*, and *Gryllotalpa vulgaris*; and a certain species, according to Professor Dolbear, acts as a thermometer, for by noting the number of chirps made per minute the exact temperature of the air has been estimated. Other groups dealt with were the Locustidæ, Acridiidæ, and the South African genus *Pneumora*. Singular as it may appear, with few exceptions it is the males that produce so much music in the insect world; doubtless it is intended as calls to the females, or it may be simply expression of joy in life, such as the singing of birds on a summer's day. Again, if so many insects of different orders are endowed with

noise-producing organs, there can be no doubt they also have the sense of hearing. Fresh fields for investigation open at every point, and the subject is one of interest and profit. The paper was followed by a short discussion. Microscopical slides dealing with entomological subjects were shown by Messrs. S. Taylor, R. Brauer, W. Buckley, and E. C. Stump. A number of preserved larvæ were distributed by Mr. W. Warren Kinsey.—ROBERT J. WIGELSWORTH, *Hon. Secretary.*

RECENT LITERATURE.

A List of Yorkshire Lepidoptera. By GEORGE T. PORRITT, F.L.S., F.E.S. (Trans. Yorks. Nat. Union). 8vo, pp. i-xvi and 193-269. London: A. Brown & Sons. 1904.

A SUPPLEMENT to the List of Yorkshire Lepidoptera, published in 1883, by same author. It contains fifty-three species not found in the first edition; of these seventeen are Tortrices and eighteen Tineæ. Fifteen species which were included in the former list are now withdrawn. The total number of species for the county is given as 1379.

The author's remarks on Melanism, in the preface, are of considerable interest. He mentions twenty-nine species of which black or nearly black examples are of regular occurrence in particular districts in Yorkshire, and, referring to a number of other species, he states that "specimens so much darker than the typical forms are so frequently taken as to indicate that they too are gradually being influenced towards the same end."

The list is a valuable addition to faunistic literature.

Proceedings of the South London Entomological and Natural History Society, 1903. Pp. i-xix, 1-90. With a plate and map. Hibernia Chambers, London Bridge. 1904.

Among other items, this modest little volume contains short papers on holiday collecting at Dawlish, and the reports of field-meetings of the Society held during the year 1903. A chart, or map, accompanying Mr. Robert Adkin's account of the excursion to Limpsfield is especially interesting, as it not only indicates the route taken by the party on that particular occasion, but it will also be exceedingly useful to anyone wishing to further explore the district.

In the Presidential Address, Mr. Edward Step, F.L.S., gives a *résumé* of the year's additions to the British Fauna Lists, and also touches on the subject of the tsetse-flies and their association with the African "sleeping sickness."

The reports of the meetings of the Society occupy over forty pages, and afford much interesting reading,

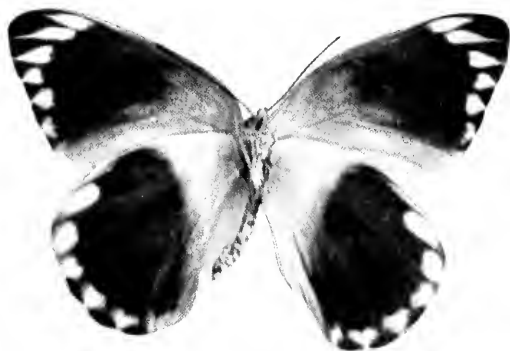
OBITUARY.—With much regret we have to announce the death of Mr. Robert McLachlan, F.R.S., &c. A further notice will appear in the July issue.



1.



2.



3.

1. CHLORIPPE GODMANI.

2. MONETHE JOHNSTONI.

3. DELIAS HEMPELI.

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[No. 494.

DESCRIPTIONS OF THREE NEW BUTTERFLIES.

BY WALTER DANNATT, F.E.S.

(PLATE VII.)

DELIUS HEMPELI, sp. n. (Pl. VII. fig. 3, under side).

Male. Chalky white, with black markings. Fore wings have the lower discocellular black, and a broad black patch beyond it, extending from just below the costa to near the outer margin, terminating at the second vein; its inner edge is diffuse, and from its outer edge the black is continued along the veins, forming five elongated white spots on the outer margin. Hind wings white, powdered beyond the middle with greyish, with four cuneiform spots faintly distinguished. Under side fore wings similar to upper side, but the black has a brownish tinge, and is diffused more or less over the whole of the area, the basal and inner margin being yellow suffused with black. Hind wings black, basal area yellow, extending along the inner margin, where it is powdered with black; marginal spots yellow, the upper two longer than the others. The under side of this species (a male) most nearly resembles the female of *Delias candida*, but the fore wings are much lighter, and the spots on under side of hind wings are reddish and of a different form. Expanse, 73 mm.

Hab. Gilolo. I have much pleasure in naming this species after an American friend, Mr. Adolph Hempel.

CHLORIPPE GODMANI, sp. n. (Pl. VII. fig. 1).

Female. Dark chocolate-brown, tinged with fulvous on the outer marginal area, crossed by a broad white band from the subcostal interspace to the inner margin; this is followed by a darker diffuse band. There is a reddish subapical spot, and another between the white band and the anal angle, and some bluish scales beneath. Under side of fore wings pallid; the subapical spot is almost white, the basal third of the wings fulvous, obscured by silver at its extremity and along the costal area, white opaque band; the outer marginal area is duller brown, becoming whitish beyond the cell; the whole area, except the margin itself, is washed with silver, outer margin whitish. Thorax and abdomen brown above, white beneath. This species is

very constant in the markings. Dr. Staudinger says it is nearest to *C. selina* female. Expanse, 68 mm.

Hab. Venezuela. I take the liberty of dedicating this species to Mr. F. Du Cane Godman, D.C.L., F.R.S., &c., through whose generosity our National Collection is being greatly extended, enlarged, and considerably enriched.

MONETHE JOHNSTONI, sp. n. (Pl. VII. fig. 2).

Male, Wings orange; apex blunt; external margin black, irregular, widest at the apex. Hind wings: outer margin black, with a narrow metallic green hair-line near the outer edge. Under side similar, but paler, and without the green hair-line. Palpi long. Rather similar in form to *Monethe molione* (Godman), but the apical spot is disconnected in that species. Expanse, 38 mm.

Hab. British Guiana. I have the pleasure of naming this species after Sir Harry Johnston, K.C.B.

SOME NEW OAHUAN (HAWAIIAN) HEMIPTERA.

BY G. W. KIRKALDY.

THE island of Oahu may be divided roughly into two parts, *viz.* the Forest Region, say, from 1500 ft. upwards, to which for the most part autochthonous insects are confined—and those, indeed, sparsely—and the Lowlands, where introduced plants flourish, and where autochthonous forms are the exception. Around the coast, during the greater part of the year, there is nothing but a dreary vista of algaroba (*Prosopis juliflora*), gluebush (*Mimosa*), and the hateful lantana (*Lantana camara*), all of them destructive to clothing and temper.

Some time, however, during the period which the people here are pleased to call “winter,” but which would pass very well for summer in England—and, if I may judge from recent reports, would scarcely be distinguishable from the English summer of 1903—sometimes varying much as to exact time and duration; after the heavy rains of November, December, January, and even, as this year, February and March, a lowly investment of Malvaceæ, especially *Sida*, Linné, and other similar plants, springs up, and with it certain insects found only at such times and in such situations around the Oahuan coast. The spot most convenient for dwellers in Honolulu is the well-known Leahi, or Diamond Head, an extinct crater some six miles from the city.* Inside the crater (near the top of the rim only, for lantana and mimosa now fill the sides and floor), on the sloping sides exte-

* The highest point of Leahi is 762 ft. above sea-level, the floor of the crater being 300 or 400 ft. lower.

riorly and down to the shore, are patches and stretches of *Sida*, &c., where the lantana and mimosa permit them to grow. However, in this coast region one finds *Ithamar hawaiiensis*, *Opuna hawaiiensis*, &c., as well as some of the forms now described. Although all these coast forms are so far not known outside the Hawaiian Islands, it is possible that some may yet be found on the coast-line among the short-lived spring vegetation in some of the southern Polynesian Islands.

Collecting on the mountains often has to be restricted to the knife-like ridges, the sides being almost impassable; in a few, such as the ridge from the Pacific heights to Konahuanui, there is a rough trail. Occasionally one sees a pair of the glorious *Pyrameis tanmeamea* coquetting around the top branches of a koa-tree, or in brushing through the tree-ferns one disturbs a nest of hornets (*Polistes hebraeus*. Fabr.); but usually insects have to be closely looked for or beaten out of the trees. Sweeping is of no avail, as there are almost no autochthonous species feeding on low-lying plants, and, indeed, there are scarcely any low-lying autochthones on the mountains.

For the present, the reader may profitably consult "Mr. Blackburn's *résumé* of his Journeys and Collecting in the Archipelago" (1885, Sci. Trans. R. Dublin Soc. (ii.) iii. pp. 197-208); soon, however, there will appear the Introduction to the 'Fauna Hawaiiensis,' in which all these matters will be fully discussed.

The genera and species now described are (*=new) :—

- Fam. Fulgoridæ, subf. Asiracinæ.
 - *Peregrinus** *maidis* (Ashmead).
 - *Megamelus leahi*.*
 - *Aloha ipomoeæ*.*
- Fam. Tetigoniidæ subf. Jassinæ.
 - *Deltocephalus hospes*.*
 - *Eutettix perkinsi*.*
- Fam. Miridæ subf. Mirinæ.
 - Halticus chrysolepis*.*

It is hoped that all these will be described in detail, and figured in the 'Fauna Hawaiiensis.'

○ PEREGRINUS, gen. nov.

Belongs to the section with short first segment of antennæ, and with lateral keels of pronotum not outwardly deflected, but reaching posterior margin. Somewhat allied to *Megamelus*, Fieber, but distinguished by the more rounded head, much larger and differently formed pronotum, different tegminal venation, &c. Somewhat like *Eueides* (= *Euides*, Fieber, preoccupied), but distinguished by the different form of the keel of the pronotum.

Vertex seven-sided, formed much as in [♂]*Eucides*, central keel of front forked nearer to the base than to the apex, somewhat again as in [♀]*Eucides*, but a little more roundedly; lateral margins anterior to the eyes subparallel. Antennæ also very similar to [♂]*Eucides*, but the second segment a little more dilated apically. Pronotum subrotundately emarginate basally, lateral keels reaching to the base, a little arched outwardly; there is also an impressed dot on each side of the middle keel. Scutellum very large, nearly three times as long medianly as the not insignificant pronotum, the part within the keels produced posteriorly subacutely, this produced part being about one-third of the entire scutellar length; lateral keels straight, slightly diverging posteriorly, widely separated anteriorly from the middle keel. Posterior tibiæ longer than the femora, extending well beyond the apex of the abdomen; first segment of the tarsus much longer than the other two together.

Type, *P. maidis* (Ashmead).

♂ *Delphax maidis*, Ashmead, 1890, 'Psyche,' v. 323, text figs.

♀ *Dicranotropis maidis*, Van Duzee, 1897, Bull. Buffalo Soc. Nat. Sci. v. 240.

In his description, Ashmead has omitted to mention a characteristic dark brown elongate spot in the angle formed by the junction of the great claval vein and the interior margin of the tegmen.

Hab. North America: Florida and Texas; on corn and coarse grass. Hawaiian Islands: Hawaii, Oahu, and Kauai; on corn (introduced).

I am indebted to my friend Mr. Van Duzee for a specimen of this insect, which he had before him when writing his paper on the North American forms (cited above).

Descriptions and figures of the earlier stages of this and other forms will, it is hoped, appear shortly in another place.

♂ MEGAMELUS LEAHI, sp. n.

The short winged form only is known, and is distinguished from the other described species by the shape of the tegmina, which are longer and narrower, and rounded apically; the veins are strongly studded with setiferous granules.

Head, thorax, and legs pale greenish, with a slight bluish tinge; intercarinal areas on head, a broad band on each side of the central keel of pronotum and scutellum, three small spots on each side of the pronotum between the last mentioned and the lateral keels, and one on the scutellum, pale brownish green. Eyes brownish black. Clypeus apically more or less silvery, spotted with brownish red at the base; front also somewhat obscurely striped longitudinally with pale brownish green, and spotted apically with brownish red. The legs are also marked with pale brownish green, the apices of tibiæ, of tarsi, and of the spines brownish black. Tegmina semiopaque, milky, veins pale brownish, granules dark brownish. Abdomen above pale greenish brown (with a purple lustre towards the base), and with a median and

three lateral longitudinal silvery stripes, the median of these three not nearly reaching the base. Ovipositor in the female pale brownish. Tibial spur with eight strong spinelets. Long. $2\frac{1}{2}$ mill.

Oahu: Leahi. On a yellow composite not yet determined. (Only inside the crater, or on top, not on the lower slopes. March-April, 1904—G. W. K.).

The above is the colouring in living examples; when dry the green often turns to pale yellow, and the whole colouring becomes more obscure.

♁ ALOHA,* gen. nov.

Belongs to the division with short antennæ, and straight entire pronotal keels.

Head narrower than the pronotum (lateral margins between the eyes subparallel), little prominent before the eyes, as seen from above, anterior margin roundly truncate; vertex shaped something like *Delphacodes*, Fieb.† (nec Melichar), but the middle keel generally almost obsolete (sometimes, however, strongly developed), with an impressed spot on each side. First segment of antennæ about two-thirds of the length of the second. Frons somewhat narrow, subparallel, with two median keels which are subparallel, but slightly rounded outwardly, obsolete on the arched part of the head. Clypeus tricarinate, median keel strongly developed. Rostrum reaching to posterior coxæ. Pronotum short, keels entire. First segment of posterior tarsi about twice as long as the other two together, tibial spur about two-thirds the length of the first segment of tarsi. Tegminal venation very similar to that of *Megamelus*.

♁ ALOHA IPOMOEÆ, sp. n.

♀. Flavo-testaceous above and beneath, exterior lateral margins spotted with blackish brown. Tegmina hyaline tinged with brownish, immaculate in the long-winged form, except that the apical angle of the lower claval area is dark brown; in the short-winged form there is a spot at the apex of the costal area; veins with setigerous blackish granulations.

♂. Similar to the female, but darker; abdomen blackish, apical margin (and lateral margins more or less) pale ochreous or flavous. Tegmina spotted with black. Long. $2\frac{1}{2}$ –3 mill.; expanse of tegmina, 8 mill.

Hab. Honolulu, from coast-line up to about 1000 ft.; on various species of *Ipomoea* (R. C. L. Perkins and G. W. K.; March, April, 1904). This species is doubtless autochthonous.

♁ DELTOCEPHALUS HOSPES, sp. n.

In structure somewhat near to *D. signatifrons*, Van Duzee, but with different head pattern, &c.

* "Aloha," the Hawaiian salutation (lit. "love").

† The type of *Delphacodes*, Fieb., is *Mulsanti*, Fieb. For Melichar's genus *Delphacodes* I propose the name *Pseudaræopus*, type *lethierryi* (Rey).

Fusco-testaceous; front transversely broadly striped (about eight) with dark brownish, the basal markings of these visible just at the apex of the vertex. Eyes purplish brown. Tegmina with colourless veins, the claval and some of the corial sparsely sown with dark brown, extreme apex of clavus dark brown, apex of tegmina obscurely fumate. *A characteristic dark brown spot at the base of the median ante-apical cell.* Legs pallid, with dark granules. Abdomen more or less dark. Vertex strong, somewhat flat, margin in front of the eyes straight; ocelli almost on a level with the disk of vertex before the upper margin of eye. Pronotum scarcely twice as broad as long, sides short, posterior angles strong, postero-lateral margin nearly parallel with scutellar margin of tegmina, which are long with appendices slightly overlapping; costal veins not reflexed, median ante-apical cell a little constricted, extending posteriorly clearly beyond the adjacent cells, and a little farther than the exterior discoid cell. Length, 3 mm.

Honolulu; attracted to light in the evening (probably from grasses), March, 1904 (R. C. L. Perkins). Possibly introduced.

EUTETTIX PERKINSI, sp. n.

Not closely allied to any species known to me.

Head, pronotum, and scutellum pale clear yellow. Vertex with a tiny brownish dot on each side (near the intero-apical angles of the eyes as seen from above) joined together by a thin brownish line, at right angles to the longitudinal suture of the vertex; on each side of the last-named, in the middle of the subquadrilateral areas thus formed, is a larger brownish speck. Eyes greyish. Mesonotum with antero-lateral and apical margins black, concealed by the pronotum, part of which thus acquires a greenish tinge. Lateral margins of scutellum narrowly blackish, two dots on the disk the same colour. Tegmina opaque ivory white interiorly, milky subhyaline exteriorly; base of clavus smoky, bordered internally by dark brown; extreme apex of clavus dark brown, interior and apical parts (except the anti-apical areoles) smoky.* Beneath pale stramineous, claws brown. Vertex well rounded, between the eyes very delicately, longitudinally wrinkled and punctured. Lateral margin of vertex between the eyes slightly diverging outwardly and anteriorly. Venation rather obscure exteriorly, not reticulated. Ultimate segment about four times as long as the penultimate, posterior margin notched apically. Pygofers scarcely four times as long as the last segment, spines almost colourless. Long. 4 mill.

Leahi; on *Sida* (one of the Malvaceæ), March, 1904.

N.B.—In somewhat immature specimens the tegmina are only slightly smoky, the apical veins being more or less dark brownish (especially at the extero-lateral margins). In very immature examples the whole insect is pale yellowish, only the claws being dark.

* The effect of the tegminal colour and pattern is therefore smoky, with a large pale opaque spot in the centre (of the two tegmina shut together), and pale lateral margins.

HALTICUS CHRYSOLEPIS, sp. n.

Head, pronotum, and scutellum shining black, immaculate. Tegmina brownish black. Pronotum, scutellum, and tegmina sufficiently thickly covered with easily divested pale golden scale-like hairs. First and second segments of antennæ pallid, apex of second black, third and fourth dark; base of third tarsal segment black, posterior femora a little reddish. Abdomen black. Head as seen in front subequilaterally triangular. Clypeus as seen from the side scarcely wider at the apex than in the middle; labium narrow as seen from the side. Pronotum transversely aciculate. Long. $2\frac{1}{4}$ mill.

Honolulu; on grass and *Carex* (March, 1904, R. C. L. Perkins).

N.B.—*Calocoris canus*, Distant (1893), is usually quoted as a synonym of *H. uhleri*, Giard, but, I think, in mistake. Distant's species seems more allied to the *saltator*, Fourcroy, group. It has certainly nothing to do with *Calocoris*.

In July last (1903) I had the opportunity of a very brief survey, through the courtesy of Mr. Alex. Rodger, the curator, of F. B. White's collection of Hawaiian Hemiptera, contained in the Museum of Natural Sciences, Perth, Scotland.

Five types are lost, viz. :—

1. *Geotomus jucundus*, which is well known to be = *pygmalus*, Dallas.
2. *Triphleps persequens*, of which, however, I have seen a specimen answering to the description.
- 3 & 4. *Dilasia decolor* and *denigrata*. Both now placed as one species in *Lasiocheilus*.
5. *Lilia delecta*. Unknown to me.

Of the others :—

6. *Nabis lusciosus* is similar to the example figured on pl. v. f. 35, of my "Hemiptera" ('Fauna Hawaiiensis,' iii.).
7. *Nabis subrufus* is similar to fig. 37.

The other forms have been correctly interpreted.

NOTE ON THE ORTHOPTEROUS GENUS *CAPNOBOTES*.

By T. D. A. COCKERELL.

DURING the last week of August, 1903, at Pecos, New Mexico, I became acquainted with the Decticeid genus *Capnobotes*. The dry hillocks at Pecos are clothed with nut pines (*Pinus edulis*) and so-called cedars, species of *Sabina*. From the pines, at dusk, there proceeds a shrill cry, produced by the males of *Capnobotes*. The noise is loud, but pitched in so high a key that my companion, who was not at all deaf to ordinary sounds, could

hear nothing. The capture of the insects proved a matter of considerable difficulty, and although, from their cries, they were evidently numerous, I got only two. The attempt to find them in the daytime proved futile, and the cries only commenced just before darkness set in, leaving a very short time during which they could be seen, after they had been detected by the ear. It was almost impossible to climb into the small trees without making enough disturbance to cause the insects to become silent and take a leap for another branch; for this reason hunting them with a light was useless,—they would jump off into the darkness and be lost.

The Decticinae of New Mexico, so far as previously known, numbered five genera and nine species. The discovery of *Capnobotes* at Pecos added a sixth genus and tenth species. In the 'Canadian Entomologist,' April, 1897, Scudder gives a table of the known species of *Capnobotes*, three in number. A fourth, found in Mexico, was added by Mr. Rehn in 1900. In Scudder's tables the Pecos species runs to *C. occidentalis* (Thomas), known from California, Nevada, and Utah. To confirm (or disprove) the identity, I asked Professor L. Bruner for measurements of *C. occidentalis* in his collection. He kindly gave the following, the average from four specimens:—Length of body, ♂ 26, ♀ 32; of pronotum, ♂ 6.5, ♀ 7; of tegmina, ♂ 41, ♀ 49; of hind femora, ♂ 25, ♀ 29; of ovipositor, 28 mm. This agrees with my specimens, which are evidently *occidentalis*. The male body, if stuffed with cotton when fresh, is about 30 mm. long. The male antennæ are from 51 to 53 mm. long. One of my examples* is sepia-brown in its body, markings of tegmina, &c., but the other has these parts all apple-green, the pronotum with two ochreous bands, edged outwardly on the hinder part by a narrow black stripe. The green form may be known as var. *viridis*.

In Dr. Howard's 'Insect Book,' Pl. xxxv, fig. 6, is a good figure of *Capnobotes fuliginosus* (Thomas). The Pecos insect is very similar, but smaller, with much less dark color on the hind wings.

TABLE OF CAPNOBOTES.

| | | |
|--------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------|
| Tegmina short (Mexico) | | <i>imperfectus</i> , Rehn. |
| Tegmina long | | 1. |
| 1. Outer margin of anterior femora very faintly spined beneath; metazona scarcely elevated above the prozona; tegmina ♂ 41, ♀ 49 mm. | | 2. |
| Outer margin of anterior femora distinctly spined beneath | | 3. |
| 2. Coloured parts dark brown (California to New Mexico) | | <i>occidentalis</i> (Thos.). |
| Coloured parts green (New Mexico) | | <i>occidentalis</i> var. <i>viridis</i> , Ckll. |

* Now in the British Museum.

3. *Metazona* abruptly elevated above the prozona; tegmina spotted and streaked, in ♀ as much as 52 mm. long (Arizona) *fuliginosus* (Thos.).
Metazona gradually elevated above the prozona; tegmina nearly uniform in coloration (California)
bruneri, Scudder.

Colorado Springs, Colorado, U.S.A. :
 May 6th, 1904.

DESCRIPTIONS OF NEW LEPIDOPTERA FROM EQUATORIAL AFRICA.

BY EMILY MARY SHARPE.

Family ACRÆIDÆ.

ACRÆA MELANOSTICTA, sp. n.

Allied to *A. servona*, Godt., and *A. circeis*, Drury, but distinguished by the less transparent fore wing, and the smaller white spots.

Fore wing: Ground colour entirely smoky brown, relieved by two whitish transparent spots, one situated in the cell, and the second between the first and second median nervules. Near the apical area is an oblique band consisting of three internervular white spots. Hind wing smoky brown, with a somewhat broad border of ochraceous yellow crossing the central area. Under side: Fore wing smoky brown, with the white transparent spots strongly in evidence; costa yellow, with streaks of the same colour between the nervules on the apex and hind margin. Hind wing entirely ochraceous yellow, the nervules on the hind margin brownish black, with small internervular markings near the discal area; the base and central area showing a number of black spots, larger and more united than in the allied species. Expanse, 1.6 in.

Hab. Toro; November–December, 1900 (*H. B. Rattray*).

Family NYMPHALIDÆ.

ANTANARTIA AMAUROPTERA, sp. n.

Allied to *A. delius*, Drury, but differing in the ground colour of both wings, which is dark brown.

Fore wing: Ground colour dark brown, with a curved band of chestnut crossing from near the centre of the costal nervure to the vicinity of the posterior angle, and with a faint line of minute white spots visible near the apical area. Hind wing entirely dark brown, relieved near the inner margin with reddish brown hairs; the hind marginal border similar to that of *A. delius*, but with the characteristic rufous-yellow markings more chestnut-red in colour. Under side similar in markings to that of *A. delius*, but much darker; it may, in fact, be compared with that of *A. schoneia*, Trimen, as regards the

ground colour and markings. The band on the fore wing may be described as chestnut-brown. Expanse, 1·7 in.

Hab. Toro; November–December, 1900 (*H. B. Rattray*).

Besides the type above described, there are five more specimens in Major Rattray's collection, all varying somewhat as regards the chestnut band on the fore wing. One specimen resembles *A. delius* on both wings as to the reddish chestnut colour; a second specimen has the chestnut band visible from the costa to the median nervure; whilst a third melanistic variety has no red band in evidence. They were all collected in the same month, and in the same locality.

KALLIMA RATTRAYI, sp. n.

Allied to *K. rumia*, Westw., but the female has no white discal patch on the hind wing, and the oblique band on the fore wing is yellow instead of white.

♂. Very similar to *K. rumia* in colour and markings; the mauve band on the fore wing somewhat brighter in colour, the characteristic white spots being nearly obsolete. Under side similar to that of *K. rumia*. Expanse, 2·3 in.

♀. Fore wing: General colour light brown, the apical area somewhat darker, and relieved by two white spots near the apex; an oblique band of buff-coloured spots crossing the wing, and terminating above the first median nervule. Hind wing entirely light brown, the white patch being absent. Under side resembling that of *K. rumia*, but with light spots on the fore wing slightly smaller. Expanse, 2·6 in.

Hab. Toro; November–December, 1900 (*H. B. Rattray*).

EUPHEDRA RATTRAYI, sp. n.

Allied to *E. zampa*, Westw., but distinguished by the chestnut patch near the base of the fore wing.

♂. Fore wing: Ground colour rather darker green than in *E. zampa*, with an oblique band near the apical area creamy white, broader than in the above-named species; near the base a deep chestnut-red patch, with a suffusion of the same colour extending between the nervules towards the hind margin. Hind wing with the central area reddish brown, deeper in colour on the subcostal nervules; hind margin bluish green, relieved by internervular white spots suffused with blue. Under side: General colour of both wings yellowish buff, tinged with green; the white bands and spots similar to those of *E. zampa*, with the three whitish spots rather more strongly indicated than in the latter species. Expanse, 2·7 in.

♀. Scarcely different from that of *E. zampa*, the oblique apical band being somewhat broader, the white spot near the posterior angle indicated by a faint bluish line. Under side somewhat more dingy in colour, the apical area having a greenish tint; all the other white spots and markings strongly pronounced, especially those at the end of the cell of the hind wing. The dark outlines of the white spots on the hind margin less strongly indicated. Expanse, 3·4 in.

Hab. Toro; November–December, 1900 (*H. B. Rattray*).

EUPHÆDRA CHRISTYI, sp. n.

Similar to *E. zaddachi*, Dewitz, but with no crimson on the hind wing.

♀. Fore wing resembling that of *E. zaddachi* as regards its dark ground colour, but with the two ochraceous bands slightly broader. Hind wing: The whole of the central area pale ochraceous yellow, with a greenish tinge near the base and towards the anal angle; the broad hind margin brownish black. Under side similar to that of *E. zaddachi*. On the hind wing a broad costal line of deep crimson extending from the base to as far as the submarginal row of internervular black spots; the central area creamy yellow. Expanse, 3.2 in.

Hab. Toro; November–December, 1900 (*H. B. Rattray*).

Dr. Christy also collected two specimens of this new species at Kibero, January 11th, 1903.

HARMA MARMORATA, sp. n.

Similar to *H. beckeri*, H.-Schæff., the male being somewhat paler in colour. The female is at once distinguished by the absence of the bright yellow spot on the hind wing.

♂. Fore wing: Central area pale creamy yellow; apex and hind margin deeper yellow; the dark brown submarginal spots and markings not so strongly indicated. Hind wing: Central area creamy yellow, the broad hind marginal border much lighter in colour, and having a suffusion of orange-yellow; the dark brown hastate marks being strongly pronounced. The under side does not differ from that of *H. beckeri*. Expanse, 2.7 in.

♀. Fore wing similar to that of *H. beckeri*, but with the white spots on the discal area more broken up, these spots thus forming two distinct rows of hastate markings, from the subcostal nervule as far as the first median nervule; the spots all tinged with greyish blue on their outer edge, nearly all the white spots being outlined with this colour; the characteristic white area about the centre of the inner margin being here represented by a creamy yellow patch; the blue colour at the base rather more deeply coloured than in *H. beckeri*. Hind wing: Central area of wing creamy yellow, with less blue at the base; hind marginal border slightly broader; the second row of white spots more hastate in shape, and lined on the outer edge with blue. The first row of white spots is also tinged with blue. The bright yellow patch towards the anal angle is absent. Under side similar to that of *H. beckeri*, with the same differences as on the upper side as regards the discal row of spots. The hind wing has a distinct transverse line of deep chestnut-brown from the costa to the anal angle. Expanse, 3.7 in.

Hab. Toro; November–December, 1900 (*H. B. Rattray*).

A "BUTTERFLY SUMMER" IN ASIA MINOR.

BY MARGARET E. FOUNTAINE, F.E.S.

(Concluded from p. 159.)

Melitæa arduinna, Esp. (?).—This is a very difficult species to identify. I believe those I have from Broussa in the spring, and again in the autumn, are true *arduinna*; but Mrs. Nicholl has thrown many doubts upon their identity. I certainly did not see it at Amasia.

M. phæbe, Kn.—Generally distributed, but not so common at Broussa as at Amasia.

M. trivia, S.V.—At Broussa in May; and at Amasia a succession of broods throughout the summer. The females varied enormously; I have one from Broussa in May, and one from Amasia in June, both large and strongly marked; while two I have from Amasia in August are unlike these as any two *Melitæa* could well be; they are small, with very oblong wings, and the ground colour is light and even throughout, while the black markings, especially in one of them, are extremely sparse and scanty.

M. didyma, O.—As usual, presenting an interesting and pleasing variation. The males of the summer brood at Amasia decidedly inclined towards the var. *neera*, some much more so than others. The females varied from pale fulvous to a greenish grey.

M. athalia, Rott. (?).—One fine female from Tokat in July I have classed as belonging to this species, to which I have but little doubt that it does. I do not recollect observing any others.

Argynnis lathonia, L.—Generally distributed, and always typical.

A. aglaia, L.—At Amasia in June and July.

A. paphia, L.—Very common at Amasia; also Tokat, where I took a fine specimen of the var. *valezina*, and saw others.

A. pandora, S.V.—Common throughout the summer; also at Arndoutkeiny, near Constantinople.

Melanargia galatea var. *procida*, Hbst.—Not common at Amasia; much more so at Tokat; but none of the specimens presented at all an extreme form of *procida*.

M. larissa, H.G., and var. *hertha*, H.G.—First taken on the Upper Maidan, at Amasia, on June 8th, where it afterwards became common in all the localities round. Almost on the top of the Lokman, in July, I took a female of the var. *hertha*, in which the black tracery is extremely delicate and undefined. I did not see any others like it.

E. athiops var. *melusina*, H.S.—In the pine forest at Tokat; a fine large form.

Satyrus hermione, L.—Common at Amasia and Tokat. I could not see that any of the specimens differed in any way from the type.

S. circe, F.—Also common at Amasia and Tokat.

S. briseis, L., and var. *pirata*, Esp.—Extremely common at Amasia from the end of June, throughout July. The specimens were larger and more brilliant than the European form, and var. *pirata* occurred with the type, but I was only able to secure an occasional specimen, as it was far from common.

S. semele var. *mersina*, Stgr.—Very common all round Amasia.

Not, in my opinion, a very distinct variety, but constant as far as it goes.

S. bischoffii, H.S.—This lovely *Satyrus* was by no means common; I only took it in one locality at Puelly. It did not appear till the end of June, and was soon over.

S. pelopea, Klug.—At Amasia at the end of June, and Tokat in July. It was larger and brighter than those I have from the Anti-Lebanon.

S. mnizechii, H.S.—This butterfly, which was formerly classed as a variety of *S. pelopea*, is now ranked as a distinct species by Staudinger, to which it certainly has every cause to lay claim. My first capture (a female) was on July 9th, near Amasia, where it soon became extremely common. It differs from *S. pelopea*, which did not appear till about a fortnight later, by the broad suffusion of fulvous on the fore wings in the female, and by the colour of the apex and the hind wings underneath being grey instead of the warm tone so characteristic in *pelopea*. *S. mnizechii* did not appear at all at Tokat.

S. anthelea, Hüb.—Fresh out in the Maidan, at Amasia, on May 30th, but though the males soon became extremely common everywhere, I failed to procure one single female! This butterfly struck me as coming very close to *S. amalthea*, but without females it is difficult to judge.

S. geyeri, H.S.—This insect literally swarmed on the wide, rock-strewn plateau at the top of the Lokman. I first took it on July 25th, when it was fresh out, and every succeeding visit I paid to this locality I found its numbers increasing more and more. I was also able to secure a good amount of females.

S. arethusa, S.V.—Flying with the preceding, but comparatively rare.

S. statilinus, Hufn.—This species was very common, but nearly over, at Broussa, in the end of August.

S. fatua, Err.—Very like the preceding, only larger, and the under side of a more bluish grey tone. It abounded in all the hot valleys near Amasia, at the end of July and August. It was easily caught off the fruit which the peasants had spread in great quantities over the hot rocks to dry in the sun, and which seemed to be particularly attractive to *S. fatua*.

Parage roxelana, Cr.—Very common near Amasia in June and July. Specimens would sometimes even come into the house where I was staying.

P. climene, Esp.—Standinger questions the existence of this butterfly at Amasia, but there it most certainly is, though I did not find it anywhere except on the Lokman, and just above the town on the way up to that mountain. It occurred towards the end of June, but was rather rare, and quickly over. I never saw a female.

P. mæva var. *adrasta*, Hüb.—Widely distributed.

P. megæra, L.—Common in all low localities. I could not make out that any of the specimens differed materially from the type.

P. egeria, L.—Common, like the preceding.

Epinephele lycaon, Rott.—On the lower slopes of mountains near Amasia in June. The males were very large and fine.

E. ianira, L.—Never failing to appear almost everywhere.

Ctenonympha leander, Esp.—Nearly over at Amasia at the end of May, and I watched in vain for a second brood.

C. pamphilus, L.—Common everywhere throughout the spring, summer and autumn. The late summer brood at Amasia produced a good form of var. *lyllus*.

Spilothyrus alcea, Esp.—Fairly common at Amasia; some of the specimens were paler underneath than the type.

S. laratæ, Esp.—Very common at Amasia throughout the summer.

Syrichthus nomas, Ld.—Not common; taken singly at Amasia in June.

S. sida, Esp.—One fine female near Broussa in May. Fairly common at Amasia in May and June. The specimens were much more brilliant underneath than those I have from the South of France.

S. alveus var. *cirsii*, Rbr.—Occurred at Amasia in July.

S. malvæ var. *taras*. Meig.—A very marked form of this variety occurred, not rarely, with the type, at Broussa in April; unluckily, most of the specimens were worn.

S. phlomidis, H.S.—This very pretty "skipper" was common all round Amasia throughout the summer.

S. orbifer, Hüb.—At Broussa and Amasia, not uncommon.

Nisoniades tages, L.—Fresh out at Broussa in April.

N. marloji, B.—One specimen only taken on the Caraman, near Amasia, in June.

Hesperia thaumas, Hufn.—Not common at Broussa in May.

H. sylvanus, Esp.—Also at Broussa in May; not common.

H. comma, L.—On the top of the Lokman, in July.

H. hyrax, Ld.—I believe I overlooked this species, as I seem to have only one specimen which tallies with the description of it, from Amasia in June, where I think it was not uncommon. I can only plead the prolific abundance of so many interesting species at the same time as an excuse for this omission on my part. And I will conclude this article by once again sounding the praises of Amasia,—that wonderful locality, worthy only to be called "The Digue of Asia!"

7, Lansdown Place (East), Bath: February, 1904.

SUPPLEMENTARY LIST OF THE LEPIDOPTERA OF THE ISLAND OF CAPRI.

By C. SEYMOUR BROWNE.

IN continuing this list my forebodings approach fulfilment, like unto a certain apocryphal animal whose tail was greater than its body (and, in this case, not yet fully grown), as such appears to be this list; and so I must claim the indulgence of my better-versed entomological brethren.

My best thanks are due to Mr. Richard South and to Mr. Louis B. Prout for their kindness and patience in determining the greater part of the insects mentioned in this list.

This year I hope to have the assistance of a fellow-worker in further developing the resources of Capri. I should also be grateful for any hints as to what methods to adopt. It would also be of the greatest assistance if any readers would inform me of what works exist bearing on the Lepidoptera of this part of Italy, and also where a full reference to the lepidopterous work of the Costas' can be found.

Costa's *H. serraria* (3848), which Staudinger queries, has not yet come to hand, though I have seen a doubtful specimen in a Naples collection. I should be glad to hear of any specimens, and to receive a photograph of same. Costa gives this moth in one of his plates.

The correct naming of the Zygenidæ and Syntomidæ appears to be a difficult matter, and I should be glad to receive any specimens of these or of the Sesiidæ that would probably be found here. I think possibly some of specimens may be :—

4327g. *Zygæna scabiosæ* v. *neapolitana*, Calb.

4356a. *Z. transalpina* v. *sorrentina*, Stgr. Sorrento is only distant two miles.

4356b. *calabrica*, Calb.

Of 4356c, ab. *boisdualii*, Costa, I have some specimens (yellow spots), taken on a mountain top above Napoli; also, in the same district, the new var. found by Herr Fritz Zickert, which is without the yellow spot on hind wing.

4361. *Z. oxytropis*, B., found at Avellino, should also be taken here.

ADDITIONS TO PREVIOUS LISTS.

PIERIDÆ.

38. *Aporia crataegi*, Linn. One specimen.

52. *Pieris napi*, Linn.

57. *P. daphnice*, Linn. Small form described by Zeller in his Italian Lepidoptera.

69. *Euchloë cardamines*, Linn. Very scarce.

69a. *E. cardamines*, Linn., var. *turritis*, O. Only one example, 1903.

81. *Leptidia sinapis*, Linn.

81a. *L. sinapis*, gen. vern. *lathyri*, Hb.

81d. *L. sinapis*, gen. æst. *diniensis*, B.

NYMPHALIDÆ.

156. *Vanessa io*, Linn. Only one example, 1903.

392. *Pararge mæra*, Linn.

440. *Cænonympha pamphilus*, Linn. Rare.

LYCENIDÆ.

512b. *Chrysophanus phleas*, Linn., var. *eleus*, F.

638b. *Lycana cyllarus*, Rott., var. *lugens*, Carad. About equally common with *L. cyllarus*.

HESPERIDÆ.

703. *Hesperia alveus*, Hb. Rare.

SPHINGIDÆ.

730. *Dilina tiliæ*, Linn. One undeveloped specimen for a pupa.

749. *Deilephila euphorbiæ*, Linn. Common.

749b. *D. euphorbiæ* var. *gruentzenbergi*, Stgr. This is the moth that I erroneously alluded to as a var. of *D. livornica* on p. 307, 1903. Found on the higher grounds, *D. euphorbiæ* proper on the lower; fairly common.

NOTODONTIDÆ.

866. *Pygæra curtula*, Linn.

LYMANTRIDÆ.

944. *Ocneria rubea*, F.

LASIOCAMPIDÆ.

970g. *Lasiocampa quercus*, Linn., var. *sicula*, Stgr. I have not *quercus* proper; neither do I think it has been found at Naples.

(To be continued.)

CAPTURES AND FIELD REPORTS.

NOTE ON *HALIAS PRASINANA*.—From nine larvæ which I beat last August, I have so far reared eight imagines. Of these one female has the hind wings yellow. Barrett (vol. ii. p. 174) says female has white hind wings; my specimen seems to be more sparsely scaled on the hind wings than my males. I have had one pupa exposed in the cocoon all the winter, and, except when away, have looked at it every day. It never, as far as I can remember, presented the same side twice successively; thus the pupa turned in the cocoon every day. The under side of the pupa is originally bright green, and only turns to orange about March. The wing-cases become bright green three days before emergence.—H. V. PLUM; The College, Epsom.

DEILOPHILA LIVORNICA IN ENGLAND, 1904.—

Carlisle.—On May 17th last a fine specimen of the above was brought to me alive, it having been taken at rest on a barber's shop-window in Botchergate, Carlisle, about 9.45 p.m. on the evening of May 16th. It formed quite a centre of attraction to passers-by for some little time before being taken off. It is in good condition except a slight damage to right side, where its captor had grasped it with his fingers, and some of the scales rubbed off the abdomen during contact with the inevitable match-box. It is a male, and measures three and a quarter inches from tip to tip of the wings. I have never heard of any previous record of this insect being taken in or near Carlisle.—J. ED. SHWAYTES; 8, Clement Place, Blackwell Road, Carlisle, June 20th, 1904.

Devonshire.—A specimen of this moth was taken at Yelverton, near Plymouth, on May 19th. A cat was playing with it in my garden at about 6 a.m. Fortunately it was secured in perfect condition.—C. W. BRACKEN; Brentor View, Yelverton, S. Devon.

Dorsetshire.—A male specimen of this rare species was brought to me a few days ago from Warmwell, near Dorchester, by my son (Rev. R. J. Pickard-Cambridge). It was found, just after it had come out of the chrysalis state, by Mrs. Haig Thomas in the garden of her residence (Warmwell House), and kindly added by her to my collection.—O. PICKARD-CAMBRIDGE; Bloxworth Rectory, June 1st, 1904.

Gloucestershire.—A fine example of this rare British species was caught at rest by a lady at Marsemore, near Gloucester, on May 23rd, 1904, and given to her nephew (boy collector). Unfortunately it is slightly rubbed in handling, otherwise it looks as though it had only just emerged from pupa stage.—A. LIONEL CLARKE; Stroud Road, Gloucester.

Hampshire.—I have pleasure in adding another capture to the one recorded from Bournemouth (*ante*, p. 168). On May 27th a neighbour brought me a moth he had caught in his shop the previous evening, no doubt attracted thither by the lights; and I was most agreeably surprised, on opening the box, to see a very good specimen of *D. livornica*. It is some thirty years ago since I have heard of a specimen in this immediate neighbourhood. I took one in June, 1874, and in 1876 another was taken near Fordingbridge, and about the same time my friend, the late Rev. H. G. W. Aubrey, took one in his garden at Hale, near Breamore. Since those dates, occurrences have been recorded from Winchester, New Forest, Christchurch, Lymington, and several other localities in Hants. A casual perusal of volumes of the 'Entomologist' for the last twenty years or more indicates that, although June is the principal month for the occurrence of this species amongst us, yet it has been met with from May to October, and once—at Crewkerne—in February; but some years it seems to be absent altogether. Although Manchester, Carlisle, Norwich, Isle of Man, and a few other northern and midland localities have their records, they are few in comparison with the southern counties from Cornwall to Kent. The latter county, however, otherwise so prolific in "good things" of a supposed continental origin, seems to lack its due proportion of records, whilst the adjoining county of Sussex has the largest number. That the species is migratory appears evident, from its not infrequent presence on board ships at sea. Are we indebted to migrants for most of those in our cabinets, whether "aliens or born in the land," as is the case with *Deiopeia pulchella*, *Colias edusa*, and others?—G. B. CORBIN; Ringwood.

An apparently freshly emerged specimen of this splendid Sphinx was captured in this house on May 28th. It flew into a bedroom window, attracted, I think, more by the scent from a vase of azaleas than by the lamp. It is the first time it has been recorded in this parish (Milton).—HUGO HARPUR CREWE; "Stanleys," near Brockenhurst, Hants.

Isle of Wight.—I have two examples of *D. livornica* that were captured here about the middle of last month. Both these specimens seem to have been attracted by light, one coming into a friend's house through the open window, and one was captured resting on a shop-window. In condition, one is fair, but the other is very rubbed,

though both were no doubt fresh enough when first captured.—
HUBERT F. POOLE; Glen-Rest, Shanklin, June 13th, 1904.

COLIAS EDUSA IN CORNWALL.—Last August a friend of mine took *Colias edusa* in North Cornwall. It is a fine male, in good condition.—
L. AND. RILEY; Manor House, Kingston, Taunton, May 31st, 1904.

ERRATUM.—Page 167, line 11, for “*Hadena*” read “*Acronycta*.”

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, May 4th, 1904.*—
Professor E. B. Poulton, M.A., D.Sc., F.R.S., President, in the chair.—
Mr. W. J. Kaye exhibited a piece of a plant of *Eupatorium macrophyllum* from British Guiana. It was stated that the white flowers were very attractive to the *Lycorca*, *Melinæa*, and *Mechanitis* species of that region. Vast numbers were often to be seen congregated on one single bush. Species of *Heliconius* were also found on the same plant, but only occasionally, and it was significant that only those species that agreed closely in pattern and coloration with the *Ithomiinæ* were so found. He also exhibited a remarkable larva-like twig of birch, found on Oxshott Heath while he was searching for larvæ of *Geometra papilionaria*, and, on behalf of Mr. C. P. Pickett, a pupa of *Rumia cratægata*, the larva of which had spun up in an empty pupa-case of *Pieris brassica*. The latter was on the roof of a breeding-cage, and the Geometrid larva had completely crept inside to spin its cocoon.—
Mr. J. E. Collin exhibited a specimen of *Corethra obscuripes*, v. d. Wulp (? = *C. fusca*, Staeg.), a little-known species of the genus, and new to the British list, which he had found in some numbers at Newmarket.—
Mr. G. T. Porritt exhibited a living larva of *Agrotis ashworthii*, of which he had found considerable numbers on one of the mountains of Carnarvonshire during the last week in April.—
Commander J. J. Walker, R.N., exhibited a gall sent him by Mr. Harold S. Mort, identified by Mr. Froggatt as *Brachyseelis duplex*, Schrader, and found at Wentworth Falls, Blue Mountains, N.S.W., where it was by no means common. Mr. Mort wrote that he thought at first it was made by joining two leaves, but noticed afterwards that it grew direct from the trunk of the tree (a Eucalyptus), while Mr. Froggatt had informed him that the whole of the gall, which resembled a large locust-bean, including the ears, was made by the insect.—
Mr. G. H. Verrall exhibited three specimens, from the Hope Collection at Oxford, of *Neoitamus cothurnatus*, Meig., an Asilid not previously recorded as British. They were taken near Oxford by Mr. W. Holland.—
The President exhibited a Longicorn beetle, together with a large Bracon from the same locality, captured near Malvern, Natal, by Mr. C. N. Barker, who said that the large yellow and black ichneumon, when on the wing, bore an extraordinary likeness to the Longicorn *Nitocris nigricornis*, though no one would suspect a similarity in the cabinet.—
Mr. H. J. Turner exhibited living larvæ and cases of several species of the lepidopterous genus *Coleophora*, and contributed notes on *C. troj-*

lodytella, *C. livella*, *C. laricella*, *C. hemerobiella*, *C. solitariella*, *C. pyrrethipennella*, *C. conyzae*, and *C. alcyonipennella*.—Dr. A. Jefferis Turner, M.D., communicated a paper entitled "A Classification of the Australian *Lymantriadae*."—Major Neville Manders, R.A.M.C., communicated a paper entitled "Some Breeding Experiments on *Catopsilia pyranthe*, and Notes on the Migration of Butterflies in Ceylon."—The President read a communication from Professor E. A. Minchin, describing the attack made by a bird upon a species of *Elymnias*, and a part of a letter recently received from Mr. J. C. Kershaw, one of the Fellows of the Society, living at Macao, throwing light upon the struggle for life maintained by *Rhopalocampta benjamini*, a Hesperiid of that locality. A discussion on the bird enemies of Lepidoptera followed, in which Mr. F. Merrifield, Commander Walker, Mr. M. Burr, and other Fellows joined.

Wednesday, June 1st.—Professor E. B. Poulton, D.Sc. M.A., F.R.S., President, in the chair.—Mr. Arthur F. Bayne, Gerencia, Ferro Carril del Sud, Plaza Constitucion, Buenos Ayres; Dr. Simon Bengtsson, Ph.D., Lecturer at the University of Lund, Sweden; Mr. G. Bertram Kershaw, Ingleside, West Wickham, Kent; Mr. W. A. Nicholson, 36, Promenade, Portobello, N.B.; and the Rev. Thomas John Robert Armine Slipper, M.A., Tivetshall Rectory, Norwich, were elected Fellows of the Society.—After a few sympathetic words by the President, who announced the death of Mr. Robert McLachlan, F.R.S., Treasurer, and one of the oldest Fellows of the Society, it was unanimously resolved to express, on behalf of the Society, sincere sympathy with the family of the deceased in their bereavement. It was then announced that Mr. Albert Hugh Jones had been elected a member of the Council, and also elected to act as Treasurer in the place of the late gentleman.—Mr. E. B. Green exhibited various insects from Ceylon, including a carpenter bee (*Xylocopa fenestrata*, Fab.) and a large Asilid fly (*Hyperechia xylocopiformis*, Wlk.), which very closely mimics the bee; specimens of a Mycetophilid fly and cocoons from which they emerged, showing the beautiful structure, formed of an open network of white anastomosing threads; and examples of a Tineid moth and the remarkable larval cases.—Mr. H. St. J. Donisthorpe exhibited specimens of the rare *Tachys parvulus*, taken in the New Forest in May.—Mr. J. E. Collin exhibited specimens of *Mochlonyx velutinus*, Ruthé, a rare British Culicid, which he, in company with Messrs. Verrall and Wainwright, had found in numbers near Beaulieu in Hampshire, on May 22nd.—Mr. A. J. Chitty exhibited an Ophionine ichneumon, the head of which was covered with the pollen of some orchid, making the insect look as though it was attacked with fungus.—Mr. C. P. Pickett exhibited long series of *Angerona primaria* and *Lycæna corydon*, showing a remarkable range of variation in both species.—The President exhibited specimens of *Paltothyreus tarsatus*, Fabr., an ant belonging to the family Poneridæ, recently received from Dr. S. Schönland, Curator of the Albany Museum, Grahamstown, who mentioned that he had noticed, about eight miles west of Palapye Road Station, an awful stench, which, however, passed off after a time. It turned out afterwards that it emanated from some ants of this species living in trees.—The President exhibited a cluster of the green eggs of

Vanessa urticae fixed to the under side of a small leaf towards the summit of a nettle-stem. The cryptic resemblance of the eggs to their environment was very remarkable. He also read a note on the courtship and pairing of the species.—Dr. T. A. Chapman exhibited two very interesting Erebiæ caught by the President on the Guadarrama (near Madrid, Spain) on July 25th, 1902, at an elevation of probably about 6000 feet. Though taken together, and very much alike they proved to be of two species, viz. *E. erias* and *E. stygne*, both males. Dr. Chapman remarked that the same two species which he found last year in Spain, associated together and closely resembled each other, which is not their habit in Switzerland.—Mr. H. J. Turner exhibited several species of the lepidopterous genus *Coleophora*, and contributed notes on *C. laricella*, *C. albitarsella*, *C. bicolorella*, *C. lineolea*, *C. viminetella*, *C. nigricella*, *C. discordella*, and *C. ochrea*. Colonel Charles Swinhoe, M.A., F.L.S., read a paper on “Tropical African Geometridæ in the National Collection.”—Mr. W. L. Distant communicated a paper entitled “Additions to a Knowledge of the Family Cicadidæ.”—The President communicated a paper by Mr. G. F. Leigh, entitled “Synepigonic series of *Papilio ceuea* (1902–3) and of *Hypolimnas misippus* (1904), together with Observations on the Life-history of the former,” and exhibited specimens to illustrate the same.—Mr. Edward Saunders, F.R.S., communicated a paper on “Hymenoptera Aculeata from Majorca (1901) and Spain (1901–2).”—H. ROWLAND-BROWN, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*March 21st, 1904.*—Mr. G. T. Bethune-Baker, President, in the chair.—Rev. J. Harvey Bloom, Whitechurch Rectory, Stratford-on-Avon, was elected a member of the Society.—Mr. J. T. Fountain showed a series of *Agrotis jimbria*, bred from larvæ found at Marston Green in 1903; also *Phyalia pedaria* from Highbury, where he found four on one lamp, and none others.—Mr. Gilbert Smith, an aberration of *Arctia caia* bred some years ago; the two sides were unequal in size, and quite different in pattern.—Mr. W. H. Flint gave an account of the genus *Eupithecia*, its structure, allies, habits, and mode of capture, &c., with a detailed account of the species. He exhibited his collection of the same, amongst which the most interesting were *insignata* (*consignata*), of which he took seven specimens at Kingswood, Warwickshire, some years ago.

April 18th.—The President in the chair.—Mr. W. H. Flint exhibited a collection of the genus *Dianthæcia* and some of its allies. Amongst the more noteworthy species were *D. compta*, from East Ireland; *D. cæsia*, from the Isle of Man; *D. albimacula*, from Folkestone; *D. irregularis*, from Cambridge; *Calymnia pyralina*, from Kingswood; *C. diffinis*, from Marston Green; and a specimen of *Valeria olaguna* from an old collection.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

RECENT LITERATURE.

British Lepidoptera. By J. W. TUTT. Vol. iv. 8vo, pp. 535. London: Swan Sonnenschein & Co. 1904.

The fourth volume of 'British Lepidoptera' has just been issued, and, owing to the fact that it treats on a superfamily—the Sphingides—that has been studiously worked at and written upon by Messrs. Rothschild and Jordan in the 'Revision of the Lepidopterous Family Sphingidæ' only just recently, it is bound to be criticized in the light of a comparison. The author in the preface foresees this, and fears a "poor comparison." It will be for careful readers and workers to decide, and we think that perchance good results may accrue from a perusal of both. It is most unfortunate that we find, even though the strict rule of priority has been applied to the nomenclature (as in the case of Messrs. Rothschild and Jordan's work), that it is different from that work. Is this to mean that, do what we may, agreement is impossible? The present work, put beside the latter, will reveal the position we have arrived at in this matter.

From the Natural History point of view the present volume will take its place amongst the classics of entomological literature. Mr. Tutt is nothing unless thorough, and the complete overhauling he has given to the twelve remaining British hawk-moths will rank as one of his greatest biological achievements. It must indeed be gratifying to the author, and none the less to his readers, to find that the independent results of his studies of the larvæ and pupæ actually coincide to a large extent with the classification arrived at by Messrs. Rothschild and Jordan in their work, which is built up essentially on imaginal characters. One can compare such a case with two mathematicians independently solving a difficult problem. Both get the same result. It is no proof that either is right, but the probability is exceedingly strong. The searching enquiry that has been made concerning the species treated in vol. iv. should be read therefore with double interest, in view of this coincidence of opinions. It will be necessary for the reader to note that the classification of the Palearctic Sphinges as given in the catalogue at the end of the book is not wholly in accordance with that given in the text. We take it that Mr. Tutt was maturing his opinions as he was writing; and, in fact, on page 244 we find a footnote that the only way out of a difficulty was to revise the terminology, although half-way through the book. The fact becomes clear that the whole of the manuscript should have been sent in a single instalment, and not in pieces, to the printer. It does seem a pity that one may read something in the first half of the book that is greatly modified in the second half. For instance, in the text the Eumorphinæ are a subfamily of Sphingidæ, but in the catalogue they are a subfamily of Eumorphidæ. Even in vol. iii. the raising of the Eumorphids to family rank was anticipated, but it has not actually come till the end of vol. iv. It is not too much to assert, however, that the portion of the book dealing with the Eumorphids—Eumorphines and Daphnidines—deserves the highest praise. We here have a very

critical review of all the characters offered, and as a result a classificatory scheme where previously no classification existed. The pages devoted to the Eumorphinae will be read with great interest, as showing how the British species are dispersed through four distinct tribes. Each tribe is in turn fully diagnosed, and in many cases most minute details of the larval differences are given.

The work of Weissman on 'Studies in the Theory of Descent' is constantly under review, particularly that portion that deals with the development of larval markings. In the main there is a general agreement with the views there set forth, but occasionally criticisms are made that are worth considerable reflection. At page 263 the subfamily Sphinginae is entered upon, which includes the four remaining British hawk-moths—*Hyloicus pinastri*, *Sphinx ligustri*, *Agrius convolvuli*, and *Manduca atropos*. Over these four species we have 238 pages of printed matter. The elaborateness of the life-histories accounts for much of this space. The description and habits of the larva of *Agrius convolvuli* runs into twenty-five pages, and represents the scale on which this side of the work has been done. We are glad also to have previous published errors rectified. A word must be said, too, of the altogether unprecedented description of the pupæ and the detailed measurements, which together sometimes occupy more than four pages for a single species. The last species is *Manduca atropos*, which occupies seventy-three pages. Of these the twenty pages devoted to the habits will come in for a large share of attention. A summary is given of the various opinions that have been given as to how the cry of the imago is produced. We should have thought that this was a little unnecessary, seeing that quite a number of first-rate workers have confirmed one another as to the real cause. Passerini, Moseley, Poulton, and Chapman all give the same reason, and there can hardly be any doubt now about the matter. There is an appendix, which runs to close on thirty pages, and contains a valuable life-history of *Daphnis nerii*, with an exceedingly good black and white plate. Altogether, the Sphingid specialist has cause to rejoice over such a valuable work, while for every entomologist there are pages of the deepest interest.

We feel compelled to add a word as to the printing and get-up of the book. This is not what it should be. The various headings are not in bold enough type, and there is not a sufficient diversity in these. Subfamily, tribe, and genus all have the same type, and do not help the eye much in finding anything in connection with these. Again, under *Manduca atropos* it is not at all easy to find where the habit of robbing beehives or the cry of the imago is described, as these come under the paragraph "Habits," which is twenty pages long. Such details as these would greatly serve to increase the facility with which the book could be used. We mention this matter fearlessly, as we feel that its modification is an easy matter, and one that would be bound to be appreciated by everybody. While vol. iv. was going through the press we heard ominous rumours as to Mr. Tutt's health. We sincerely wish him a new lease of life to continue his fine work.

W. J. K.

Agrestia Ligustia: Riviera Nature Notes. A Popular Account of the more conspicuous Plants and Animals of the Riviera and the Maritime Alps. Second edition. With Frontispiece, Thirty-one Plates and Ninety-three Illustrations in the text. London: Quaritch. 1903. 8vo, pp. xv, 402.

WE are very pleased to welcome this new and much-enlarged edition of an extremely useful and attractive book, by an author who veils himself under the letters "C. C.," but who dedicates his book to Sir Thomas Hanbury, a view of whose mansion and garden at La Martola forms the frontispiece. The author informs us that he has lived in the district for twelve years (part of the time before the annexation of Nice to France, when the country was in a more primitive condition than at present), and he is therefore able to write of it from long personal knowledge.

A large portion of the book is devoted to trees and plants; but quadrupeds, birds, lizards, frogs, shells, insects, and spiders, have not been neglected; and some very useful appendices are added, such as, "Problems to Solve," "List of Butterflies" (including Spingings and Zygenæ), "Books Useful for the Study of the Flora," and "Sights worth Seeing."

Although the book deals chiefly with natural history, it is written in a pleasant gossipy style, and contains frequent references to history, archæology, &c. We have no patience with persons who discourage any reference to non-technical subjects, even in popular scientific books.

We would strongly recommend anyone visiting the Riviera, either for health or pleasure, to take this book with them, for we are sure that they will find much in it that will greatly increase the interest of their visit, and much information that they will be very pleased to have with them on the spot.

W. F. K.

ROBERT MCLACHLAN.

ON May 23rd there passed from our midst a well-known figure in the entomological world in the person of Mr. Robert McLachlan. His health had been failing for some months before his death, which took place at his residence in Lewisham at the comparatively early age of sixty-seven.

From his father he inherited independent means, which enabled him to devote his whole life to the pursuit of natural history. From his presidential address to the Entomological Society of London in 1887, we learn that as a child his attention was turned to botany. As a youth he made a voyage in 1855-6 to Australia and the East, when, pursuing his earliest bent, he made a valuable collection of Australian plants. On returning to England, however, he left his first love, and took up with the study of entomology. In that branch of zoology his knowledge was general, though, as we learn from the 'Entomologists' Annual' for 1858, he commenced, as is usually the case, with the Lepidoptera. Soon, however, he found his life's work in rescuing from neglect and confusion the Neuroptera.

The groups constituting the order are most heterogeneous, with life-histories as varied as their appearance. Add to this that the order contains some of the more ancient insects, and it is safe to say that in clearing the path for future students, Mr. McLachlan did a good work indeed. In 1865 appeared a monograph of the British Trichoptera, which was followed in 1867 by one on the Psocidia; while the next year—1868—saw the Planipennia similarly treated. In 1870 (assisted by Rev. A. E. Eaton in the Ephemera) appeared a 'Catalogue of the British Neuroptera,' which, though many additions have since been made to the list, has been of great use to students of the Order. But Mr. McLachlan's *magnum opus* is the 'Monographic Revision and Synopsis of the Trichoptera of the European Fauna (1874-1884),' a work of the very first importance in zoological literature.

Besides these larger works, appeared articles and pamphlets innumerable in the transactions of learned societies, and in various periodicals, especially in the 'Entomologists' Monthly Magazine,' of which, from its start in 1864, he had been the editor. His connection with entomologists (neuropterists especially) was world-wide, and his collections of Neuroptera therefore are amongst the finest in the world.

Mr. McLachlan paid frequent visits to the Continent, and was honorary member of the entomological societies of many of the European States. Of the Entomological Society of London he had been a member for nearly half a century, having been Secretary and President, and holding the office of Treasurer at the time of his death. In 1877 he became a Fellow of the Royal Society. He was, in addition, Fellow of the Linnean Society, the Royal Horticultural Society, and the Zoological Society. He took a deep interest in the West Kent Natural History, Microscopical, and Photographic Society, which he joined in 1873, and of which he was President in 1892 and 1893.

With the death a year or two since of the venerable Baron de Selys Longchamps, Mr. McLachlan was left *facile princeps* amongst students of the Neuroptera, and we shall probably look around in vain for anyone capable, in the immediate future, of adequately filling his place.

W. J. L.

OBITUARY.—We are very sorry to hear that Mr. EDWARD E. G. J. SPARKE, B.A., F.E.S., of 1, Christchurch Villas, Upper Tooting, S.W., died somewhat suddenly in the early part of last May. He was an enthusiastic collector, and close observer of the habits of insects, chiefly Lepidoptera. The Tuddenham fauna received a considerable share of his attention, but he was also well acquainted with the Lepidoptera of certain localities in Surrey that he particularly favoured. Although he did not contribute much to its literature, he possessed a wide knowledge of his subject, and this was always at the service of anyone who sought information from him. He was a genial companion, and by those who knew him personally will be greatly missed.

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DESCRIPTIONS OF SOME NEW SPECIES OF CHLAMYDÆ FROM SOUTH AMERICA.

By MARTIN JACOBY.

CHLAMYS TRIMACULATA, sp. n.

Flavous; the head and thorax spotted with purplish or black, posterior portion of the latter moderately raised, the elevation undivided; elytra with a single tubercle at the base, the latter, three spots at the middle, and the apex, deep purplish, the rest flavous, with brown punctures, the middle and sides with some short ridges. Length, 4 millim.

Head closely rugose-punctate, flavous, the middle with a more or less distinctly marked dark purplish band; antennæ fulvous, the terminal joints rather darker; thorax with the basal portion gradually raised into a rounded elevation, the back of which is bounded by a serrate ridge and perpendicularly deflexed, the entire surface is covered with small rugosities and reticulations, more or less of flavous colouration, the back of the elevation dark purplish to a greater or smaller degree, the anterior portion stained with some small purplish spots, placed transversely; elytra subquadrate, with a single conical tubercle at the middle of the basal margin, followed by an oblique ridge towards the suture, which below the middle runs parallel with the suture to some distance from the apex, another shorter ridge is placed still closer to the suture anteriorly, and joins the other one near the middle; smaller ridges occupy the posterior portion of the elytra at the sides; the latter are rather deeply sulcate below the shoulders, the basal and apical portion are reddish brown, as well as three elongate spots at the middle; of these two are placed near the suture, one below the other, and the third (the largest) at the side of them; the rest of the surface is pale yellowish, marked with dark brown punctures; pygidium, under side, and legs flavous, closely reticulate.

Hab. Jatahy, Prov. Goyaz, Brazil.

At first sight this species seems identical with *C. reticulata*, Klug, but in that species the thorax has two broad purplish bands, and another one at each side, and the elytra are provided with another tubercle near the suture at the middle, and a third near the apex, of which there is no trace in the two specimens of

the present species before me. Altogether, Lacordaire's description speaks of four tubercles on each elytron; in *C. trimaculata* there is only a single one, as mentioned above. (Collection M. Donckier and my own.)

CHLAMYS DONCKIERI, sp. n.

Black; the antennæ, labrum, and tarsi fulvous; thorax with a high conical elevation, sulcate at the top; elytra with a velvety black space below the scutellum, a tubercle near the suture below the middle, and two more elongate ones near the apex, an oblique ridge at the disc, and another below the shoulders. Length, 3 millim.

Head opaque, deep black, finely and remotely punctured; labrum and antennæ fulvous; thorax with the middle portion raised into a high conical tubercle, the top of which is deeply sulcate, the entire surface and the elevation closely punctured and reticulate, velvety black; elytra with a similarly coloured broad space below the scutellum, closely punctured, bounded at the sides by an oblique ridge from the middle of the base to the suture, at which place it forms a high transverse ridge, from the shoulder another ridge joins the first one before the middle; a third ridge is placed near the lateral margins, but becomes indistinct posteriorly; near the apex are two tubercles, one of elongate ridge-like shape near the suture, the other more conical in shape; pygidium strongly rugose-punctate, the suture finely serrate; tarsi fulvous.

Hab. Prov. Goyaz, Brazils.

The thoracic hump in this species is very pronounced, and slightly narrowed towards the top, and the elytral ridges are strongly raised at their commencement. The insect is no doubt closely allied to *C. hircina*, Lac., but differs in the highly raised elytral ridges and their tubercles; *C. minax*, Lac., has the thoracic elevation of different shape, and differently sculptured elytra; the same is the case with *C. thoracica*, Koll. (Coll. Donckier and my own.)

CHLAMYS SEMINIGRA, sp. n.

Obscure ferruginous; thorax finely punctured, the base with a regularly rounded elevation, feebly bicarinate; elytra with black punctures, a short transverse ridge before the middle, and five small tubercles below the latter; breast and the middle of the abdomen, as well as a small spot at the sides of the latter, black; legs fulvous, femora partly black. Length, 4 millim.

Head flat, pale ferruginous, with a small brown spot at the middle; antennæ of the same colour, the fourth and following joints strongly transverse; thorax with the basal portion gradually raised into a rounded elevation, the posterior portion of which shows two feeble oblique ridges; the entire surface is finely impressed with small brown punctures, and the middle portion is rugose, ferruginous, with a small obsolete dark spot anteriorly, and a short brown band at each side near the base; the elytra are punctured like the thorax, but more closely so, and have two rather distinct longitudinal ridges at the sides only—one in front of the shoulders which ends in a short transverse ridge before the middle, the second ridge is very short, and placed close to

the lateral margins at the middle ; at this place it is marked by a transverse tubercle ; opposite, near the suture, another tubercle is placed, three more occupy the posterior portion of the elytra, the interstices at that portion are rather strongly rugose ; the breast and the middle of the abdomen deep black, also the intermediate and posterior femora, with the middle portion of the latter colour ; rest of the under side flavous ; the first segment of the abdomen with another small black spot at each side ; pygidium finely rugose, flavous, the base with a small and obsolete spot at each side ; prosternum transverse at the anterior portion, strongly compressed posteriorly.

Hab. Prov. Goyaz, Brazils.

The colour of the under side, in connection with the nearly obsolete elytral ridges, will distinguish this species ; the prosternum is also of rather peculiar shape. (Coll. Donckier and my own.)

CHLAMYS SEMIBRUNEA, sp. n.

Subelongate, parallel, piceous, with pale fulvous ridges and spots ; legs and pygidium fulvous, with dark markings ; thorax with the basal elevation rounded, the sides of the latter with indistinct pale ridges, the rest deeply punctured with black ; elytra with a network of pale and short ridges, closely punctured, the apex with two obsolete tubercles. Length, $2\frac{1}{2}$ millim.

Head closely rugose, dark fulvous, the middle with a blackish mark ; antennæ with the lower three or four joints fulvous, the rest dark ; thorax with a moderately raised and round basal elevation, feebly canaliculate at the top, from which irregular pale fulvous and short ridges project sideways, which intermix and form a kind of network ; the elevation is well limited laterally by a semicircular groove, and entirely and strongly rugose, at the sides are two feebly raised callosities, and the entire surface is closely impressed with black punctures ; the anterior portion of the elevation is more or less marked with fulvous at the middle ; scutellum nearly black ; elytra deeply and closely punctured, the punctures black, interrupted by transverse irregular fulvous ridges, without the usual four longitudinal costæ, or of which perhaps only one can be distinguished from the middle of the base, and gradually approaching the suture, at the middle of which a short transverse ridge is placed ; another short semicircular ridge surrounds the scutellum below the base ; at the sides, longitudinal and transverse short ridges of pale colour join each other, and with the exception of two very obsolete tubercles near the apex, there are no others visible at the rest of the surface ; suture finely serrate throughout ; pygidium with two short ridges at the middle fulvous, with black punctures, the sides depressed ; breast and abdomen black ; legs fulvous, the femora and tibiæ with a blackish spot at the middle, prosternum gradually triangularly widened anteriorly.

Hab. Brazils (*C. Bruch*).

The almost entirely indistinct elytral costæ, the absence of most of the tubercles, and the sculpture of the thorax does not agree with any of the other small species described by Lacordaire. Two specimens are contained in my collection.

CHLAMYS FULVIMANA, sp. n.

Obscure æneous below; the head, antennæ, and the spotted legs fulvous, above black; thorax with a deeply divided basal elevation, the sides finely and closely punctured, the elevation strigose; elytra with nine tubercles, closely and strongly punctured; sides of the breast and the abdomen fulvous. Length, 5 millim.

Head finely punctured, fulvous, the vertex with a black central spot; antennæ fulvous; thorax finely and closely punctured, black, the sides with an elongate blunt callosity, the base strongly raised at each side, deeply divided above, and slightly carinate at the top of each division, the latter rugosely strigose; elytra constricted at the middle, strongly punctured, the anterior portion with five tubercles, a large one at the middle of the base, three small ones placed triangularly below the first tubercle, and one of strongly transverse shape near the suture at the middle; five more small tubercles are placed at the posterior portion of the elytra, at which place the interstices are more or less rugose or reticulate; the suture is finely serrate; pygidium finely rugose, carinate at the middle; sides of the breast, and to a less extent of the abdomen, as well as the legs, fulvous; the femora and tibiæ with an elongate black streak at the outer side; abdomen obscure æneous, finely punctured, the breast more strongly so.

Hab. Costa Rica.

I only know a single specimen of this well-marked species, which seems allied to *C. knochi*, Koll., but has a differently sculptured thorax, and coloured under side and legs. (My collection.)

CHLAMYS SURINAMENSIS, sp. n.

Bright cupreous; the labrum and antennæ fulvous; thorax entirely covered with fine confluent reticulations, the basal portion raised, sulcate at the top, the sides with a blunt tubercle; elytra sparingly punctured, with four acutely raised flexuose ridges at the outer disc, a short oblique ridge below the scutellum, and one near the suture below the middle. Length, 5 millim.

Head entirely covered with confluent longitudinal reticulations, cupreous, the epistome more finely and closely reticulate-rugose; labrum and antennæ fulvous; thorax with the posterior portion elevated, the elevation divided by a short but broad and very deep sulcus, the back of the raised portion suddenly perpendicularly deflexed, and limited by a transverse sulcus, the sides likewise raised into a broad blunt tubercle, the entire surface closely confluent reticulate; scutellum smooth, bright cupreous, its apex bisinuate; elytra broadly subquadrate, slightly narrowed posteriorly, with the following highly raised cupreous costæ or ridges: a short oblique one immediately below the scutellum from below the base to the suture; a second one from the middle of the base to the middle of the elytra, where it forms an acute angle, and is continued along the suture, or gradually approaching it towards the apex; at the latter place it turns upwards, and continues along the lateral margin in a flexuose line to the shoulder; a third ridge begins in front of the shoulder, and, after joining the second one at the middle, accompanies it for some distance,

where it breaks off; there is also another very short costa visible near the apex within the space surrounded by the second costa, the shoulders are tuberculate, or rather prominent and smooth, and a single smooth tubercle is placed near the scutellum; all the interstices show some single punctures of different sizes; pygidium cupreous, very finely punctured; prosternum compressed and narrow, except at the extreme base.

Hab. Surinam.

I know only a single specimen of this handsome and highly metallic species; the design of the elytra differs from any other with which I am acquainted, but comes somewhat near *C. smaragdina*, Lac.

CHLAMYS CENTROMACULATA, sp. n.

Short and subquadrate, flavous; the thorax with lateral and a central elongate black spot, the basal portion elevated into a crested hump; elytra with the anterior portion with black ridges and tubercles, the posterior one flavous, with elongate tubercles and ridges; pygidium and legs spotted with black. Length, $2\frac{1}{2}$ millim.

Head closely rugose, flavous; the vertex with a central black spot; another one is placed at the base of the antennæ, the latter with the fifth and following joints transverse, flavous, the terminal joints slightly darker; thorax with the basal portion gradually raised into an acute ridge at each side, which join at the back, and extend perpendicularly downwards in another ridge; these ridges are of black colour, as well as the sides of the elevation; an elongate black spot is placed at the middle of the elevation; the rest of the thorax is flavous, with several black spots anteriorly, as well as the punctures themselves, the interstices are slightly and irregularly convex, and the central black mark is bounded at each side by another small ridge; scutellum dark; elytra for the greater part flavous, impressed with deep dark brown punctures; a highly raised oblique flavous ridge runs from the shoulder towards the suture before the middle, the end of which is nearly black below the scutellum; it is joined at nearly right angles by a short costa, which finishes in a flavous tubercle near the suture below the middle, near the apex are two other larger flavous tubercles, the interstices are rather closely longitudinally costate and punctured, and a more prominent black tubercle is placed at the middle of the basal margin; the suture is finely serrate; pygidium with a longitudinal central groove, flavous, spotted with black anteriorly and posteriorly; under side with numerous black punctures; legs flavous; tibiæ with a blackish spot; prosternum carinate, triangularly dilated anteriorly.

Hab. Brazils (*C. Bruch*).

This insect has its probable most nearly allied form in *C. adspersata*, Koll., but neither Kollar nor Lacordaire give a sufficient detailed description. Anyhow, the thoracic spots, similar in the two specimens before me, are not mentioned, and many other differences in the sculpture leave no doubt as to the specific distinction of this *Chlamys*.

CHLAMYS CONSTRICTIPENNIS, sp. n.

Subquadrate, black, opaque; the lower joints of the antennæ and the tarsi fulvous; thorax with an isolated raised basal portion, traversed by ridges, the sides tuberculate, minutely granulate and punctured; elytra constricted at the posterior half, bounded anteriorly by a high deeply sinuate oblique ridge, apical portion obsoletely tuberculate, remotely punctured. Length, 4 millim.

Head strongly punctured at the clypeus only, the upper portion nearly impunctate, finely coriaceous, deep black, opaque; the very deep indentations of the eyes with a slight greenish tint, anterior margin of the clypeus deeply concave; labrum and palpi fulvous; antennæ with the fifth and following joints gradually transversely dilated, the terminal five joints piceous, transversely subquadrate, the lower joints fulvous; thorax minutely granulate and remotely punctured, the basal portion raised into an isolated rounded elevation, with a transverse ridge at each side of the posterior portion at the top; from these ridges several smaller and more obsolete branches run downwards to the deflexed anterior part of the elevation, which is altogether surrounded by a groove; at the sides two larger and one small callosity are placed; scutellum with its posterior edge slightly concave, but entire; elytra with the anterior half widened, and bounded by a deeply indented and highly raised ridge, the space within with two small tubercles at the basal margin, placed obliquely one below the other, and a short oblique ridge near the suture; the posterior portion of the elytra with a transverse rather feeble ridge below the middle, followed by three or four transverse tubercles near the apex; pygidium carinate at the middle, impressed at the sides; under side and legs rather strongly foveolate-punctate; tarsi fulvous, pygidium triangularly widened anteriorly, strongly depressed in shape of a ridge at the posterior portion.

Hab. Peru.

This is a well-marked species, on account of the constricted posterior portion of the elytra, and the high ridge dividing the two parts; the terminal joints of the antennæ are not of triangular but subquadrate transverse shape.

(To be continued.)

DESCRIPTIONS OF NEW LYCÆNIDÆ FROM
EQUATORIAL AFRICA.

BY EMILY MARY SHARPE.

Family LYCÆNIDÆ.

OXYLIDES FEMININA, sp. n.

Allied to *O. faunus*, Drury, but with more white on the hind wings of both sexes.

♂. Fore wing: The blue area somewhat lighter in colour than in *O. faunus*. Hind wing: The black line on the apex narrower; the

hind margin near the anal angle white, relieved by three dusky spots situated between the nervules, the middle spot being almost obsolete. Under side similar to that of *O. faunus*, but the yellow transverse band slightly narrower. Expanse, 1·1 in.

♀. Fore wing: Ground colour smoky brown, with a bluish grey patch near the centre extending from the inner margin to the discoidal cell. Hind wing: General colour smoky brown, relieved by a bluish grey patch near the base; a large white patch near the anal angle, extending to the discoidal nervule; this white area relieved by three dusky inter-nervular spots as in the male; the tails and cilia white. Under side: Similar to that of the male above described. Expanse, 1·1 in.

Hab. Entebbe, Uganda; May, 1900 (*H. B. Rattray*).

APHNÆUS RATTRAYI, sp. n.

Allied to *A. orcas*, Drury, but distinguished from that species by the much darker colouring of the under side.

♂. Both wings similar to those of *A. orcas*, as regards colour and markings. Under side:—Fore wing: The yellow ground colour much more dingy than in *A. orcas*; the silver markings heavily encircled with deep crimson, a line of this colour being visible along the hind margin and terminating in a minute silver spot near the apex. Hind wing: Ground colour dingy yellow, the silver spots and bands surrounded with deep crimson; the crimson submarginal border relieved by two small silver spots. Expanse, 1·2 in.

Hab. Toro; November–December, 1900 (*H. B. Rattray*).

HYPOLYCÆNA UGANDÆ, sp. n.

Allied to *H. hatita*, Hewits., but differing in the lighter markings on the under side, which may be compared with those of *H. buxtoni*, Hewits.

♂. Fore wing: Similar to that of *H. hatita*, but with the blue area not quite so vivid in colour as in the above species. Hind wing blue, the whole of the inner margin greyish white; the white area on the anal angle more pronounced, with a second white spot above this anal marking. Under side: Both wings entirely white, the yellow transverse bands narrower and not so strongly pronounced; the principal band on the hind margin not united to the submarginal line on the anal angle as in *H. hatita*. Expanse, 1·2 in.

♀. Ground colour smoky brown, relieved on the inner margin by a suffusion of bluish grey. Hind wing: Smoky brown, with a bluish grey tinge near the base; the hind margin and discal area from below the discoidal nervule white, relieved by a thin smoky brown line and three dark spots, the central spot being the smallest. Under side: Does not differ from that of the male described above. Expanse, 1 in.

Hab. Entebbe, Uganda; October, 1900 (*H. B. Rattray*).

IOLAUS HEMICYANUS, sp. n.

Allied to *I. iasis*, Hewits., but distinguished from that species by the larger black area on the fore wing.

♂. Fore wing: Nearly half of the wing brownish black, the basal area brilliant blue. Hind wing: The apex with a larger portion of brownish black than in *I. iasis*, becoming stone-colour along the costa; the discoidal cell having the characteristic band, but without the tuft of hairs; the lower portion of the wing bright blue; the inner margin greyish. Under side: Ground colour of both wings white; the apical area of the fore wing dusky, enclosed by a transverse fuscous line from the costa to as far as the first median nervule; a similar line, somewhat fainter, near the hind margin; a slight fuscous line at the end of the discoidal cell; a similar fuscous line on the hind wing, followed by a faint submarginal line, the lower half becoming bright orange towards the anal angle; the usual ocelli visible, one on the lobe, and the second between the first and second median nervule. Expanse, 1.2 in.

Hab. Entebbe, Uganda; May, 1900 (*H. B. Rattray*).

IOLAUS ALBOMACULATUS, sp. n.

Allied to *I. iasis*, Hewits., and its allies, but easily distinguished by the white patch on the fore wing.

♂. Fore wing: The costa and apical area black, becoming quite narrow on the posterior angle; the central area deep blue, relieved by a white patch situated above the middle of the discal area. Hind wing similar to that of *I. iasis*, the blue being somewhat more purple in tint. Under side: Does not differ from that of *I. iasis*. Expanse, 1.1 in.

Hab. Toro; November–December, 1900 (*H. B. Rattray*).

SUPPLEMENTARY LIST OF THE LEPIDOPTERA OF
THE ISLAND OF CAPRI.

BY C. SEYMOUR BROWNE.

(Concluded from p. 188.)

THYRIDIDÆ.

1059. *Thyris fenestrella*, Sc.

NOCTUIDÆ.

1090. *Acronycta psi*, Linn.

1185. *Agrotis c-nigrum*, Linn.

1399. *A. ypsilon*, Rott.

1401. *A. trux*, Hb.

1402. *A. saucia*, Hb. (as well as var. *margaritosa*).

1405. *A. crassa*, Hb. A large form.

1527. *Dianthæcia luteago*, Schiff.

1542. *D. filigramma*, Esp.

1553. *D. carpophaga*, Bk.

1715b?. *Hadena secalis*, Linn., ab. *leucostigma*, Esp. (Only one very damaged specimen taken.)

1763. *Aporophyla australis*, B.
 1768. *Ammoconia senex*, H.-S.
 1774. *Polia serpentina*, Tr. Scarce.
 1778. *P. rufocincta*, H. G. Appeared in hundreds in December to light.
 1825. *Dryobota protea*, Bkh.
 1843. *Chloantha hyperici*, Fb.
 1858. *Trigonophora flammea*, Esp.
 1940. *Leucania sicula*, Tr. I had classed these under *scirpi*, but, Sir George Hampson having kindly pointed out to me the difference, I found all but one of my examples to be *sicula*, and am rather doubtful if I have *L. scirpi*, as my one specimen appears to be *cyperii*.
 1940a. *L. sicula*, Fr., var. *fuscilinea*, Graef.
 1940b. *L. sicula* ab. *cyperii*, B. Calb. calls this a var. of *scirpi*, and I am inclined to think that what I have called *scirpi* is this form.
 1947. *L. putrescens*, Hb.
 1966. *L. albipuncta*, F. Only one taken, which Mr. South has kindly named for me, and noticed some differences of markings.
 1981 or 1982. *Stilbia* ——. One specimen damaged, which Mr. Prout, with many others, has kindly examined, and pronounces to be *anomala*, Hb., or possibly *faillæ*, Püng.
 2066. *Taniocampa pulverulenta*, Esp.
 2070. *T. incerta*, Hufn.
 2125. *Orthosia helvola*, Linn. (*rufina*, Esp.). Two examples taken at light in December.
 2127. *O. pistacina*, F.
 2127b. *O. pistacina* ab. *serina*, Esp.
 2127c. *O. pistacina* ab. *rubreta*, Esp.
 2127d. *O. pistacina* ab. *carulescens*, Calb. Common with most of the aberrations from November well into January.
 2186. *Xylocampa arcola*, Esp.
 2248. *Cucullia lactuca*, Esp. One example, summer, 1903, and another, Jan. 12th, 1904—a fresh specimen; in March two or three more.
 2281. *Eutelia adultrix*, Hb.
 2394. *Thalpochares velox*, Hb. Three or four taken in 1903.
 2426. *T. purpurina*, Hb.
 2428. *T. ostrina*, Hb.
 2429a. *T. parva*, Hb., ab. *rubefacta*, Mab.
 2431. *T. paula*, Hb.
 2433. *T. candidana*, F.
 2662. *Catephia alchymista*, Schiff.
 2715. *Catocala nymphagoga*, Esp. Only one in 1903.
 2720. *Apopestes cataphanes*, Hb.

GEOMETRIDÆ.

2861. *Pseudoterpna coronillaria*, Hb. Scarce. (*P. pruinata*, see p. 308, 1903, was an error.)
 2898. *Eucrostes herberia*, Hb. Only one taken, 1903.
 2929. *Acidalia trilineata*, Sc.
 2934. *A. ochrata*, Sc.

3006. *A. infirmaria*, Rbr.
 3010. *A. obsoletaria*, Rbr.
 3023. *A. elongaria*, Rbr.
 3026. *A. trigeminata*, Hw.
 3031. *A. politata*, Hb.
 3043a. *A. degeneraria*, Hb., ab. *depravata*, Stgr.
 3044. *A. rubraria*, Stgr.
 3048a. *A. aversata*, Linn., ab. *spoliata*, Stgr.
 3068. *A. submutata*, Tr.
 3095. *A. ornata*, Sc.
 3113. *Ephyra porata*, Fb. (Previously recorded, in error, as *E. punctaria*.)
 3118. *E. subpunctaria*, Z.
 3143b. *Sterrha saccharia*, Linn., ab. *atrifasciaria*, Stefan. I have two specimens of this, both showing very markedly the dots on fore wings, entirely wanting in my specimens of *saccharia*, which have only the bright crimson stripe.
 3174. *Orthololita bipunctaria*, Schiff.
 3220. *Anaitis plagiata*, Linn.
 3229. *Chesius spartiata*, Fuesl. The form occurring here has been described by Mr. Prout as var. *capriata* (*ante*, p. 60).
 3294. *Lygris associata*, Bkh.
 3311. *Larentia cupressata*, H. G.
 3344b. *L. fluctuata*, Linn., ab. *neapolisata*, Mill.
 3378. *L. fluriata*, Hb.
 3419. *L. cupreata*, H.-S.
 3459. *L. unifasciata*, Hw.
 3608. *Tephroclystia semigraphata*, Brd.
 3641. *T. phæniceata*, Rbr.
 3646. *T. abbreviata*, Stph.
 3658. *T. pumilata*, Hb.
 3671. *Phibalapteryx vitalbata*, Hb.
 3673. *P. corticata*, Tr.
 3724. *Metrocampa honoraria*, Schiff.
 ? 3760. *Eurymene dolobraria*, Linn.
 3830. *Zamacra flabellaria*, Heeger. Feb. 10th, 1904.
 3830. *Z. flabellaria*, Heeger.
 3917. *Pachynemia hippocastanaria*, Hb.
 3948a. *Gnophos variegata*, Dup., ab. (et v. ?) *cymbalaria*, Mill.
 3956. *G. asperaria*, Hb.
 3956a. *G. asperaria*, Hb., var. *pityata*, Rbr.
 4077. *Aspilates ochearia*, Rossi.

NOLIDÆ.

4105. *Nola strigula*, Schiff.

CYMBIDÆ.

4126. *Sarothrips revayana*, Sc.
 4132. *Nycteola falsalis*, H.-S.
 4141. *Hylophila prasinina*, Linn., is found on the lower parts of the island, *H. bicolorana* on the higher.

SYNTOMIDÆ.

4146a. *Syntomis phegea*, Linn., ab. *phegeus*, Esp. In the specimens of *phegea* found here the white spots are small in size.

4156c. *Dysauxes punctata*, Fb., var. *fanula*, Fr. I have also a darker and a very faint form.

ARCTIDÆ.

4168b. *Phragmatobia fuliginosa*, Linn., var. *fervida*, Stgr. I think the form here should be described as above.

4301. *Lithosia caniola*, Hb. Extremely common. I think my previous mention of *L. unita* was an error.

ZYGÆNIDÆ.

4351. *Zygana stechadis*, Bkh.

4352c. *Z. filipendulæ* var. *ochsenheimeri*, Z.

4356. *Z. transalpina*, Esp. Varying in the direction of the named vars., i. e. spots on fore wings reduced in size; black margins of hind wings beginning to widen.

PSYCHIDÆ.

4451. *Pachytelia villosella*, O.

4490. *Phalacropterix apiformis*, Rossi.

SESIIDÆ.

4627. *Sesia chrysidiformis*, Esp.

PYRALIDÆ.

41. *Crambus trabeatellus*, H.-S.

208. *Hypsotropa limbella*, Z.

232. *Homæosoma sinuella*, F.

Euzopherodes sp. Probably undescribed.

739. *Aerobasis glaucella*, Stgr.

835. *Pyralis obsoletalis*, Mn.

845. *Herculia glaucinalis*, Linn.

931. *Stenia punctalis*, Schiff.

978. *Scoparia angustea*, Steph.

1003. *Hellula undalis*, F.

1241. *Pyrausta cespitalis*, Schiff.

OTHER "MICROS."

1638. *Cheimatophila tortricella*, Hb.

2257. *Carpocapsa pomomella*, Linn.

3133. *Chimabache fugella*, F.

3206. *Depressaria subpropinquella*, Stt.

Acrolepia. Species.

ON SOME NEW GENERA AND SPECIES OF
HYMENOPTERA.

BY P. CAMERON.

(Continued from p. 163.)

ICHNEUMONIDÆ.

CÆLOJOPPA CARINISCUTIS, sp. nov.

Black, shining; the face, clypeus, the orbits, the basal half of the mandibles, palpi, a line on the pronotum, a slightly broader one on the lower edge of the propleuræ, an irregular mark, broader than long, on the mesonotum, the scutellums, the lower half of the mesopleuræ, the base of the mark curved upwards, the part under the hind wings, the apex of the metanotum all round, the line narrowed on the top and at the bottom reaching to the coxæ, the narrowed part of the petiole, the apex of the post-petiole, and of the other segments broadly, pale yellow. The four front legs pallid yellow, the femora fulvous above, the hinder legs dark fulvous, the coxæ and trochanters more yellowish in tint, and marked with black on the outer half at the apex; the tibiæ darker in tint. Wings clear hyaline, the stigma fuscous, the nervures darker. Petiole smooth and shining; a fovea at the base of the post-scutellum; the second and following segments closely punctured; the gastrocæli strongly striated, the apex testaceous. ♀. Length, 8 mm.

Hab. Darjeeling.

SPILOJOPPA, gen. nov.

Scutellum flat, broad, not keeled laterally. Areola large, almost twice longer than broad, of equal width throughout, open at the base; the lateral areæ are separated; there are no teeth on the apex. Head large, as broad as the thorax; the temples broad, the occiput roundly incised. Eyes large, parallel; the malar space small. Clypeus not separated, its apex transverse, its sides rounded. Labrum hidden. Mandibles with the upper tooth much larger than the lower. Antennæ stout, dilated and compressed beyond the middle. Petiole long, the post-petiole not much dilated, the second and third segments closely punctured, closely and finely longitudinally striated at the base. Gastrocæli large, deep; the last segment is fully larger than the sixth; the sheaths of the ovipositor largely project; the ventral keel extends to the apex of the fourth segment. Areolet five-angled, narrowed above; the disco-cubital nervure broken by a minute stump; the transverse median nervure is received distinctly beyond the transverse basal. Legs of moderate length; the apices of the tarsal joints spinose. The known species is black, largely marked with yellow, the legs rufous. The second to fifth abdominal segments project at the apices laterally.

Belongs to the Joppini, and is not unlike *Cælojoppa* in form and coloration, but may be known from it by the flatter, not keeled scutellum, and by the much larger areola of equal width throughout. The latter is larger than usual.

SPILOJOPPA FULVIPES, sp. nov.

Black; the face, clypeus, the eye-orbits—the outer more narrowly above—base of mandibles, palpi, the upper and lower edge of the prothorax—the lower line not reaching to the apex—tubercles, two lines on the central part of the mesonotum, the sides and the apex more narrowly of the scutellum—the black central line being gradually, roundly narrowed towards the base—the scutellar keels, post-scutellum, the areola, the apex of the metanotum, except on the posterior median area, the yellow extending on to the spiracular area and on to the pleuræ below, a large irregular mark on the lower part of the mesopleuræ, the mark being roundly dilated upwards at the apex, and extending narrowly near the apex on to the sternum, the tubercles, the apex of the mesopleuræ, a squarish mark behind the spiracles, and the apices of the first, fourth, and following segments, and two large marks on the apices of the second and third segments, pallid yellow. Legs bright fulvous, the four front coxæ and trochanters yellow, the hinder coxæ black, marked with yellow above; the hinder femora, &c., broken off in my example. Wings clear hyaline, the stigma dark testaceous, the nervures darker. ♀. Length, 12 mm.

Hab. Darjeeling.

APIDÆ.

PROSOPIS BASIMACULA, sp. nov.

Black; the basal segment of the abdomen with a large irregular mark, commencing near the base and extending to the apex, where it extends to the sides, and having an irregular indentation on the inner side near the apex, brownish red; the apices of the third and fourth segments brownish, and covered with fulvous pubescence; the inner orbits from the base of the antennæ rufous, the red line continued to the base of the mandibles below. Legs black, the anterior tibiæ in front and the basal half of the hinder pair testaceous. Wings hyaline, the costal, radial, and cubital cellules smoky violaceous, the stigma and nervures black. ♀. Length, 8-9 mm.

Hab. Darjeeling.

First recurrent nervure received shortly beyond the transverse cubital, the second interstitial. Metanotal area coarsely rugosely reticulated. Front and vertex closely rugosely punctured; the face and clypeus bearing longish shallow clearly separated punctures. Malar space large, nearly as long as the third and fourth antennal joints united. Pro- and mesothorax closely and strongly, almost rugosely punctured; the apex of the pronotum is raised. Scutellum punctured like the mesonotum, the post-scutellum more closely rugosely punctured. The entire base of the metanotum is coarsely rugosely reticulated; the apex of the area and the rest of the metanotum closely rugose, the punctuation running into reticulations on the sides. The apex and lower part of the metapleuræ are closely rugose; the under side is bordered by a curved furrow, beneath which it is finely closely rugose. Abdomen finely, closely, and distinctly punctured.

This is larger than any of the recorded Indian species, with none of which can it be confounded. The face and the malar space are longer than usual.

ANDRENA INOA, sp. nov.

Black, the pubescence white, darker on the thorax, on the scutellums fulvous; the head closely and distinctly punctured; on the vertex the punctures are not so strong or so close as they are on the face, and it is also more shining. The metanotal area coarsely reticulated in the centre, the sides obliquely striated; the apical slope is irregularly reticulated, the striæ broken; its sides are keeled all round, and there is a stout keel in the centre, which commences shortly below the top. Legs piceous-black. Wings hyaline, the stigma testaceous, the nervures darker. ♂. Length, 9 mm.

Hab. Himalayas.

Head largely developed behind the eyes. Antennæ rather shorter than usual, with the joints not dilated below. Mandibles black, smooth, shining, and sparsely haired. Dorsal segments of abdomen closely and distinctly punctured; the middle ones slightly depressed at the apex. In the centre of the apical half of the penultimate ventral segment is a raised tubercle, covered with fulvous pubescence, broad and rounded at the base, and becoming gradually narrowed towards the apex; the last segment is closely punctured. In front the third cubital cellule is not much longer than the second; the third transverse cubital nervure is roundly curved, and is hardly obliquely sloped above as in most species of *Andrena*. The apex of the clypeus has a stout margin, clearly separated from the upper part; it is transverse, with the sides bent downwards.

Characteristic of this species is the keeled margin of the apex of the metanotum, with the stout keel in the centre. In Bingham's arrangement it would come in near *A. phædra*, Cam.

HALICTUS HIMALAYENSIS, sp. nov.

Black, the pubescence white, the wings clear hyaline, the nervures and stigma black; the base of the median segment with curved, irregular, clearly separated striæ, the apex of the segment distinctly margined, the anal rima with the apical half piceous. ♀. Length, 7 mm.

Hab. Himalaya.

The vertex indistinctly, the front closely and distinctly punctured; its lower part with a narrow keel in the centre. Face sparsely punctured, its centre almost impunctate; the clypeus is more strongly, but not quite so closely punctured as the sides of the face; its apex fringed with long white hair. Mesonotum shining and impunctate. Metapleuræ opaque, shagreened. Abdomen smooth and shining; the apical fringes white, the segments without transverse furrows or depressions. The legs have a brownish tint; the calcaria pale testaceous; the outer spur on the hinder tibiæ stoutly spined. The second recurrent nervure is received near the base of the apical third of the cellule. The head is more elongate and narrower than usual; the eyes converge above. The basal area of the metanotum appears larger than usual; its striæ in the centre are irregular; laterally more regular and oblique.

(To be continued.)

NEW CULICIDÆ FROM THE FEDERATED MALAY STATES.

BY FRED. V. THEOBALD, M.A.

(Continued from p. 165.)

Observations.—The two types sent by Dr. Leicester are not quite perfect, having been slightly damaged in transit. They were bred from larvæ taken in bamboo jungle on the Pahang Road, about five and three-quarter miles from Kuala Lumpur. The thoracic adornment is so very marked the species cannot well be mistaken, for in *M. tremula*, which it resembles, the golden scales of the mesothorax form but very indistinct lines, not clear narrow ones as in this species. Dr. Leicester's description of the scutellum must be modified, for the scales are certainly not of the usual spindle-shape, but flattened on the mid lobe, much smaller and more irregular than in *Stegomyia*, and with more rounded apices.—(F. V. T.)

Genus LEICESTERIA, nov. gen.

Head covered with flat scales, upright forked scales, and a row of spindle-shaped creamy ones around the eyes. Palpi in the female four-jointed, long, being fully one-half the length of the proboscis; in the male the palpi are longer than the proboscis and slender, no hair-tufts. Proboscis swollen apically. Mesothorax with narrow and broad-curved scales; scutellum with flat scales; prothoracic lobes with flat scales. Venation and wing scales much as in *Stegomyia*.

This genus comes near *Eretmapodites*, from which it differs in (1), having a narrow-scaled border around the eyes; (2), the great length of the palpi, in the female, the long palpi also separating it from the other allied genera (*Macleayia*, *Scutomyia*, &c.). A single species only is known, which is here described by Dr. Leicester.

LEICESTERIA LONGIPALPIS, Leicester, n. sp.

“Head black in the middle, creamy at the sides; palpi half the length of the proboscis, both black. Thorax yellowish brown, with bronze scales and a creamy line on each side as far as the base of the wings. Abdomen with apical white lateral spots. Legs unbanded.

“♀. Head black; the vertex, occiput and nape covered with broad flat black scales; along the orbital margin is a narrow row of spindle-shaped creamy scales; laterally, where the black scales end, is a band of creamy scales, and then black scales again; there are a moderate number of black upright forked scales confined to the nape. Antennæ with the basal joint pale dirty yellow; the inner face is rather thickly clad with small flat scales with a few dark ones interspersed; the basal half of second joint is similar in colour to the basal joint; the apical half and the succeeding joints of the antennæ

are black, covered with numerous short white hairs; verticillate hairs black; last joints of antennæ not elongated. Clypeus dark brown, a few narrow white scales on its anterior margin. *Palpi black-scaled, four-jointed; third joint very long—longer than all the other joints put together; fourth joint minute. The palpi in this species are unusually long, being fully half the length of the proboscis.* Proboscis thick, entirely black-scaled. Prothoracic lobes thickly clad with flat spatulate scales, white on the lower half, black above, and from the apex a tuft of stout dark brown bristles projects. Mesonotum yellowish-brown; running round the margin anteriorly and laterally as far as the wing bases is a creamy line, composed of broad-curved scales; the rest of the mesonotum is densely clad with long narrow-curved bronzy scales, which are specially dense and long over the roots of the wings, where they form dense tufts; the colour of these scales under a hand lens is metallic bronze, but under a two-thirds power many appear pale brown; in some lights they appear purple, as do the dark scales on the head and proboscis, indeed the scales on this mosquito show a play of colours on every part as the angle of the light changes. Pleuræ brownish, clothed with tufts of white elliptical scales. Scutellum clad with flat black scales, purple or rose-purple in a good light, on all the lobes, border-bristles brown. Wings clouded, covered with dark brown scales, the lateral linear with square ends, the median also rather narrow; fork-cells moderately long; the stem of first submarginal cell about two-thirds length of cell; the base of the cell nearer the base of the wing than that of second; the second posterior cell is a little broader than first submarginal; median and supernumerary cross-veins meeting at an angle; posterior cross-vein rather short, distant about twice its length from the median. Legs with coxæ pale; fore and mid coxæ with brown and white scales, the hind with only white scales; femora pale scaled beneath, though on the fore legs there are dark brown scales intermingled; the rest of the legs and the upper surface of femora clad with dark brown or purple scales, according to the direction of the light; there is no banding of the legs nor any suggestion of it. On the fore legs there are a few yellow scales at the apex of the tibiæ. The fore and mid ungues equal and uniserrate. Metanotum yellowish-brown. Halteres with pale stems and black and white scales on the knob. Abdomen covered with broad purple-brown scales; no dorsal banding, though the white lateral bands almost meet over the apices of the segments; laterally there are conspicuous white bands passing from beneath upwards and backwards; these bands are shaped something like the mesial vertical section of an arm-chair; the scales forming them are bluish-white (in the dried specimen they may change to a dirty yellow).

“♂. The lateral band of creamy scales on the head is broader than in the female. The vertical bristles are pale golden. Antennæ pale brown, two last joints black and elongated. Plumes long, dense and purple-brown. Proboscis distinctly enlarged for about one-third its length at the apex, black scaled. Palpi slender, longer than the proboscis, scaled entirely save for a few white scales about the centre of the first apparent joint with dark purple-brown scales. Fore and mid ungues unequal, the larger uniserrated. Length 4.5 mm.”

“*Habitat.*—Kuala Lumpur.”

Observations.—This species can easily be told by the great length of the female palpi. I know of nothing approaching it. The pale apical abdominal spots often spread out to form nearly complete bands. The type sent over does not show the pale scaled line up to the base of the wing on the mesothorax, as Dr. Leicester describes; probably the specimen has been slightly rubbed.—(F. V. T.)

(To be continued.)

NOTES AND OBSERVATIONS.

NATIONAL COLLECTION OF BRITISH LEPIDOPTERA.—Mr. William M. Christy, of Watergate, Emsworth, Hants, has presented a very useful assortment of Lepidoptera from the Woodforde Collection. All the specimens are in fine condition, and have full data attached. He has also given a nice series of *Boarmia consortaria*, reared from Sussex larvæ, and an exceedingly interesting series of *Melanippe galiata*, bred from ova deposited by a female specimen taken at Arundel. These latter have the ground colour unusually white, and the band is black.

EARWIG ATTACKED BY ACARI.—Near Ashtead, on July 9th, I took an immature earwig about 8 mm. long to which were attached six large *Acari* of a brilliant vermilion tint and about 1 mm. in length. The earwig was probably *Forficula auricularia*, but as the locality was suitable for *F. lesnei*, and immature earwigs are not easily distinguished, it might possibly belong to the latter species.—W. J. LUCAS; Kingston-on-Thames.

A NEW FORM OF GNOPHÆLA.—The mountains and mountain-ranges of New Mexico are more or less isolated from one another by dry plains, and consequently present biotæ (= faunæ and floræ) largely comparable to those of islands. The "insular" races or species found are of various degrees of diversity, while, of course, in numerous instances, no obvious differences can be detected between specimens from different ranges. At Beulah, New Mexico, in the Canadian zone, the beautiful Pericopid moth *Gnophala clappiana*, Holland, is very common. It goes north into Colorado practically unchanged. In the White Mountains of Southern New Mexico, on the Rio Ruidoso at about 7600 ft. altitude, on August 3rd, Prof. C. H. T. Townsend collected a male *Gnophala* which is clearly different from the numerous examples of *clappiana* seen, and is, no doubt, one of the "insular" forms just mentioned. It differs from *clappiana* in having two small white spots below the large median spot of the anterior wings; three spots (separated only by black nervures) on the hind wings comparable to those of the subapical area of the anterior wings; a small round white spot in the cell of the hind wings; and the hind wings not so blue. Such forms, which are not subspecies because not connected with the type by intermediates (owing to the break in the distribution), and are hardly distinct enough to be accepted as species in the ordinary sense, I have thought to call idiomorphs. In this case, the Rio Ruidoso *Gnophala* may stand as *G. (clappiana id.) ruidosensis*.—T. D. A. COCKERELL; Colorado Springs, Colorado.

CAPTURES AND FIELD REPORTS.

NOTHOCHRYSA CAPITATA (NEUROPTERA).—On June 5th last I took, on Esher Common, a specimen of *Nothochrysa capitata*, belonging to the sub-order *Planipennia* of the *Neuroptera* (Linn.). It was taken off a small rush growing in Black Pond, close to the margin, and appeared not long to have been out. I have a specimen taken by Major Robertson in Hants; and Mr. Hare took one, in 1893, at the Byfleet Canal. (See also *ante*, p. 85.) What other British specimens are in collections I do not know, but the insect appears to be a scarce one.—W. J. LUCAS; Kingston-on-Thames.

EURYGASTER MAURUS (HEMIPTERA).—A specimen of this "bug" was found on the occasion of the South London Entomological Society's Field Meeting at Byfleet Canal in 1903. It is one of the Pentatomidæ, or shield bugs, in which the scutellum reaches at least to the base of the membrane of the wings. In this species the scutellum covers the wings, reaching to end of abdomen. Saunders gives Woking, Headley Lane, and Reigate as Surrey localities.—R. A. R. PRISKE; Acton.

PLUSIA MONETA IN ESSEX.—About two dozen cocoons of *P. moneta* were found last June on *Delphinium*.—Rev. W. CLAXTON; Navestock Vicarage, Romford.

PLUSIA MONETA AT READING.—On July 6th I netted *Plusia moneta* in my back garden, also *P. iota*, *P. chrysis*, and *P. gamma*, and have taken three more of the first-named insect since that date.—W. E. BUTLER; Hayling House, Oxford Road, Reading, July 14th, 1904.

DEILEPHILA LIVORNICA AND PLUSIA MONETA IN WALES.—I had the pleasure of seeing last week a fine female specimen of *D. livornica*, which had been taken this year close to Monmouth; it was found clinging to a window-curtain. I also saw, at the same time, a beautiful *P. moneta*, taken two years ago about a mile from Monmouth and close to the River Wye. The two insects were in the collection of Mr. H. Green, of Monmouth. If I mistake not, *P. moneta* has not before been taken in that part of the country.—CHARLES E. THORNEWILL; Calverhall Vicarage, Whitchurch, Salop, July 4th, 1904.

DEILEPHILA LIVORNICA IN KENT.—A very fine specimen of above was taken at rest on a post very near to the ground early in the day, on June 12th, 1904. As I had not seen a living specimen before, I could not realize my good fortune. I think this species has not been previously taken near this locality—about four miles from Ashford, on the Canterbury road.—F. A. PARRY; 13, Longport, Canterbury.

CLOSTERA RECLUSA AT READING.—On June 22nd last I had the pleasure of finding larvæ of the above, the first time I have taken the species in this district.—W. E. BUTLER.

ACHERONTIA ATROPOS AT READING.—On June 28th last a fine specimen of the above was brought to me alive; it flew into a room at Wilton House School, no doubt attracted by light.—W. E. BUTLER.

HADENA ATRIPLICIS AND DICYCLA OO IN HUNTINGDONSHIRE.—Whilst collecting in Hunts recently, I was fortunate enough to take a fine

male specimen of *H. atriplicis* at sugar on June 28th. As this is such a rarity I have thought it worth recording. A few days later, in the same neighbourhood, a beautifully fresh *D. oo* was captured.—D. DEWAR STANLEY; R.S.O., Co. Durham.

CYCHRUS ROSTRATUS IN SURREY.—On July 5th I secured a specimen of *Cychnus rostratus* floating half-dead in the baths, and on the 14th I took another example at rest on a reed at Cuttmill Ponds. It was stridulating loudly by rubbing the extremity of the abdomen against the under surface of the elytra. I do not know whether this beetle has been noticed in South-west Surrey before.—J. A. CROFT; Charterhouse, Godalming.

SOCIETIES.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*May 12th*, 1904. — Mr. A. Sich, F.E.S., President, in the chair. — Mr. Goulton exhibited another series of fine photographs of the larvæ of Lepidoptera, including those of *Aventia flexula*, *Hepialus humuli*, *Phibalapteryx lapidata*, *Enodia hyperanthus*, *Leucania pallens*, &c. — Mr. Ansorge, five specimens of *Dytiscus circumflexus*, taken from one small pond at Northwood. — Mr. Raynard, ova of *Pachnobia rubricosa* and *Saturnia pavonia*, from Wimbledon and the New Forest respectively, and the larvæ of *Noctua baja*. — Mr. Tonge, an album of photographs of ova recently taken by him. He noted that his magnification was uniformly twenty diameters. The chief species were, *Thais polyxena* var. *cassandra*, *Brephos notha*, *Tephrosia biundularia*, *T. cinctaria*, *Demas coryli*, and *Selenia illunaria*. — Mr. Turner, larvæ and cases of the following species of the genus *Coleophora*:—(1) *C. pyrrehulipennella*, a black, silken case on heather, from Mr. Main in the New Forest, and Mr. West at Shirley; (2) *C. aleyonipennella*, a very similar case, but not so compressed, on *Centaurea nigra*, from Ranmore; (3) *C. solitariella*, a slender, whitish, tubular case, on *Stellaria holostea*, from Mr. Sich, at Chiswick and also from Lewisham; (4) *C. hemerobiella*, a tubular, upright, dark brown case, on hawthorn, from Mr. Sich, Chiswick; (5) *C. albitarsella*, a compressed, blackish, hairy case, on marjoram, sent by Mr. Bankes, from Dorset; (6) *C. olivaceella*, a long, slender, brown case, on *S. holostea*, the rare but close companion of *C. solitariella*, from Lewisham; and (7) *C. lineolea*, a large, rough case, on *Ballota nigra*, from Lewisham. — Mr. Main, a very large species of "silver-fish," which came over from Java in a cargo of sugar.—Mr. McArthur, a nice series of finely marked *Agrotis cinerea*, from Brighton. — Mr. Barnett, *Plusia moneta*, from Welling, Kent.—Mr. Carpenter, a photograph of a pupa of *Euchloë cardamines*, and stated that the pupæ varied with the colour of the environment at the time of pupation; those on the green stems were green, those on the drab-coloured food were drab-coloured, and those on the zinc top of the cage were decidedly zinc-coloured.—Mr. Lucas gave a very interesting address, with lantern illustrations, on "British Orthoptera," and requested members to furnish him with any particulars of the occurrence of the various species.

May 26th.—The President in the chair.—The President referred in suitable terms to the loss Entomology had sustained by the death of Mr. McLachlan, F.R.S., a member of the Society for many years.

After similar expressions of regret from Mr. Rowland-Browne, as brother officer on the Council of the Entomological Society of London; from Dr. Chapman, as a personal friend for many years; and from Mr. Adkin, as near neighbour and friend, a vote of condolence with the relatives was passed.—Dr. Chapman exhibited (1) a few species of butterflies taken at Pont du Gard (S. France), including a fine specimen of *Chrysophanus gordius* and some *Syrichthus sida*; (2) a larva of *Thais polyxena* var. *cassandra*, suspended for pupation, showing the curious adjustment of the girth; and also a pupa of *Libythea celtis* showing how curiously the suspended pupa lies against the surface of attachment.—Mr. Carr, the larva of *Phorodesma bajularia*, in its covering made of the *débris* of the male flowers of the oak. — Mr. West (Greenwich), a short series of the rare coleopteron, *Asphyra punctata*, from Gloucester, to show the extreme sexual dimorphism. — Mr. Sich, the pupa of *Ocypris oleus*.—Mr. Turner, four species of the genus *Coleophora*, viz. cases and larvæ of (1) *C. viminetella*, from Chalfont, on willow; (2) *C. badipennella*, from Lewisham, on elm; (3) *C. ochrea*, sent from Dorset by Mr. Eustace Bankes, on *Helianthemum vulgare*; and (4) *C. ibipennella*, feeding on birch, and found by Mr. Sich at Ashted during the Field Meeting. He also showed a pupa-case of *Adela viridella* protruding from its curious fiddle-shaped cocoon. — Mr. Main reported larvæ to be very scarce in the New Forest, and members generally considered the season late. — Mr. Rowland-Browne read a paper entitled “Collecting Butterflies in the Alps.”

June 9th. — The President in the chair. — Dr. Chapman exhibited ova of *Coleophora laricella*, laid by a female specimen reared from larvæ obtained in the Isle of Purbeck. He stated they were upright eggs, with thirteen or fourteen very bold vertical ribs. He also showed the cocoon of *Thais polyxena*, which consisted of a few strands of silk attached to twigs.—Mr. Lucas, a number of grass stems attacked by a fungus, in which the larva of a Dipteron was feeding. Dr. Chapman explained the curious life-history of the latter as far as he knew it. Mr. Lucas also showed the ova of the large ladybird, *Halzia ocellata*, and specimens of parasites (Mymaridæ) on the ova of *Orygia antiqua*. — Mr. West (Greenwich), the Capsid *Harporera thoracica*, from Rammore Common, and called attention to their knotted antennæ. — Mr. Carr, ova of *Acidalia remutaria*. — Mr. Turner, cases and larvæ of *Coleophora bicolorella*, a very local species, from Chatham, and read notes on its life-history.—A discussion took place as to the season, and several members gave notes on spring collecting. It was generally considered that the season was late, and that insects were scarce, although a few species were exceptionally abundant locally.

June 23rd.—Mr. E. Step, F.L.S., Vice-President, in the chair.—Mr. Carr exhibited a double-sized cocoon of *Lasiocampa quercus*. It was of a dirty cream colour, instead of a rich brown — Mr. Ashby, examples of *Callidium abni* and *Orsodacna cerasi*, two rare species of Coleoptera taken by him at Bookham during the Field Meeting on June 4th. — Dr. Chapman, larvæ of *Agdistes bennettii*, sent by Mr. Ovenden from Rochester, together with ova of the same species.—Mr. South, living larvæ of *Nyssia lapponaria* feeding on birch. The species was noted as being extremely local, but apparently not scarce, in its two known localities in Scotland.—HY. J. TURNER (*Hon. Rep. Sec.*).

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—By the kind invitation of Major Ronald Ross, C.B., F.R.S., Professor of Tropical Medicine, University of Liverpool, Hon. Member of the Society, a meeting was held in the Johnstone Laboratory, Liverpool University, on Monday, May 16th. The following were elected members of the Society:—Corresponding members: Professors J. Hudson Beare, B.Sc., F.R.S.E., F.E.S., and Edward B. Poulton, M.A., D.Sc., F.R.S., F.L.S., F.E.S.; Drs. C. R. Billups and Geo. E. J. Crallan, M.A., L.S.A.; and Messrs. Geo. T. Bethune-Baker, F.L.S., F.Z.S.; Chas. Capper; A. J. Chitty, M.A., F.E.S.; H. St. J. K. Donisthorpe, F.Z.S., F.E.S.; W. H. Harwood; J. H. Keys; W. J. Lucas, B.A., F.E.S.; B. G. Nevinson, M.A., F.E.S.; E. G. B. Nevinson, F.Z.S., F.E.S.; E. A. Newbery; and Edward Saunders, F.R.S., F.L.S., F.E.S. Ordinary members: Messrs. W. P. Blackburne-Maze, and H. Berkley Score, F.R.G.S., F.R.Hist.S. The following donation to the Library was made by Major Ross, “The Hybernation of English Mosquitoes,” by H. E. Annett, M.D., and J. Everett Dutton, M.B. Light refreshments, kindly provided by Major Ross, having been partaken of, a tour of the extensive laboratory, with its attendant menagerie, was made, after which Professor Ross, Dr. Stevens, and the staff of the Liverpool School of Tropical Medicine, gave demonstrations “On Mosquitoes and other Flies in connection with Tropical Diseases.” Amongst the many interesting exhibits described were preparations of serum for protection from diseases; tubes of various bacteria; models of an Indian village, and a larger district to show the natural distribution of the typical breeding-grounds of malarial mosquitoes; a microscopic exhibition of malaria germs in various stages of growth; live Trypanosomata of the sleeping sickness and tsetse-fly diseases; specimens of the tsetse-fly (*Glossinia morsitans*), &c.; a series of microscopic preparations, showing the characteristic differences in appearance and structure existing between the malarial and harmless gnats, &c. At 9.30 an adjournment was made to the lecture-theatre, where Major Ross gave a most instructive and interesting lecture on the connection between malaria and mosquitoes, copiously illustrated by lantern slides. He began with a series of maps, showing the relative prevalence of malaria in various parts of the world, and then gave statistics from India, from which it appears that forty per cent. of the native children are infected with malaria at one year old, and sixty per cent. at two years; after that the percentage gradually decreases, until complete immunity ensues, and the parasite is rarely found in adult natives. This parasite is a minute jelly-like speck resembling an *Amoeba*, and lives inside the corpuscles of the blood. Bursting, it throws out spores—usually nine in number—into the blood at regular intervals, together with a minute speck of poison; this causes a rise in temperature, and the profuse perspiration which follows carries the poison off. The regular recurrence of this process causes the regularity of the periods at which malarial fever comes on, the different varieties of fever—quartan, tertian, blackwater, &c.—being due to different species of parasites. It is, however, necessary that the parasite should be transmitted from one human being to another by an insect, a female gnat or mosquito, for it is only the female that bites. A day or two after the insect has sucked the blood of an infected

person, the parasites have travelled into its tissues, and, after taking about nine days to mature, burst, scattering thread-like spores into the mosquito's blood. These threads work their way into the fly's salivary glands, and remain there until they have an opportunity of passing, together with the saliva, into human blood, when the mosquito perpetrates her next bite. The species of *Anopheles* are by no means all harmful; those that cause malaria can be always distinguished by the black spots along the anterior nervures of the wings, the usual species being *A. corticalis* and *A. funestus*. Their eggs are canoe-shaped. The larvæ breed in shallow pools of stagnant water, floating flat upon the surface, and feed on Confervæ. They have no breathing-tube, and can thus be easily distinguished from the larvæ of our commoner guats which belong to the genera *Culex* and *Stegomyia*, and hang head downwards in the water, with a long breathing-tube projected upwards to the surface. The larvæ of the latter insects breed in tubs, pots, and other vessels lying close to houses. Since the pools were drained and filled up at Ismalia, a town of six thousand inhabitants, the cases of malaria have fallen from two thousand to two hundred per annum, and these are nearly all relapses, as only ten actually fresh cases were reported last year!—E. J. B. Sopp and J. R. LE B. TOMLIN, *Hon. Secretaries*.

MANCHESTER ENTOMOLOGICAL SOCIETY.—*April 6th, 1904.*—At the Manchester Museum, Owens College; the President, Dr. W. E. Hoyle, presided.—Mr. A. J. Wilson read a paper entitled "Insects found in North-West Derbyshire and the Surrounding District." The locality referred to includes a part of Lancashire and Cheshire. With the rapid advance of bricks and mortar, many of the haunts well known years ago cannot now be visited; but there are still good and satisfactory results to be obtained near such places as Glossop, Hayfield, Marple, Sale, &c. Mr. Wilson illustrated his paper with specimens from four orders of insects, to be taken in the above-named district. The following exhibits were shown by the members:—Mr. B. H. Crabtree, *Polia chi* (Toxal) var. *olivacea* (Durham), var. *suffusa* (Rotherham); specimen of *Blatta americana* taken in Ancoats (Manchester).—Mr. G. Kearey, *Pedaria pilosaria*, from Staley Brushes (Feb. 27th, 1904); specimens showing the mode in which *Sesia bembeciformis* hibernates in its second winter.—Mr. C. F. Johnson, living larvæ of *Epunda lichenea*.—Mr. Geo. O. Day, living larvæ of *Pericallia syringaria*, and imagines of *Zonosoma pendularia* var. *subroseata*, *Z. annulata* var. *obscoleta*, and other species of the genus.—Mr. W. W. Kinsey, living larvæ of *Cleora lichnaria*, on lichen, from Wig-townshire.—Mr. R. Tait, jun., insects from Derbyshire localities, and included *Metrocampa margaritaria*, *Abraxas sylvata* (*ulmata*), *Bryophila perla* (dark form), *Triphena subsequa*, *Plusia pulchrina*, *P. iota*, *Xylophasia scolopacina*.

May 4th.—The President in the chair. Mr. W. Warren Kinsey read a paper entitled "Collecting the Larvæ of Common British Lepidoptera." Mr. Kinsey stated that most of his work of larvæ-collecting had been done within the city of Manchester and the immediate neighbourhood, and he considered that the commonest larvæ there were those of *Odontopera bilentata*, *Orygia antiqua*, *Hadena pisi*, *Acronycta megacephala*, and *Nania typica*. Although the larvæ of *N. typica* were

frequently ichneumonid in the autumn, he had not found any treated thus when feeding in the spring. Larvæ, too, of *O. bidentata* were occasionally ichneumonid in the autumn, but he had never known the larvæ of *Amphidasys betularia* to suffer in like manner, although he had collected and taken them for years. The following exhibits were shown by the members:—Mr. G. Keary, *D. sulphurella*, bred from fungus obtained at Cheetham, near Manchester; Mr. J. Ray Hardy, specimens of *Psalidognathus friendi* from South America, showing the remarkable difference in size during the dry and wet seasons.—ROBERT J. WIGELSWORTH, *Hon. Secretary.*

ENTOMOLOGICAL CLUB.—A meeting was held on July 14th last, at 27 Hereford Square, S.W., the residence of Mr. Arthur J. Chitty, host and chairman of the evening. Twenty-one sat down to supper, including fourteen visitors and the following members of the Club:—Professor Poulton, Messrs. Adkin, Donisthorpe, Hall, Porritt, and Verrall.

RECENT LITERATURE.

Eleanor Ormerod, LL.D., Economic Entomologist, Autobiography and Correspondence. Edited by ROBERT WALLACE. Pp. 348. London: John Murray. 1904.

WHEN, in 1852, Miss Ormerod commenced the study of insects, making beetles her first objects of observation, Entomology was by few taken seriously, and the economic side of the subject was scarcely thought of. It seems to have been in 1868 that Miss Ormerod took up what was practically pioneer work in this phase of insect life, and from that time almost up to her death her intense energy was centred upon it. There are still some who think that the hosts of living things which make up the greater part of the animal kingdom—the insects, that is—are not worthy of serious study. Consequently, we meet occasionally with some one who would belittle the work of the economic entomologist. The honours and distinctions heaped on Miss Ormerod by Universities and other Learned Societies, as related by Mr. Wallace in the delightful work before us, enable us to assess the opinion of such detractors at its proper value.

Miss Ormerod's delightfully fresh autobiography is followed by a biographical sketch by the Editor, the rest of the volume being occupied with correspondence. At first sight the last division seems disproportionate in length to the other two; but we think the reader will certainly agree with us in finding it by no means too long, especially as by this means we are introduced to very many of the beautiful insect pictures that add so much value to Miss Ormerod's "Annual Reports." The work is, in fact, abundantly illustrated with thirty full-page plates, and eighty-two illustrations in the text.

In the United States and some other countries the State Entomologists are recognized servants of the Government. In our own country—unfortunately, we think—we seem to be behind in this respect. Perhaps it may be thought that agriculture here is in such parlous state as to be almost beyond hope; but, if this were the case, Science might just possibly help to redeem it. Economic Entomology, however, concerns the allotment-holder and the kitchen-gardener, not to mention

the fisherman, &c. If Mr. Wallace's book, and afterwards Miss Ormerod's "Annual Reports," were to be read very generally, all industries that are affected by insects would, we doubt not, be benefited materially.

W. J. L.

The Honey Bee: its Natural History, Anatomy, and Physiology. By T. W. COWAN, F.L.S., &c. Second Edition. Pp. 220. London: Houlston & Sons. 1904.

IN November, 1890, appeared the first edition of this work, which was reviewed in these pages in the volume for 1891. We have now the pleasing duty of noticing a second edition. Mr. Cowan's name is a sufficient guarantee of the usefulness of the work before us, and the text at once reveals the thoroughness with which the Honey-bee has been treated from every point of view—a thoroughness which is enhanced by the numerous excellent illustrations scattered throughout the book. The new edition will no doubt have as wide a circulation as had its predecessor.

W. J. L.

Transactions of the City of London Entomological and Natural History Society for the Year 1903. 8vo, pp. 46. The London Institution, Finsbury Circus, E.C. 1904.

THE Reports of Meetings (20 pp.) furnish interesting and instructive reading. The Presidential Address (Mr. A. W. Mera) deals largely with Entomology from the field-worker's point of view. There is an excellent paper by Mr. Louis B. Prout on "Variation in *Sciudion (Gnophos) obscurata*," which everyone should make a point of seeing. Mr. T. H. Hamling contributes "Notes on Breeding *Gonodontis bidentata* ab. *nigra*"; and Mr. A. F. Bayne gives an account of some collecting at Tacuarembo, in Uruguay.

The Lepidoptera of the British Islands. By CHARLES G. BARRETT, F.E.S. Vol. IX. Heterocera. Geometrina—Pyrilidina. 8vo, pp. 454. London: Lovell Reeve & Co., Ltd. 1904.

IN this volume the remaining genera of the Larentidæ (*Mesotype*, *Eubolia*, *Collis*, *Eupithecia*) and the family Cœnochromidæ (*Aplasta*, *Tanagra*) are treated in the first 160 pages; the remainder of the book being occupied by a large instalment of the Pyralidina. This group the author, so far, divides as follows:—Sect. 1. PYRALITES. Fam. 1. Pyraustidæ; Fam. 2. Pyralidæ; Fam. 3. Hydrocampidæ; Fam. 4. Endotrichidæ; Fam. 5. Scopariidæ. Sect. 2. PTEROPHORIDÆ. Sect. 3. ORNEODIDÆ. Sect. 4. PHYCITIDÆ. We note that *Botys* is retained in the Pyraustidæ, and that nineteen species are placed under it, all of which, with the exception of *hyalinialis*, are referred by Hampson and Rebel to *Pyrausta* and *Pionea*, and by Meyrick to *Pyrausta* and *Phlyctantania*. The three British species, *stieicalis*, L., *verticalis*, L., and *palealis*, Schiff., have recently been placed in *Loxostege*, Hb., and also in *Phlyctænodes*, Hb. So, until their rightful position is definitely ascertained, there may be no particular harm in retaining them in *Spilodes*; but we think that exception will be taken to *urticalis*, Schiff., and *verticalis*, Schiff. (*ruralis*, Scop.), being included with them.



Back Row.—Prof. R. Meldola, Mr. H. St. J. Donisthorpe, Mr. J. E. Collin, Mr. M. Jacoby, Mr. A. J. Chitty, Mr. H. Rowland-Brown, Mr. W. M. Geldart.
Front Row.—Commander J. J. Walker, Miss Poulton, Prof. E. B. Poulton, Mr. A. H. Jones, Mr. Hamilton Druce.

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VISIT OF THE ENTOMOLOGICAL SOCIETY AND ENTOMOLOGICAL CLUB TO OXFORD.

(PLATE VIII.)

A large gathering of the Members of the Entomological Society and the Entomological Club accepted the kind invitation of the Hope Professor of Zoology to Oxford on July 2nd and 3rd and 4th. Among those who were entertained at dinner by Professor E. B. Poulton at Jesus College, were Dr. F. A. Dixey, Mr. A. J. Chitty, Mr. J. E. Collin, Mr. Hamilton Druce, Mr. A. H. Jones, Mr. W. J. Lucas, and Mr. H. Rowland-Brown, representing the Council; Mr. Roland Trimen, Mr. G. H. Verrall, and Professor R. Meldola, past-Presidents, with Commander J. J. Walker, Mr. M. Jacoby, Mr. W. M. Geldart, and Mr. H. St. J. Donisthorpe representing the Fellows of the Society. Professor Poulton, replying to a cordial vote of thanks to him proposed by Mr. Trimen, laid stress on the value of these gatherings as tending to promote the interests of entomological science, and said that it was especially notable that he should have beside him three Fellows who had filled the Presidential chair. On Saturday and Sunday the Fellows and Members were further entertained in the Museum, where great progress has been made in the arrangement of the several collections, and in the afternoon a picnic up the Cherwell was organized; not a few of the party having already taken the opportunity to investigate the fauna of the neighbourhood, under the direction of Mr. A. H. Hamm, of the Museum, and others. The expedition was as great a success as ever: but for some reason the river, usually alive with dragonflies, yielded not a solitary specimen. The coleopterists, however, who landed at a certain fungus-haunted tree, gave a good account of *Mycetophagus multipunctus*, and now that Commander Walker has come to anchor permanently in Oxford, we may look for bountiful additions to the rather meagre entomological lists of the county at present in existence. The

gathering finally adjourned to the beautiful Fellows' garden of Wadham College, and later, in Dr. Dixey's rooms, separated, after a meeting which will be remembered with exceptional pleasure by all those who were privileged to attend.

H. R.-B.

BUTTERFLY HUNTING IN THE SOUTH TYROL.

BY H. ROWLAND-BROWN, M.A., F.E.S.

WHETHER the season or the localities be to blame, there is no doubt that my entomological experiences in search of butterflies this year have proved disappointing. My expectations of the neighbourhood of Vienna had been raised by articles which have appeared in this magazine, and a study of local lists. But here, at all events, being alone, I can only think that I failed to hit out the right spots in the places named, since three several expeditions proved utter failures, so far as local species are concerned.

On the footpath leading up to the Kallenberg from Nussdorf I met with *Heteropterus morpheus* rather unexpectedly in a patch of lucerne, otherwise productive of nothing more than *Lycæna baton*; a day at Weidlingbach, besides the commoner butterflies, yielded only a few *L. damon* and *Chrysophanus virgaureæ*; while Mödling, of which I had anticipated great things, furnished forth no more than *Satyrus hermione*, a few ordinary fritillaries, and a single example of *Pieris rapæ* var. *flavescens*, found here in some quantities by Miss Fontaine in 1898. The park at Schönbrunn I did not thoroughly explore, but *Neptis lucilla* was nowhere visible. Had I extended my observations to the Heterocera, I could have made a good bag in the Prater from the electric lamps, but it requires some nerve to collect in the brilliantly lighted restaurant garden, where, in the tropical weather I experienced from July 6th to 11th, the entire city dines and drinks the long summer evenings until far into the small hours.

Leaving on the 11th, I joined Mr. F. C. Lemann, Mr. A. H. Jones, and Mr. Hamilton Druce at Brenner the next day, but unfortunately my arrival in the mountains was signalled by a change in the weather; a high wind was blowing, and soon after midday our particular alp was shrouded in misty rain. This was especially disappointing, as a former visit had convinced me that it was a really fine hunting-ground for the higher alpine species, and especially the interesting and, in my experience, rare little *Melitæa asteria*, which occurs just above the tree limit. I secured two or three specimens, mostly from hawkweed flowers; but it was distinctly rare, and when I returned three weeks later

to the same spot but a single female rewarded a morning's search. The hills on the left-hand side of the railway looking towards Brennerbad are the best collecting-ground hereabouts, and especially fertile in Erebidæ. On this occasion I took or observed *E. epiphron* var. *cassiope*, *E. manto*, with ab. *cæcilia*, Hb., *E. lappona* (a small and poor form), *E. goante*, *E. tyndarus*, *E. gorge* var. *triopes* (the invariable Tyrolese form), and, in the fir-woods, *E. coryale* and *E. ligca*; while, on July 27th and 28th, I found *E. pronoe*, and *E. mnestra* (one). *L. pheretes* (females) was the best of the "blues" present, a genus, by the way, very sparsely represented, in my experience, throughout the eastern granitic and dolomitic alps. On the day previous some members of our party had taken *Argynnis thore*, in the old locality by the Brenner See, and this, with *A. amathusia*, *A. pales*, *A. niobe*, and *A. aglaia*, very plentifully, constituted all the Argynnidæ seen by me in the pass. The next day we adjourned to Mendel *viâ* Botzen, to find that this once delightful and remote village had been "discovered" by means of a funicular railway, and the whole place invaded by crowds of tourists. We were, however, rather fortunate than otherwise in failing to secure adequate accommodation at the bigger hotels, for we finally decided upon the little Hotel Adler, where the manners of Herr Spitko were as welcome and excellent as the cleanliness of his rooms and the quality of his wine. Frankly, I cannot recommend the Mendel Pass as it now is to the entomologist who looks for large hauls. Alpine species there are none, or next to none. The mountains are thickly girdled with green fir-forest; the few higher points are close cropped by cattle to their summits, and there is everywhere a dearth of water. With these drawbacks, however, the views of the distant Brenta and the towering Ortler ranges are beautiful in the extreme, while there is at least one good, if limited, piece of collecting-ground. The zigzags which scale the cliffs of Mendel are extremely well-wooded with a variety of trees—willows, poplars, and mountain ash—not usual in this class of road. We found *Pararge achine*, just going over, in some numbers, amongst the copses; *Vanessa antiopa*, recently emerged and not uncommon; *Apatura iris* (a few, mostly worn, with immense females); *Satyrus hermione* (fresh), and one *S. circe*; *Parnassius apollo*; *Papilio podalirius* (frequent), and *P. machaon*, *Argynnis paphia*, *A. aglaia*, *A. niobe*, and an occasional *A. ino*; and of Lycenidæ, *L. escheri*, *L. meleager* (one taken by Mr. Druce), *L. arion* (much worn), *L. hylas*; and at the bottom of the zigzags, quite close to the Matschacher Hof, *L. argiades*, a fresh brood, with ab. *coretas*, and an occasional *L. orion*. The only two Erebias were *E. ceto* (scarce), and *E. nerine*, which is *par excellence* the Mendel "ringlet." On the warm stone escarpments of the roadside, wherever the attractive *Sedum telephium* grew, the males were collected in countless numbers, the females always

rare, and chiefly to be found among the grasses. A beautiful insect, with the iridescent shining glow upon its wings; I do not consider, however, the Mendel specimens as fine as those which I took in 1900 near Bormio, the western extremity of its flight.

A walk upon Monte Roën (6735 ft.) next day, though bringing us to a respectable height, added only *Lycæna optilete* (1), *Chrysophanus hipphotoë* var. *curybia* (males), *Colias phicomone*, and *Erebia stygne* to the bag, and one very fine *A. thore*, which I was fortunate enough to secure on the descent, among swarms of *A. amathusia*, with *L. corydon*, the commonest insect about. *Epinephele lycaon* was also fairly common on the roadside, with a complement of the usual Hesperiidæ, though all sorts of *Hesperia*, unlike Switzerland, were notably few and far between; indeed, *H. carthami* and one or two *H. var. alveus* represented the group.

From Mendel we drove to Madonna di Campiglio (4970 ft.) on the 20th, a long hot journey enlivened by swarms of *P. podalirius*, and as we began the woodland ascent from Dimaro, innumerable freshly-emerged *Erebia ethiops*. Otherwise the roadside proved hardly more productive than at Mendel, and the same may be said for such of the nearer alps and fir-woods as we investigated in the neighbourhood. Our chief object in visiting Campiglio was to obtain the local variety of *Erebia glacialis* var. *alecto*, which for some time, and until finally distinguished by Calberla, I think, was supposed to be the *E. melas* of the Pyrenees. The known locality is at a considerable elevation around the Austrian Alpine Club shelter hut on the way to the Brenta, but it probably occurs on all the mountains of this particular range where conditions are favourable. I came across no specimens, however, approximating to the usual alpine form of *Alecto*, though some were certainly nearer to those taken by me on the spurs of the Ortler above Trafoi four years ago. We can hardly be reckoned fortunate in the choice of the three days on which we climbed that stony barren path, for, although we did find this characteristic butterfly, which merits a distinctive varietal name quite as much as many less marked departures from the type, on two occasions it poured with rain soon after we were on the *débris* where it occurs, and on the third it clouded over almost as soon as the nets were unfurled. The difficulty of securing specimens, however, added not a little to the excitement of the chase, conducted on an almost perpendicular and moving slope of loose stones, among the crevices of which *alecto* disappeared like magic with the failure of the sun, and often escaped from under the gauze itself. A modest series of about a score, of which by no means all were perfect, rewarded three days' hard work; I should have said hard labour had I not grateful recollections of the hut, in which we found a welcome shelter, as well as food and bottled beer. Whilst flying, the

metallic flush of the wings is somewhat difficult to distinguish. In certain lights in the cabinet it resembles as nearly as possible the purple glow of *Apatura iris*. Lower down we took a very nicely marked form of *Erebia pronoe*, but again the uplands were almost destitute of butterfly life. Nor did a walk to Pinzolo on a brilliant midsummer day add largely to our experiences, though here, for the first time, we encountered *C. dorilis*, and *Satyrus cordula*, similar rather in size and marking to my Cevennes forms, and wholly inferior to the splendid specimens taken last year about this time at St. Martin-Vésubie and Digne.

On the 28th we again drove from Campiglio, where we had been most comfortably housed at the Hôtel Dolomiten, to St. Michele on the railway to Botzen, where my friends stayed for a day's collecting, and found *L. orion* now in profusion, while I returned to Brenner, thence returning by Innsbruck and Bâle to London.

Taken as a whole, the trip, from the entomological point of view, was decidedly not a success, though, counting single captures, the number of species met with makes up a respectable total. Subjoined is a list of those butterflies which were either observed by me or by members of the party, and, unless otherwise stated, it may be assumed that they occurred in all localities visited except Vienna:—

Papilionidæ: *Papilio podalirius* (not at Brenner), *P. machaon*, *Parnassius apollo*. Pieridæ: *Picris cratægi*, *P. brassicæ*, *P. rapæ*, *P. napi* var. *bryoniæ* (Brenner), and var. *flavescens* (Mödling only), *P. callidice*? (Campiglio), *Leptidia sinapis*, with an occasional ab. *diniensis*; *Colias phicomone*, *C. hyale*, *C. edusa*, and ab. *helice*, rarely. Lycænidæ: *Thecla spini*, *T. ilicis*, *T. acaciæ* (1), *Zephyrus quercus*, all at Mendel; *Chrysophanus virgaureæ* (not at Brenner), *C. hippothoë* var. *eurybia*, *C. dorilis* (Campiglio), *P. phlœas*, *Lampides telicanus* (one taken at Brenner by Mr. Lemann—rather remarkable at such an elevation, 5000 ft.); *Lycæna argiades* (Mendel only), *L. ægon*, *L. optilete* (1, Monte Roën), *L. orion* (Mendel and Botzen), *L. baton* (Vienna and Mendel), *L. pheretes*, *L. astrarche* and ab. *allous*, *L. icarus* (very scarce), *L. escheri* (Mendel), *L. corydon*, *L. hylas*, *L. meleager* (1), *L. damon* (Vienna), *L. minimus*, *L. semiargus*, *L. arion* (Mendel); *Cyaniris argiolus* (Mendel). Apaturidæ: *A. iris* (Mendel), *A. ilia* (Botzen). Nymphalidæ: *Limenitis camilla*, *L. sibylla*; *Polygonia c-album*, *Vanessa polychloros*, *V. urticæ*, *V. io*, *V. antiopa*, *V. atalanta*, *V. cardui*; *M. phæbe*, *M. didyma*, *M. dictynna* (Mendel), *M. athalia*, *M. parthenie*, *M. asteria* (Brenner only), *A. euphrosyne*, *A. pales* and ab. *naxæa*, *A. dia*, *A. amathusia*, *A. thore* (Monte Roën and Brenner), *A. ino*, *A. latonia*, *A. aglaia*, *A. niobe* (with ? ab. *pelopia* at Campiglio), *A. paphia*, and one var. *valesina* (Mendel). Satyridæ: *Melanargia galatca*; *Erebia epiphron* var. *cassiope*, *E.*

melampus (Monte Roën), *E. mnestra* (Brenner), *E. manto* and *ab. cœcilia* (Brenner), *E. ceto*, *E. stygne*, *E. nerine* (Mendel), *E. glacialis* var. *alecto* (Campiglio), *E. lappona*, *E. tyndarus*, *E. gorge* var. *triopes*, *E. goante* (very rare), *E. pronoe*, *E. æthiops*, *E. ligea*, *E. caryale*; *Satyrus hermione*, *S. circe?* (Mendel), *S. semele*, *S. actæa* var. *cordula*; *Pararge mæra*, *P. megæra*, *P. egeria*, *P. achine* (Mendel only); *Epinephelè lycaon*, *E. jurtina* (*E. tithonus* appeared to be entirely absent); *Aphantopus hyperanthus*; *Cœnonympha arcania* and var. *satyrion*, *C. pamphilus*; *Hesperia carthami*, *H. fritillum* var. *alveus*, *H. sao*, *Thanaos tages*, *Adopœa thaumas*, *A. lineola*, *Augiades sylvanus*, *A. comma*, and *Heteropterus morpheus* (Vienna only).

A LIST OF THE COCCIDÆ OF THE HAWAIIAN ISLANDS (HEMIPTERA).

BY G. W. KIRKALDY.

(Bureau of Agriculture, Honolulu.)

THIS supersedes my list in the 'Fauna Hawaiiensis.' The nomenclature is almost exactly that of Mrs. Fernald's Catalogue.

Sub-fam. COCCINÆ (MONOPHLEBINÆ).

1. *ICERYA PURCHASI*, Maskell.—Formerly destructive, but since the introduction of the ladybirds, *Vedalia cardinalis*, *Novius koebeli*, and *Rhodolia* spp., it is of little importance, only occurring sporadically.

Sub-fam. ORTHEZIINÆ.

2. *ORTHEZIA INSIGNIS*, Douglas.—For a report on this, see Koebele [7].* It has so often been stated that Prof. Koebele was responsible for the introduction of this pest into the Islands for the purpose of controlling Lantana, that it seems necessary to declare again that not only is the above statement untrue, the scale having slipped into Maui some years ago, but that it was in direct violation of the earnest warnings of Prof. Koebele, that it was introduced on the windward side of Oahu and on the Kona side of Hawaii, and with the mistaken idea of exterminating the Lantana.

Sub-fam. KERMINÆ.

3. *ERIOCOCCUS ARAUCARIÆ*, Maskell.—On *Araucaria*, alligator pear, fig, and guava, but now controlled by the ladybirds, *Cryptolæmus montrouzieri* and *Sticholotis punctatus*.

4. *TRECHOCORYS LONGISPINUS* (Riley).—Formerly very destructive to coffee and samang, but practically wiped out by the ladybirds, *Cryptolæmus montrouzieri* and *Cryptogonus orbicularis*.

* The numbers in brackets refer to the brief bibliography at the end.

5. *T. ALBIZZIÆ* (Maskell).—In the early nineties, terribly destructive to all kinds of citrus, but wiped out by *Cryptolæmus montrouzieri*.

6. *T. CALCEOLARIÆ* (Maskell).—Formerly causing considerable destruction to sugar-cane, but of little importance now, being controlled by *Cryptolæmus montrouzieri* and *Scymnus debilis*.

7. *T. CITRI* (Risso).—On orange and coffee, but of little importance.

8. *T. FILAMENTOSUS* (Cockerell).—Introduced from Japan in the early nineties on citrus, from which it soon spread to coffee and other shrubs and trees. The citrus and coffee were so infested by it that their destruction in the near future seemed imminent; nevertheless it has been practically exterminated by *Cryptolæmus montrouzieri*.

9. *T. BROMELIÆ* (Bouché).—A consignment of pine-apples was recently inspected, slightly infested with this, but was fumigated and the mealy-bugs destroyed. It is possible, however, that it may have been introduced before systematic inspection was inaugurated. *T. bromeliæ* is also known from India, South Africa, and Massachusetts (under glass), on *Hibiscus*, *Canna*, and mulberry,

10. *T. NIPÆ* (Maskell).—The cause of considerable destruction to alligator pears, guava, &c., but largely preyed upon by *Cryptolæmus montrouzieri*. [10.]

11. *T. VIRGATUS* (Cockerell).—Leguminous trees were in some instances entirely destroyed in former years, but the scale has been rendered unimportant by *Cryptolæmus*.*

12. *ASTEROLECANIUM PUSTULANS* (Cockerell).—This is the *Planchonia* sp., formerly recorded by Prof. Koebele on *Jacaranda mimosifolia*, *Prosopis dulcis*, oleander, fig-tree, &c. It is controlled by a Chalcid parasite.

Sub-fam. CALYMMATINÆ (= COCCINÆ).

13. *CHAETOCOCCUS BAMBUSÆ* (Maskell). [= *kermicus*].—On bamboo. I have not seen it in the Islands.

14. *PULVINARIA MAMMÆ*, Maskell.—Controlled by *Cryptolæmus montrouzieri*, *Fedalia cardinalis*, and *Hyperaspis* sp.

15. *P. PSIDI* (Maskell).—Prof. Koebele writes (5, pp. 107–8): “I myself must confess that nowhere have I ever seen a landscape so completely blackened by the fungoid growth, caused by the honey exudation of the *Pulvinaria* scale in which this grows [in the coffee districts], as that of North Kona on my visit in February, 1894. On my recent trip to the same place, all these

* The last eight species are listed as *Pseudococcus* by Mrs. Fernald, and were formerly known as *Dactylopius*; both these names are synonymous, and apply only to the cochineal insect of Mexico (*Dactylopius mexicanus*, *Coccus cacti* of many authors).

had changed, and the districts, to me, had the appearance of another country, all owing to the presence of the *Cryptolæmus* beetle that devours the eggs of the scale." *Rhyzobius ventralis* also assists in the control."*

16. *CERCPLASTES RUBENS* (Maskell).—Kept in check by four Chalcid flies.

17. *C. CERIFERUS* (Anderson).—Of no importance.

18. *C. FLORIDENSIS* (Comstock).—Of no importance; kept in check by a Chalcid.

19. *CALYMMATA ACUMINATUM* (Signoret).—Always badly parasitised by spp. of Chalcids.†

20. *C. HESPERIDUM* (Linné).—On citrus, apparently now very rare. I have seen one or two oranges from Japan slightly infested.

21. *C. LONGULUM* (Douglas).—One of the commonest species, but is kept in check to a certain extent by *Rhyzobius ventralis*, a ladybird.

22. *EULECANIUM MORI* (Signoret).—Of little importance.

23. *SAISSETIA HEMISPHERICUM* (Signoret).—Always kept in check by *Cryptolæmus* and by internal parasites.

24. *S. NIGRUM* (Nietner).

25. *S. OLEÆ* (Bernard).

26. *EUCALYMNATUS TESSELLATUM* (Signoret).

27. *E. PERFORATUM* (Newstead).

These last four are of little importance.

Sub-fam. DIASPINÆ.

28. *CHRYSOMPHALUS AURANTII* (Maskell).—Imported from Japan, but kept in check by the ladybird *Platynaspis nigra*.

29. *ASPIDIOTUS CYDONIÆ*, Comstock. [= *greenii*].—Of little importance; there is a well-marked variety—*tectu*, Maskell—apparently found so far only in these Islands.

30. *A. PERSEARUM*, Cockerell.—Of no importance.

31. *A. PERNICIOSUS*, Comstock.—This pest, so terrible on the mainland, is of no importance here, the conditions being apparently unsuitable. I have seen a few examples on imported Californian fruit.

32. *A. SIMILLIMUS*, var. *TRANSLUCENS*, Fernald.—Of no importance.

33. *A. RAPAX*, Comstock.—Prof. Koebele notes that it was formerly in such numbers on apple, pear, and peach trees imported from America, that some of the trees had died. Not now seen.

34. *A. HEDERÆ* (Vallot).—I have no recent information of this.

35. *MORGANELLA MASKELLI* (Cockerell).—Of no importance.

* Prof. Koebele mentions two other species of *Pulvinaria*, but they are unnamed, and I have no further information.

† *Coccus* is used for this by Mrs. Fernald (2), but applies properly to *cacti*, Linné.

Kept in check by a Chalcid parasite and by a ladybird, *Platynaspis nigra*.

36. PSEUDAONIDIA DUPLEX (Cockerell).—Repeatedly introduced from Japan, but apparently not established. I have recently seen it on camellia plants from Japan.

37. AULACASPIS ROSÆ (Bouché).—Very common on rose trees all around Honolulu.

38. A. PENTAGONA (Tozzetti). [*Howardia prunicola* and *Diaspis patelliformis*].—Of little importance.

39. DIASPIS BOISDUVALII (Signoret).—Of little importance.

40. D. BROMELIÆ (Kerner).—Collected by Dr. Reh, of Hamburg, in 1902 [9] in Honolulu, and recently discussed by Mr. Van Dine [11].

41. HOWARDIA BICLAVIS, Comstock.—Always badly parasitised.

42. PHENACASPIS EUGENIÆ (Maskell).—Kept in check by *Rhizobius* sp. Often occurring in numbers on oleander leaves, but apparently doing little harm to the tree.

43. FIORINIA FIORINIÆ (Boisduval).—Kept in check by *Rhizobius* sp.

44. ISCHNASPIS LONGIROSTRIS (Signoret).—Near Honolulu on palms. If this scale has been previously recorded from these Islands, the notice must have been published in the daily press. "The most easily recognized of scales, appearing as a short black line on the leaf it infests" (Cockerell, 1897, Bull. Bot. Dep. Jamaica (N. S.) iv. p. 150).

45. PARLATORIA PROTEUS (uricola). 46. P. PERGANDII, Comstock.

47. P. ZIZYPHUS (Lucas).

48. LEPIDOSAPHES PINNÆFORMIS (Bouché).

49. L. PALLIDA (Maskell). 50. L. ULMI (Linné).

These last six are apparently of little importance.

51. L. GLOVERII (Packard).—Does not seem of much importance.

52. L. BECKII (Newman). [*citricola*].—On various species of *Citrus* over all the Islands, but the damage is more apparent than real, in some places at least, as this species is almost always badly parasitised, and is also preyed on by the ladybird, *Platynaspis nigra*. It occurs sparingly on citrus fruits imported from the mainland. Occurred in large numbers with *L. gloverii* and *Calymmata longulum*, on citrus fruits from China and Japan. Thus, instead of the former widespread havoc caused by the scale-bugs, and especially by the mealy-bugs, we have now only three, or at most four, species that can be considered really destructive, except sporadically; so much so, that unless one secures examples of many of the species when they do appear for a short time, one has to wait often many months for their reappearance.

53. L. CROTONIS (Cockerell).—Honolulu, on *Croton*. Previously recorded only from Jamaica.

List of Works on Hawaiian Scales.

1. T. D. A. COCKERELL: "A Check-list of the Coccidæ" [Bull. Illinois St. Lab. Nat. Hist. iv. pp. 318-39 (1896)].
2. MRS. M. E. FERNALD: "A Catalogue of the Coccidæ of the World" [Bull. Mass. Agr. Coll. Exp. Sta., No. 88, pp. 1-360 (1903)].
3. G. W. KIRKALDY: "Hemiptera" [Fauna Hawaiianensis iii.; Coccidæ on pp. 102-12 (1902)]. (On page 174 is a Bibliography of some earlier writings).
- 3a. G. W. KIRKALDY: "A Preliminary List of the Insects of Economic Importance recorded from the Hawaiian Islands" [Hawaiian Forester i. pp. 152-9 (June, 1904)].
4. ALBERT KOEBELE: "Report of Entomologist" [Bienn. Rep. Minister Int. Provis. Gov. Hawaiian Isl. 1894, pp. 98-104 (1894)].
5. ALBERT KOEBELE: "Rep. Entom." [Rep. Int. Republic Hawaii for biennial period ending 1897, pp. 105-37 (1898)].
6. ALBERT KOEBELE: "Report" [Rep. Comm. Agr. for 1900, pp. 36-52 (1901)].
7. ALBERT KOEBELE: "Rep. on Lantana Scale" [Rep. Comr. Agr. for biennial period ending 1902, pp. 54-65 (1903)].
8. JOSEPH MARSDEN: "Rep. Commr. Agric." [Rep. Int. Repub. Hawaii for 1894, pp. 31-8 (1895)].
9. L. REH: "Zur Naturgeschichte Mittel- und nordeuropäischer Schildläuse" [Allg. Zeitschr. für Entom. ix. p. 30 (1904)].
10. D. L. VAN DINE: "The 'Mealy Bug,' or 'Pear Blight' of the Alligator Pear" [Press. Bull. U. S. Federal (Hawaiian) Exp. Sta. No. 8 (1903)].
11. D. L. VAN DINE: "The Pine-apple Scale (*Diaspis bromeliæ*, Kerner)" [Hawaiian Forester, i. pp. 111-4 (1904)].

RECENT LITERATURE ON BELGIAN FOREST
INSECTS.

BY G. W. KIRKALDY.

My good friend Mr. G. Severin, of the Brussels Museum, has been so kind as to send me copies of a number of his memoirs on the forest insects of Belgium, published in the 'Bulletin de la Société centrale forestière de Belgique.' These memoirs are economic in purport, and are occupied by a recital of the life-history of the insects in question, and are illustrated by coloured plates of the insect in various stages, its habitat, &c., as well as by text-figures. The Belgian fauna is so interesting to British entomologists, that an enumeration of these memoirs—published in a bulletin not readily accessible in Britain—will doubtless be acceptable to the readers of the 'Entomologist.'

1. "Projet de règlement sur les insectes nuisibles aux forêts résineuses, 1898, pp. 609-56."

2. "Projet de règlement sur les insectes nuisibles. Rapport

de la 2^e Commission (Campine)," 1899, pp. 290-4. (There seems also to be another edition of 11 pp.).

3. "Le genre *RETINIA*" [Lepidoptera], 1901, pp. 598, &c., and 674, &c. Four coloured plates and seven text-figures. Deals with *Retinia buoliana* and *turionana*.

4. "Les ravages de certaines chenilles en 1901," 1902, pp. 9-22, three text-figures. Deals with the ravages of *Pieris brassicæ*, *Euproctis chryorrhœa*, *Lymantria dispar*, *Malacosoma neustria*.

5. "Le *Dendroctonus micans* en Belgique," 1902, pp. 72-83 [by G. Severin and O. Bricchet].

6. "L'invasion de l'Hylésine géante," 1902, pp. 145-52; one text-map. Deals with the beetle *Dendroctonus micans*.

7. "Le genre *LOPHYRUS*, Latreille," 1902, pp. 619-40; two coloured plates and five text-figures. Deals with the sawflies, *Lophyrus pini*, *rufus*, and *pallidus*. The plates represent *pini*.

8. "Le genre *HYLOBIUS*, Schönherr," 1902, pp. 689-712; two coloured plates and four text-figures. Deals with the Curculionids, *Hylobius abietis*, *pinastri*, and *piceus*. The plates represent *abietis*.

9. "Le genre *MYELOPHILUS*," 1902, pp. 754-69; three coloured plates and four text-figures. Deals with the beetles, *Myelophilus piniperda* and *minor*.

10. "Le genre *PISSODES*, Germar," 1902, pp. 775-801; two coloured plates and fifteen text-figures. Deals with seven beetles of this genus.

11. "Le rôle de l'entomologie en Sylviculture," 1903, pp. 152-62.

12. *Le Dendroctonus micans*," 1903, pp. 244-63.

13. "*PSILURA MONACHA*," Linné, 1903, pp. 736-61; two coloured plates and six text-figures. Deals with the ravages of the nun-moth.

Honolulu: April 10th, 1904.

NEW RECORDS OF BEES.

BY T. D. A. COCKERELL.

Sphccodes arroyanus, n. sp.

♀. Length about 9 mm.; head, thorax and legs black, abdomen bright chestnut red, the apical half of the fifth segment clouded with blackish; head very broad, broader than thorax; mandibles black, reddish at extreme tip, notched within; clypeus strongly and confluent punctured; front dull, densely punctured; antennæ black, flagellum very faintly brownish beneath towards tip; scape long and curved; fourth joint about as long as third, fifth longer; mesothorax shining, with very strong rather close punctures, median groove very

faint, parapsidal grooves distinct; disc of scutellum sparsely punctured; enclosure of metathorax semilunar, distinctly margined, coarsely and irregularly cancellate all over; tegulae testaceous, darker basally; wings rather pale fuliginous, stigma black, nervures very dark brown; second submarginal cell slightly narrowed above; abdomen broad but rather parallel-sided; first segment with few scattered punctures; second with very minute close punctures basally, but the middle portion with very sparse punctures; third segment similar, with the minutely punctured area larger; fourth nearly uniformly punctured, except the broad margin, which is impunctate on segments one to four; fifth with a dense apical fringe of white hair; apical plate rather narrow, truncate.

Hab. Arroyo Pecos, Las Vegas, New Mexico, June 7th (*Wilmatte P. Cockerell*). Differs from *S. arvensis* by the very sparsely punctured disc of second abdominal segment; from *S. sophiae* by its larger size and dusky wings; from *S. arvensiformis* by the well-defined metathoracic enclosure, and narrower thorax and abdomen; from *S. clematidis* by the dark nervures, less black at apex of abdomen, and rather larger size.

Sphecodes sophiae, Ckll.

Colorado City, Colorado, at flowers of *Prunus*, two females; Manitou, Colo., April 28th, at female flowers of *Salix*, two females (*T. & W. Ckll.*). New to Colorado. The specimens exhibit a good deal of variation, but with the available material I cannot distinguish more than one species. *S. minor*, Rob., is closely allied to *S. sophiae*, but has darker wings, and appears to be less punctured. It is possible that the two may prove geographical races of a single species, when material has been collected all across the country. In this case, *minor* will be the name for the species, as it has at least six months' priority, both having been published in 1898.

Proteraner leptanthi, n. sp.

♂. Length about 9 mm.; head, thorax, and legs black; abdomen dark red, first segment black at base, and with a large black spot on disc, apex broadly rounded. Mandibles and antennae entirely black, fourth joint much longer than 2 + 3; mesothorax dull, very strongly and closely punctured; enclosure of metathorax without a raised rim, but distinctly defined, with about fourteen very strong longitudinal ridges; tegulae shining piceous; wings smoky at tips, stigma and nervures piceous; second submarginal cell narrowed at least half to marginal; abdomen rather broad, strongly punctured all over.

Hab. Manitou, Colorado, at flowers of *Ribes leptanthum*, April 28th, 1904 (*T. & W. Ckll.*). Allied to *P. ranunculi*, but distinguished by the perfectly black antennae, strongly punctured abdomen, &c. Six specimens were taken. On May 11th my wife took one in Cheyenne Cañon.

Proteraner rhois, n. sp.

♂. Length about 8 mm.; like *P. leptanthi*, but with a considerably narrower, lighter-coloured abdomen, with the basal half of the first segment black; enclosure of metathorax typically irregularly cancellate, not well defined (but in one Manitou specimen longitudinally ridged); tegulæ with a distinct narrow whitish margin; abdomen well punctured throughout.

Hab. Type from Rio Ruidoso, White Mts., New Mexico, at flowers of *Rhus glabra*, July 21st (C. H. T. Townsend). Also from Manitou, Colo., at flowers of *Ribes leptanthum*, one April 28th and one May 10th (W. P. Ckll.). Very distinct in appearance, by the narrow, lighter red abdomen, but with no other important character. The sculpture of the metathorax, distinct enough in the type specimens of *rhois* and *leptanthi*, is quite variable. The Rio Ruidoso locality has an altitude of about 6500 ft.; Manitou about 6600 ft.

Prosopis mesillæ, Ckll.

Colorado City, Colo., May 10th, at flowers of *Prunus*, one male (T. & W. Ckll.).

Andrena mariæ, Robertson, var. α .

Colorado Springs, Colo., at *Salix*, April 22nd; one female (W. P. Cockerell). Abdomen darker; raised lines of metathoracic enclosure fewer. The species is new to Colorado.

Andrena salicinella, Ckll., var. α .

Colorado Springs, Colo., at *Salix*, April 22nd; both sexes (W. P. Cockerell). Under side of male flagellum orange (dark ferruginous in type). The species is new to Colorado.

Andrena birtwelli, Ckll., var. α .

Colorado Springs, Colo., April 22nd; both sexes (W. P. Cockerell). Sides of face in female with much black hair. The species is new to Colorado.

Andrena prunorum, Ckll.

Colorado Springs, Colo., April 19th, at flowers of *Cymopterus acaulis*; males (W. P. Cockerell).

Andrena prunorum var. *gillettei*, Ckll.

Colorado Springs, Colo., April 19th, at flowers of *Cymopterus acaulis*; one male; and April 20th to 22nd, both sexes at *Salix* (W. P. Cockerell); Manitou, Colo., April 28th, at flowers of *Prunus pennsylvanica*; one female (T. & W. Ckll.).

Nomada fragilis, Cresson.

Manitou, Colo., April 28th, at flowers of *Ribes leptanthum*; one male (T. & W. Ckll.). In life the eyes are pale yellowish green, suffused with reddish at the top.

Bombus juxtus, Cresson.

Manitou, Colo., April 28th, at flowers of *Ribes leptanthum*; one female (*T. & W. Ckll.*). The second abdominal segment has a small red patch, not mentioned in descriptions. A female from Beulah, N. M., shows the same character.

Bombus sonorus, Say.

San Pedro, California, July 8th, &c.; common (*Ckll.*). New to California. On July 20th I found them freely visiting *Datura meteloides* at 6.30 a.m.; they hunt for nectar, but are compelled to crawl up the stamens to fly away, as they cannot well climb up the smooth inner surface of the corolla. On July 10th I found *B. sonorus* freely visiting the flowers of cultivated *Cesalpinia gilliesi*. On July 9th I saw them visiting flowers of *Abronia umbellata*, Lam., but remaining on them only a moment, and surely not getting anything. The *Abronia* is adapted to Lepidoptera.

Xylocopa varipuncta, Patton.

Los Angeles, Calif., July 22nd (*Ckll.*). At 7.20 a.m. I found a female visiting *Datura meteloides* for pollen; it hovered a good while around the flower, and then alighted on the stamens.

Spinoliella meliloti (*Ckll.*).

This was described from a single specimen. A second one, agreeing with the type, was taken by Martin D. Cockerell at Mesilla Park, New Mexico, May 20th.

Dianthidium sticticum (*Fabr.*).

Mr. Vachal sends me an example of *Anthidium sticticum* from Provence. I find that it belongs to *Dianthidium*.

Anthophora euops, *Ckll.*

Colorado Springs, Colo., April 25th, at flowers of *Ribes longiflorum*; female (*W. P. Cockerell*); Manitou, Colo., April 28th, at flowers of *Ribes leptanthum*; three males, one female (*T. & W. Ckll.*). New to Colorado. The female, not before known, is like the male, but has the face black; the eyes are green, as in the male. On May 10th my wife took males at Colorado City, at flowers of *Thermopsis arenosa* and *Ribes longiflorum*.

Emphoropsis salviarum (*Ckll.*).

Blue River, Arizona; one female (*Dr. A. Davidson*). Only known previously from New Mexico. At the same place Dr. Davidson collected a large example of *Anthophora urbana* var. *alamosana* (*Ckll.*), also new to Arizona. The two insects, although of different genera, are extraordinarily alike; aside from the venation, the *Emphoropsis* may be distinguished by the much less yellow tint of the thoracic hair, the much higher

clypeus, and the middle of the first ventral abdominal segment being covered with white hair which slants backwards, whereas in the *Anthophora* this region has only a transverse band of erect hair.

Synhalonia californica (Cresson).

This was described as a *Melissodes*. From the description I thought it must be a *Synhalonia*, and Mr. Viereck has kindly examined Cresson's type and finds this to be the case. It seems allied to *S. nevadensis*, but is a trifle larger, the pubescence is paler, the clypeus is yellow (yellowish white in *nevadensis*), and the basal joint of posterior tarsi has an apical tooth. This refers to the male, the only sex known. *S. californica*, Fowler, needs a new name, unless it is the female of *S. edwardsii*.

Centris bicolorella, n. n.

Centris smithii, Friese, Termétz. Füz. xxiii. (1899), p. 43 (not *C. smithii*, Cresson, Trans. Amer. Ent. Soc. vii. (1879), p. 229). Bolivia and Chile.

Centris atripes, Mocsary.

Beeville, Texas, Aug. 29th, on plant No. 86 (*C. H. T. Townsend*). New to the United States. *C. foxi*, Friese, is very closely allied, but apparently distinct.

Dialictus, Robertson.

The species of this genus have been described under various genera, and one species (*Hemihalictus lustrans*) has been wrongly referred to *Dialictus* by Crawford. The genus appears to include the following:—

Dialictus anomalus (Robertson). Illinois.

Dialictus occidentalis, Crawford. New Mexico.

Dialictus theodori, Crawford. New Mexico.

Dialictus parvus (*Panurgus parvus*, Cresson). Cuba.

Dialictus subcyaneus (*Dufourea subcyanea*, Ashmead). Lesser Antilles.

Dialictus halictoides (*Panurgus halictoides*, Fox). Lower California.

Greeleyella, n. g. (Panurginæ).

A genus related to *Hypomacrotera*, having the following distinctive characters:—

(1.) Marginal cell shorter and more obliquely truncate than in *Hypomacrotera*, but much longer than in *Macroteropsis*. It is rather suggestive of that of *Exomalopsis*, which is otherwise a very different bee.

(2.) The first recurrent nervure meets the first transverse cubital, as in *Macroteropsis*.

(3.) The basal nervure is almost straight (like that in *Andrena*), and it meets the transverso-medial. (In *Hypomacrotera* the basal falls far short of the transverso-medial).

(4.) There is no sign of the oval pit at the base of the metathorax, which is found in *Hypomacrotera*.

(5.) The labrum has very large punctures and numerous stout bristles below the strong transverse ridge.

(6.) The mandibles are simple, and the maxillary palpi quite ordinary, 6-jointed. Type *G. beardasleyi*.

Greeleyella beardasleyi, n. sp.

♀. Length nearly 9 mm.; black, the pubescence pale ochraceous or dirty yellowish white, nowhere clear white; head brown, facial quadrangle much broader than long; mandibles black, labrum broadly rounded, the apex truncate; clypeus shining, very sparsely punctured; vertex with punctures of two sizes; flagellum dark brown above, ferruginous beneath; third antennal joint comparatively short; disc of mesothorax nude, very shiny, with sparse punctures of two sizes; metathorax truncate, with a narrow dull roughened basal area; tegulae shining, reddish testaceous, dark in front; wings clear, faintly dusky in apical field; stigma and nervures reddish testaceous; marginal cell obliquely truncate, with an appended nervure; second submarginal cell narrowed more than half to marginal; *first recurrent nervure meeting first transverso-cubital*; second recurrent joining second submarginal a little before its end; femora black, with a reddish apical spot beneath; tibiae and tarsi very dark reddish (anterior tibiae pale in front), with pale orange hair; all the claws very deeply cleft; abdomen broad, shining, hind margins of segments testaceous; first segment impunctate, the others with scattered very minute punctures; apical fimbria pale reddish ochreous; ventral segments with a small ferruginous cloud in the middle.

Hab. Collected by Professor Beardsley, of the Colorado Normal School, at Greeley, Colorado, June 3rd, 1900. The insect looks not unlike *Panurginus perlevis*, which, however, has a quite different venation.

NEW CULICIDÆ FROM THE FEDERATED MALAY STATES.

BY FRED. V. THEOBALD, M.A.

(Continued from p. 213.)

Genus ORTHOPODOMYIA, nov. gen.

Head clothed with narrow-curved and forked upright scales; flat ones are at the sides. Palpi 5-jointed in the female; long, as long as half the proboscis; in the male 4-jointed, three-fourths the length of the proboscis. Thorax with narrow-curved scales on the prothoracic lobes, mesothorax, and scutellum. Wings spotted.

Allied to *F'inlaya*, but differs in the squamose structure of the head and scutellum. The female palpi are noticeably

very long. The hind legs, when the insect is resting, are held straight out, close together and quite close to the surface upon which the fly rests, an abnormal attitude in the Culicinæ.

ORTHOPODOMYIA ALBIPES, Leicester, n. sp.

“ A medium-sized species much speckled with yellow and grey, and with the last three hind tarsi with conspicuous creamy yellow, others with narrow, basal bands. Wings with four prominent white costal spots and three small ones at the base. Proboscis with two white bands. Palpi of female more than half as long as the proboscis.

“ ♀. Head broad transversely, set close to the thorax, dark grey, in a poor light almost black, densely clad with white narrow-curved scales and upright forked scales which are white in front and dark brown behind; the fork-scales are very numerous, broad-topped, the free forked edge with numerous serrations; there is a small patch of broad, white flat scales, laterally on either side, very difficult to see; there are two vertical bristles, dark brown in colour, projecting forwards, and three or four post-orbitals. Antennæ with the basal joint brown, the inner and upper faces rather densely clad with creamy spindle-shaped scales; the second joint is a dirty white at either end and black in the middle; the verticillate hairs are inserted about the middle, and are very short except on the inner face; there is a tuft of long creamy yellow scales on the inner face; other hairs are inserted near the base, and there is a whorl of short stiff bristles inserted at the end of the joint; the succeeding joints are black at the apices and at the insertion of the verticillate hairs, and dirty white between their immediate bases; at the apex of each joint except the last there is a whorl of short stiff hairs. Clypeus naked, dark brown. Palpi 5-jointed; first joint short, swollen and constricted in the middle; second joint longer, linear; third about as long as the first two, rather swollen at the apex; fourth joint about one-third the length of third; fifth joint minute, but quite distinct. The whole palp is about two-thirds the length of the proboscis, but when dry it shrinks to about half the length of the proboscis; it is black scaled except for some white scales on the upper surface of the first joint, a ring of white scales at the apex of the second, third and fourth joints, and white scales over the whole of the fifth joint. Proboscis long, black scaled over the first half, then there is a band of creamy scales extending about twice as far on the under surface as it does above; beyond this above are black scales, and white and black again at the immediate apex. The labellæ are creamy yellow. Prothoracic lobes black, not prominent, covered with white narrow-curved scales above and with broader almost spindle-shaped white scales below. Metanotum dark grey, almost black, covered with narrow-curved scales, black, tawny and white in colour, arranged in a sort of pattern. The anterior margin is covered with white scales, followed laterally by tawny scales; dorsally in the centre is a line of white scales running about half way across the metanotum and ending opposite a diamond-shaped patch of tawny scales edged with a few black scales

set in a bare space which appears as a black margin; flanking the median line of white scales on either side is a line of tawny scales, and outside this line is a patch of white scales anteriorly and a bare space having the appearance of a black spot owing to the dark colour of the metanotum; the posterior part of the thorax is chiefly occupied with a diamond-shaped patch of tawny scales edged with a few black scales and a bare space; outside this are white and tawny scales arranged somewhat irregularly. The arrangement of the scales varies considerably. Another specimen I have seen shows a central line of white, black and tawny scales from the front backwards, and flanking this is a bare line, and then a large patch of purple-black scales. In a dry specimen the scales have a very ragged appearance, and, being twisted this way and that, have not the same appearance of a definite arrangement as in a fresh specimen. Scutellum dingy yellow, clouded with black; all three lobes clad with rather long white narrow-curved scales. Scutellar bristles brown. Wings covered with black and white, broad spatulate in some specimens, almost spindle-shaped scales in others. Costa black scaled with white spots; the first spot close to the base and involving the base of all the long veins; the second involves the costal, sub-costal and first long vein; the third involves the veins as far as the fourth long vein. The fourth passes on to the base of the first fork-cell, and the fifth spot is very narrow and involves the lower branch of first fork-cell; there is a spot on the wing field at the base of the second long vein, and another on the upper branch of the fifth vein near its base, and one at its apex and another spot at the base of the second fork-cell. Supernumerary and mid cross-veins form an obtuse angle towards the base. Posterior cross-vein distant about four times its length from the mid cross-veins. Pleuræ dark brown, thickly covered with broad flat white scales. Legs with the fore coxæ pale, with creamy scales in the front legs, and hind and mid dark brown, with a few white scales; femoræ clad with purple scales freely mottled with golden; on the fore legs is a ring of golden scales a little before the apex which does not include the upper face; on the mid and hind legs the scales at the apices of the femora are elongated, and give an ill-marked feathered appearance to the legs; the tibiæ are mottled purple and golden, and at the apices of all the tibiæ is a band of creamy yellow scales; the base of the metatarsus and first two tarsal joints on the fore and mid legs are banded with creamy scales; in the hind legs the base of the metatarsus and first tarsal joint are banded, and the last three tarsal joints are creamy white. Ungues equal and simple on all the legs. Abdomen covered with purple-brown scales; each segment bears on the dorsum two spots of white scales placed on either side of the middle line and rather nearer the apex than the base; laterally there is a basal patch of white, apically a band of white scales. Some specimens bear numerous golden hairs on the apex of the segments dorsally; ventrally each segment is basally banded, and some of the segments have a median white spot.

“♂. Head brown; the narrow-curved scales form a dense tuft between the eyes and a more definite margin to them than in the female. There are more white upright forked scales, the brown comprising

about three or four rows on the nape. Antennæ with the basal joint dark brown, sparsely clad with small flat white scales; succeeding joints white, with black bands at the insertion of the verticillate hairs; last two joints much elongated; first five joints with numerous linear silky white scales with blunt rounded ends; verticillate hairs pale ochre-yellow. Palpi four-jointed, about three-fourths the length of the proboscis; there are a few white scales on the upper surface immediately in front of the clypeus, a ring of white scales at the middle of the second joint, another ring at the apex of third joint, and the fourth joint is completely white scaled; the rest scaled with dark brown scales; the first joint is very short, second joint is very long and in the middle shows a false joint, the third joint is about one-third the length of the second, and the fourth joint is short and always carried bent down towards the proboscis. Proboscis scaled dark brown for about half its length, then there is an incomplete ring of creamy yellow scales, followed by a band of dark brown scales; the apical fourth is swollen and scaled with creamy yellow scales. Thorax as in the female. Wings with an additional costal spot of white scales between the basal and second spots. Legs with more pale scales on the tibiæ; the banding of fore and mid legs is rather more evident; fore and mid unguis unequal, larger uniserrate. Abdomen with a distinct basal white band to the hinder segment in addition to the dorsal white spots. Length of female, 5 mm.; of male, 5.3 mm.

“*Habitat.*—Kuala Lumpur (in jungle five miles away).

“*Time of capture.*—April.”

Observations.—Described by Doctor Leicester from specimens bred from larvæ taken in bamboo jungle. It is a very distinct species, told at once by the last three hind tarsi being white. It resembles the *Finlayas*, and can only be separated from them by scale examination.—(F. V. T.)

(To be continued.)

NOTES AND OBSERVATIONS.

NOTHOCHRYSA CAPITATA.—I do not consider *N. capitata* quite so rare an insect as my friend Mr. Lucas's note (*ante*, p. 214), would lead one to infer; but perhaps it occurs more frequently in Yorkshire than in the southern counties. I have Yorkshire specimens in my cabinet from Castle Howard, Doncaster, Huddersfield, Selby, Skipwith, and York. I also have it from Lincolnshire. Still it seems never to be common anywhere, and I have only on one occasion taken as many as three on the same day. The other British species of the genus, *N. fulviceps*, is apparently much rarer.—GEO. T. PORRITT; Huddersfield, Aug. 17th, 1904.

NOTE ON THE DRAGONFLY *ÆSCHNA CYANEA.*—The nymphs refused food a few days before emergence, and became very restless. They

appeared to keep the extremity of the abdomen at the surface of the water, and produced a lot of air-bubbles. One I saw making great efforts to climb up the side of a vessel in which it was confined; but as it continually slipped back, I guided it with the point of a pencil to a stick which was fixed in the middle of the basin. It immediately commenced to climb, went to the top of the stick, and apparently would have gone higher if it could. In the case of the one I watched, a distinct sound was produced when the thorax split. One day I tried to feed a dragonfly; but as it would not take the flies, I took it up carefully and put the fly to its mouth, when it at once began to feed greedily, and ate three, one after the other. It appeared to have quite matured its colours, but I am afraid feeding it made it too vigorous, for it afterwards terminated the experiment by contriving to make its escape.—R. A. R. PRISKE; 66, Chancer Road, Acton, W.

VITALITY OF *BLAPS MORTISAGA*, Linn.—I received, on July 21st last, a living specimen of this beetle, which had been found in a box belonging to a young lady, who returned to Scotland from Egypt three months previously. The position in which the beetle was found convinced her that it had been packed up in Egypt. It had, in that event, subsisted for more than three months without sustenance or air, *Blaps* is a common Egyptian genus, and *mortisaga* is found as far east as the Caucasus.—HENRY H. BROWN; Cupar-Fife.

SATURNIA CARPINI ON LYTHRUM SALICARIA.—On Aug. 14th I found a large larva of *S. carpini* in the New Forest, at rest in the early morning on *L. salicaria*, the purple loosestrife. The spray was plucked, and the larva carried home upon it. Afterwards it fed readily on the foliage of this plant, which, I believe, is not one of its usual food-plants. On this large specimen, no doubt a female, the tubercles were orange in colour. On a smaller one, found the same day, and which at once commenced to spin up, the tubercles were pink. This second is no doubt a male. Was the difference in colour of tubercles due to sex or age, or chance variation?—W. J. LUCAS.

BRITISH ORTHOPTERA.—Could any of our readers kindly supply lists of the Orthoptera of Orkney, Shetland, Hebrides, Scilly, or any other outlying, or less known parts of the British Isles?—W. J. LUCAS; 28, Knight's Park, Kingston-on-Thames.

LIMENITIS CAMILLA ab.—I took a black variety of *L. camilla* near Barbignin, Fontainebleau, on August 12th last. The specimen is a female.—WALTER DANNATT; Donnington, 75, Vanbrugh Park, Blackheath, S.E.

VARIETY OF *GONEPTERYX RHAMNI*.—Mr. Lucas sends a beautifully coloured drawing of *Gonepteryx rhamni* with the fore wings clouded with orange as in *cleopatra*. Concerning this he writes:—"It was reared from one of several larvæ taken in the New Forest by Mr. Weir, on June 26th last. To all intents and purposes this specimen is clearly *cleopatra*, but all the other examples bred with it were normal. I attribute the variation to the fact that the larvæ were, till July 11th, kept in an extremely hot shed. On the date last mentioned they were

removed from the shed because of the heat. It does not seem certain whether this specimen had pupated by that date or not. This occurrence raises a very interesting question as to the relationships of *G. rhamni* and *cleopatra*."

CAPTURES AND FIELD REPORTS.

CALLIDIUM VIOLACEUM AT ESHER.—Mr. Lucas has sent me a specimen of the above beetle, taken at Esher Station, Surrey, on June 12th, 1904. I do not think it is common in this district,—E. C. ANSORGE; 12, Addison Road, Bedford Park, W.

DERONECTES LATUS IN THE NEW FOREST.—I took one specimen of this species among the shingle of a clear stream near Brockenhurst, New Forest, on May 22nd, 1904. I should like to know whether anyone else has taken it in the South of England. I have seen no records of it from this part of England.—E. C. ANSORGE.

PYRAMEIS CARDUI AT DOVERCOURT.—A few fresh examples have been seen here in the lucerne fields, but no hybernated specimens were noticed in the spring or early summer, nor did I observe any larvæ, though I fully expected to have done so, after the swarms of the perfect insect that occurred here last autumn. What became of them? Did they pass on? If they had remained to hybernate here it is not likely that all would have perished during the winter, which was not a severe one.—GERVASE F. MATHEW; Dovercourt, Essex.

SPHINX CONVULVULI AT DOVERCOURT.—A male was brought to me yesterday. It had been confined in a box that was much too small for it, and in consequence was in poor condition.—GERVASE MATHEW; Dovercourt, Essex.

COLIAS EDUSA IN CAMBS.—I saw single specimens of *C. edusa* on Aug. 5th, 8th, and 10th of this year, flying in various parts of the country round Cambridge. They are the first I have seen in the county since 1901.—S. L. ORFORD YOUNG; Aug. 15th, 1904.

COLIAS EDUSA IN ESSEX.—The first, a fresh-looking male, was seen here on July 29th, when one of my boys covered it with his net, but let it escape, and it then passed me at a furious rate, and we saw it no more. The wind had been blowing fresh from the east and south-east for several days previously. On Aug. 4th we caught two, a male and female, in a lucerne field, and saw one or two more. The female was confined in a breeding-cage, with a piece of lucerne, some syrup on a sponge, and placed in the sun. On the morning of the 7th she was found dead, but had deposited forty-two eggs on the muslin, twenty-eight on lucerne, and three on the wire framework of the muslin hood; seventy-three in all. The eggs were placed upon some growing plants of white clover, began to hatch on the 10th, and on the 16th the more advanced larvæ had already effected their first change. On the 9th a female was seen, and three males were captured, but no more have

been noticed since, so I am inclined to think that these few were immigrants blown across the North Sea during the strong easterly winds that prevailed between the 24th and 28th of July.—GERVASE F. MATHEW; Dovercourt, Essex, Aug. 18th, 1904.

CHEROCAMPA NERII AT EASTBOURNE.—A very fine example of *C. nerii* was caught, resting on a bathing-machine, in the early morning of July 14th last, at the Wish Tower, Eastbourne. It was brought to me alive, and is now in my collection.—S. A. CHARTRES; 17, Mayfield Place, Eastbourne, July 30th, 1904.

THECLA W-ALBUM IN GLAMORGANSHIRE.—We took several specimens of *T. w-album* near Cardiff last month, but found it very local.—B. ANSALDO and T. SHELLEY; King's Road, Cardiff, August, 1904.

SPHINX CONVULVULI IN NORFOLK.—It may interest some of your readers to know that specimens of *S. convulvuli* are now to be taken in Norfolk. I have seen as many as four of an evening, hovering over flowers of tobacco. I should like to know if these are hibernated or recently emerged examples. Some of them seem quite fresh, but others much worn. We often find pupæ of this species when taking up the potatoes in October.—W. E. N. BAKER; "The Chase," Tilney All Saints, King's Lynn.

ORTHOTENIA BRANDERIANA, L. (= EUCOSMA BRANDERIANA, Meyr. = OLETHREUTES BRANDERIANA, Rebel) IN SURREY.—On June 25th last, Mr. A. J. Scollick very kindly gave me a couple of Tortrices that he had beaten from a hedgerow in the Esher district on the previous day; these I found to be *O. branderiana*, a species which I believe has not hitherto been recorded from Surrey. Subsequent visits to the locality by Mr. Scollick and myself resulted in the capture of four other specimens. I may mention that I had collected among the aspens in the district almost every year since 1895, but had not seen the species there, in any stage, until this year.—R. SOUTH; 96, Drakefield Road, Upper Tooting, S.W.

COLLECTING IN THE NEW FOREST IN JUNE.—I arrived at Brockenhurst on June 4th, but for the first week was rather hampered with a north-east wind, which did not improve matters as far as insects were concerned, so I turned my attention to beating, and secured from oaks the following larvæ:—*Himera pennaria*, *Teniocampa miniosa*, *Liparis monacha*, *Hybernia defoliaria*, *Cosmia trapezina*, *Nola strigula*, *Liparis auriflua*, *Scopelosoma satellitia*, *Petasia cassinea*, and *Phigalia pilosaria*; also, feeding on the lichens of oak-trees, a few larvæ of *Cleora glabraria*; and whilst beating I turned out a few imagines of *Hylophia prasinana*. Sugaring again this year was very poor as far as my experience went, the only good nights being on the 16th and 17th, the last two days of my stay, when I took *Boarmia consortaria*, *Aplecta herbida*, *Erastria fuscula*, *Thyatira batis*, *Euplexia lucipara*, *Tephrosia extersaria*, *Grammesia trilinea*. Most of the evenings I devoted to larvæ-searching by means of an acetylene lamp and dusking over the heath. Of larvæ I took, feeding on heather, fair numbers of *Agrotis agathina*, *Noctua neglecta*, *Selidosema plumaria*, *Eubolia plumbaria*, and a few

Satyrus semele, and of insects *Nemoria viridata*, *Hadena contigua*, *H. pisi*, *Phibalapteryx lignata*, and some dozens of *Scodiona belgiaria* (males), a few found at rest, flat on the ground, in the daytime, in which position they resembled a piece of stone remarkably well. At night they rested on the top of grass-stems; and as there was a lot of cotton-grass (*Eriophorum polystachyon*) growing about the spot, it was very difficult to distinguish between the two, so much did they resemble one another. A friend of mine, Mr. W. G. Gould, who was down with me at the time, took some interesting flashlight photographs of *S. belgiaria* at rest; also of larvæ of *Agrotis agathina*, *Noctua neglecta*, *Eubolia plumbaria* feeding, and various other interesting natural history objects. By means of light in the glades of the forest I captured *Melanthia ocellata*, *Melanippe rivata*, *Eurymene dolabraria*, *M. montanata*, *Coremia unidentata*, *Grammesia trilinea*, *Spilosoma menthastri*, *S. lubricipeda*, *S. mendica* (female, from which I obtained some hundred or so ova, from which larvæ are now feeding well on plum), *Noctua plecta*, *N. xanthographa*, *Notodonta camelina*, *Larentia pectinataria*, *Corycia taminata*, *Cidaria truncata*, *C. corylata*, *Orgyia pudibunda*, *Metrocampa margaritaria*, and *Euplexia lucipara*. In the daytime there seemed to be very little about flying in the glades. I took good series of *Pararge egeria*, *Argynnis euphrosyne*, *Venilia maculata*, *Fidonia piniaria* (male and female), *Bombyx rubi*, and *Hesperia malva*: also, flying over some of the heaths, *Spilosoma fuliginosa* and *Anarta myrtilli*. Attracted by the flowers of rhododendrons, short series of *Macroglossa fuciformis* and *Euclidia mi*. On June 17th I went to Ringwood, and took *Emydia cribrum*, *Lithosia mesomella* and *Aspilates strigillaria*. *E. cribrum* was evidently just coming out, as there were very few to be seen; but those taken were in perfect condition.—LAWRENCE S. HODSON; Maisonnette, Palmer's Green, N., Aug. 3rd, 1904.

DEILEPHILA LIVORNICA AT BOURNEMOUTH.—It may interest the readers of the 'Entomologist' to know that I had the good fortune to capture three specimens of this rare hawk-moth, flying over rhododendrons and azaleas in our public gardens in Bournemouth, on 28th and 29th of May last, and about the same time Mrs. Jackson, of "Malvern," Crescent Road, also captured three. All six specimens were as good as bred. Dr. Crallan is breeding a number of larvæ obtained from eggs laid by a female that was brought to him. Major Robertson and Mr. Hooker also had a specimen each brought to them.—W. McRAE; Bournemouth.

COLIAS EDUSA IN HANTS AND DORSET.—Mr. H. E. Annett saw one between Brockenhurst and Southampton on Aug. 1st, and Mr. W. McRae saw one near Christchurch the same day. About Aug. 16th Mr. E. P. Reynolds saw some half a dozen near Swanage, but succeeded in capturing only one worn female. On Aug. 20th I captured a beautifully fresh female near Hinchelsea in the New Forest.—W. J. LUCAS.

PLUSIA MONETA IN WORCESTERSHIRE.—With regard to the increasing distribution of *P. moneta*, it may be of some interest to note that I captured a fresh specimen of this moth in my garden near Worcester, on the evening of July 4th, flying over valerian at dusk. I believe this is the first time that the species has been recorded from this district.—H. A. McNAUGHT; 2, Chatley Villas, Claines, Worcester, Aug. 23rd.

SPHINX CONVULVULI IN LONDON.—A very nice example of this species was found at rest on a window-sill at the Victoria and Albert Museum, South Kensington, on Aug. 23rd last. The specimen will be added to the National Collection of British Lepidoptera.

SPHINX CONVULVULI IN HANTS.—I found a fine fresh female *S. convulvuli* on a paling at Totland Bay, at precisely the same spot where I found a similar specimen on Sept. 10th, 1901. The date of the present capture was Aug. 19th.—G. E. J. CRALLAN; Bodorgan Manor, Bourne-mouth, Aug, 25th, 1904.

NOTES FROM NEW ZEALAND.—Some account of the season 1903-4 in New Zealand may be of interest. Beginning at the end of last season, I went to Napier during April and May, and there obtained one or two *Vanessa itea* identical with specimens which I took at Freemantle, Western Australia; *Chrysophanus boldenarum*, a pretty little "copper" delicately suffused with purple, was most abundant on the beach, and also a few miles up country along the river beds. This was much lighter than specimens which I have seen from the South Island, some of which are nearly black. I did no night-work, and the only moths I took were our old friend *Heliothis armigera*, and a new species which Mr. G. B. Hudson has kindly named for me *Orthosia pallida*. I then returned to Wellington, where, winter having fairly set in, there was nothing doing until the end of November. About this time the two coppers, *Chrysophanus salustius* and *C. enysii*, were abundant on the flowers of the water-cress. About the same time I obtained one or two *Hepialus virescens* at light. On New-year's Day I took a damaged example of the rare *Porina enysii* in the Botanical Gardens. *Vanessa gonerilla* was early and abundant, my first example being taken Dec. 6th, and another on the 7th; this insect was not out in the 1902-3 season until the end of January. Owing to the weather being unfavourable when I visited the locality, and also to the fact that a fire had destroyed a large portion of its old haunts, I was unable to again obtain *Dodonidea helmsi*, only seeing one or two. This fire is particularly unfortunate, as, once destroyed, the New Zealand bush never re-grows. It will be of interest to English collectors to know that *Sphinx convulvuli* was common throughout both Islands; this moth is usually confined to the extreme north of the North Island. In addition to this, several examples of a fine *Chærocampa*, not previously recorded in New Zealand, were taken in different parts of the Colony, probably immigrants from Australia. In Coleoptera the only notes I have are: an example of the local *Lasiorhynchus barbicornis*, Jan. 4th, 1903; *Æmona hirta* and *Æ. simplicollis*, Dec. 8th, 1903; *Trichosternus antarcticus*, Jan. 24th, 1904; *Odontria xantrosticta*, which is a curious little woolly beetle, was common in March and April at light, and lying dead on gravel-paths of a morning. The common ti-tree beetle, and the tiger *Cicindella tuberculata*, were abundant throughout the summer. The summer was very long and warm, which probably accounted for the immigrants. I omitted to state that several examples of *Deiopeia pulchella* were also taken; these latter, and two of the *Chærocampas*, by Mr. O'Connor, at Titahi Bay.—HUBERT W. SIMMONDS.

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LIFE-HISTORY OF *LYCÆNA ARGLADES*.

BY F. W. FROHAWK, M.B.O.U., F.E.S.

SINCE the discovery of this species in Dorsetshire, in 1885, several works on British butterflies have been issued, but there appears to be no description published of either the egg or pupa, and the descriptions given of the larva in the various books are obviously copied from Dr. Lang's 'Butterflies of Europe,' where it states that the larva is "pale green, with a darker dorsal stripe, dark lateral streaks, and light brown and white spots."

By the kindness of Dr. Chapman and Mr. Hugh Main in supplying me with eggs of this interesting species, I have been enabled to work out its life-history; therefore have now pleasure in giving complete descriptions of its various stages. The butterflies were captured in the South of France in July last by Dr. Chapman, who sent them direct to Mr. Hugh Main; he in turn kindly sent me some of the ova he obtained from them, which I received on July 25th, with a note saying they had been laid the day before. They were deposited in a cluster at the base of the leaves of *Lotus corniculatus*, also a few single eggs in other parts of the plant. Undoubtedly, in a wild state, they are laid singly, and never in clusters, on account of the cannibalistic habits of the larvæ.

The egg is very small, being exactly the same size in diameter as the egg of *L. minima*, i. e. $\frac{1}{56}$ in., and $\frac{1}{112}$ in. high; it resembles the egg of *L. icarus* in shape. It is circular and compressed, of a clear pale greenish-blue colour, but varies both in extent of the ground colour and in the structure of the reticulations, which are white, resembling frosted glass, and cover the whole surface in an irregular network pattern; in some the pattern is almost like ordinary network, forming squares, and others have the cells triangular, but all are irregular, and some have the juncture of the reticulations much more prominent than others. The upper surface is very slightly sunken, being almost

flat, with a somewhat irregularly formed micropyle, which is darker, and without the frosted appearance which covers the whole of the surface excepting the base; the reticulations on the depressed portion of the crown are simple, being without the raised knobs at the junctures; those surrounding the side are prominent, but diminish on nearing the base; the cells between the reticulations have a fine granular surface.

All the eggs hatched on July 30th, remaining six days in the egg-state. The larva makes its exit by eating the crown, as well as a portion of the side of the egg-shell.

Directly after emergence the larva is exceedingly small, being only $\frac{1}{40}$ in. long; it is similar to other young *Lycænidæ* larvæ in having a slight medio-dorsal furrow and sloping sides, and furnished with rows of long white serrated hairs, four dorsal and three lateral on each segment; those on the dorsal surface are in pairs on each side of the furrow, both curve backwards, the anterior one being very long; below these are two spiracular-like disks outlined with dark olive, and below a pair of small dark tubercles bearing a club-shaped hair, excepting on the 6th, 7th, and 8th segments, which only have hairs on the posterior ones; the subspiracular row of hairs consist of three long ones on each segment, projecting laterally, each having a dark base; along the ventral surface are similar serrated hairs, and shorter ones on the claspers; the head is greenish olive and black, and the body of a pale ochreous yellow in shadow, and pale grey in high light; to the naked eye it appears wholly whitish; the entire surface is sprinkled with black points. They are very active when first hatched, crawling rapidly for such small creatures, and feed on various parts of the plant. I found one feeding with its anterior half buried into the end of a stem which had been cut off.

First moult, Aug. 3rd, the first stage only lasting four days. Shortly before first moult it measures only $\frac{1}{16}$ in. long.

During the early stages these larvæ, like the other *Lycænidæ*, require the greatest attention to distinguish their changes, on account of their very small size and similarity of stages, and unless most carefully watched under a lens it is practically impossible to detect their moults.

After first moult—six days old—it measures $\frac{1}{12}$ in. long, the body is considerably humped dorsally from the 2nd to 9th segments, the 1st, 10th, 11th, and 12th being rather compressed, and a decided lateral ridge; the surface is finely granulated, and studded all over with serrated hairs of various lengths; those along the dorsal and lateral regions are longest and curved; all are whitish (excepting those on the subdorsal surface, which are dusky), with bulbous bases, from which rise thorn-like spikes, each base forming a star; there are also numerous disks scattered over the body. The general colour is a pale yellow, with

a medio-dorsal longitudinal brownish stripe, oblique brownish side stripes, and a rust-coloured subspiracular line, bordered laterally by whitish; the head is shining black, and beset with a few fine whitish hairs. Other forms occur, having a generally pale greenish ground colour, with slightly darker markings.

Second moult, Aug. 7th. After second moult—nine days old—it is $\frac{1}{5}$ in. long; very similar to previous stage, but on the 10th segment is a rudimentary gland, or one of indistinct formation, surrounded by minute star-like processes, and a fringe of delicate white spines or bristles, each bearing a tuft of spine-like hairs, extremely fine, similar in construction to those bordering the gland of *L. arion* larva. Both forms now more closely resemble each other, the brownish marked form assuming a generally green colouring, with only a faint pinkish lateral line. In this stage they greedily feed on the seeds of *Medicago lupulina*, eating through the capsule, and devouring the contents, but appear to feed mostly at night.

Third moult, Aug. 12th. After third moult—eighteen days old—it is $\frac{1}{4}$ in. long, the ground colour is a beautiful clear green, with a darker green medio-dorsal furrow, and three longitudinal rows of oblique dull green side markings, and a waved dull green lateral band bordered below by a pale line, and faint dull brownish-pink streaks; the whole surface is thickly sprinkled with serrated hairs of different lengths, those bordering the dorsal furrow are the longest, they vary from white to ochreous brown, and have similar swollen star-like bases, which vary in form and colour—some are brownish, others white, resembling little glass petals. As in the previous stage, numerous disks are scattered over the surface; the spiracles are prominent, and outlined with brown. In this stage they feed as much by day as by night, but are much slower between the moulting, occupying eleven days from the third to fourth moults. The gland on the 10th segment is now more distinct, but surrounded with similar processes and bristles.

Fourth and last moult, Aug. 23rd. After fourth moult, and fully grown, it measures $\frac{2}{3}$ in. long. It is of the usual onisciform shape, with slightly flattened sides, and with only a very shallow dorsal furrow, bordered each side by a fringe of spinous bristles, slightly serrated, and varying in length; the whole surface is densely studded with shorter but similarly formed bristles, which vary much in length and colour from white to pale brown, each, including the longest dorsal ones, have wonderfully formed bases (similar but more pronounced than in the previous stages), composed of a bulb-centred star, the points rising from the base; some are wholly white, others olive-green; there are also numerous shining whitish-green disks outlined, or set in black rings more or less starred, of various sizes, and scattered over the whole surface; the spiracles are whitish, outlined with brown,

and the inner edge dentated. The gland on the 10th segment is similar to that in the previous stage, being a small elongated transverse fissure, and fringed with fine white bristles as described. Although so similar in formation to the gland of *L. arion*, I have been unable to detect any liquid exuding from it when touched; also it appears less sensitive to irritation. On the 11th segment is a subdorsal, partly retractile, whitish tubercle. The ground colour is pale green, with a darker green medio-dorsal stripe, and oblique side stripes of a fainter green; in some specimens the lateral ridge is tinged below with pinkish brown; the head is black and shining, and is hidden under the overlapping 1st segment, except when extruded while feeding and crawling.

During the last stage I supplied the larvæ with both the common white and red clover-blossoms, which they greedily devoured. One larva completely ate up the whole of the petals of a red blossom in two days; it appeared to be feeding continually both day and night the whole time. They also readily feed on the flowers, seeds, and leaves of *Lotus corniculatus*.

During their earlier stages the larvæ are decidedly cannibalistic. I noticed one larva after the first moult feeding on a newly-hatched larva, which it seized as it emerged from the egg; but during the last two stages I did not find them attacking each other, which agrees with the cannibalism of *L. arion* larvæ.

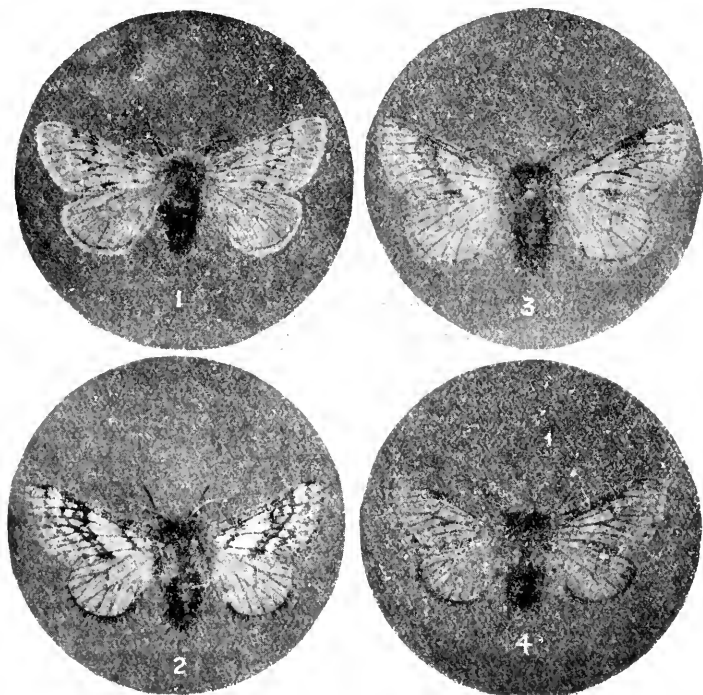
The pupa is attached to the food-plant by the cremastral hooks to a pad of silk and a girdle round the body; all mine were attached to the centre of the leaves, and the general resemblance, both in form and colour, between a decaying *Lotus* leaf and the pupa is very similar. The pupa measures $\frac{1}{3}$ in. long, of fairly uniform thickness, the head is truncated in front, the thorax slightly swollen dorsally, the abdomen rises at the base, and falls away in a gentle curve to the anal extremity, which is bluntly terminated. The entire surface is a pale green, and very finely reticulated; the wing-cases are rather whiter green than the rest of the body, with whitish neuration, and irregularly sprinkled with minute black specks; a medio-dorsal line composed of a series of black marks and specks runs the entire length, and forms a well-defined line over the head and thorax, but becomes broken up into a series of spots on a darker ground stripe along the abdomen; a super-spiracular series of small black dots, one on each of the 3rd, 4th, 5th, 6th segments, and a large somewhat oval black blotch on the 1st abdominal segment; and two others, one at the base of the wing on the meso-thorax, another on the meta-thorax, also a small spot on the pro-thorax; all these and a few other tiny specks sparingly sprinkled over the body are black. The whole surface, excepting the wings, is sprinkled with slightly curved moderately long white serrated hairs, each with a swollen base; near the base of the wings are a few fine white bristles,

terminating in a cluster of much finer bristles; the spiracles are whitish and prominent. It remains from about ten to fourteen days in the pupal state, according to temperature.

The first imago emerged on Sept. 6th, the last on Sept. 18th, 1904.

VARIATIONS OF NYSSIA LAPPONARIA.

By E. A. COCKAYNE.



ON looking over the males of *Nyssia lapponaria* which I captured or bred at the beginning of the year, I find that, far from being extremely constant, they show a considerable range of variation. As a whole they appear to be paler than those captured by Mr. Christy, though I have only been able to compare them myself with the one in the Hope Collection at Oxford. This corresponds to my darkest specimens, which form a small proportion of the whole number.

These darker individuals have three very distinct blackish lines and a broad marginal band on the primaries, separated into two

parts by an extremely thin wavy line of the pale grey ground colour. Far more numerous are specimens in which the three lines are all distinct, but thinner, and with the outer half of the marginal band either absent or much reduced, and most visible at the nervures. In a considerable number, about one-fifth, of the specimens the second line is absent, except just at the dorsum. The two very pale forms mentioned in the 'Entomologist,' June, 1904, may be regarded as an extreme form of this. The first and third lines are very thin, and the second almost entirely obsolete (fig. 1). Both parts of the marginal band are merely represented by a slight deepening of the ground colour.

With regard to the relative positions of the lines, the first is very regular, varying only slightly in its distance from the base; the second and third are liable to considerable alteration. As a rule they pass on either side of the discal cell, and as they approach the dorsum become united by a group of black scales lying between them. It is not unusual to find this taking place earlier, and causing coalescence just beyond the discal cell. In one specimen the whole space between the two lines from costa to dorsum is filled with black scales, and a black band passes across the centre of the wing. The marginal band in this male is, however, poorly developed (fig. 2). The second and third lines vary in distance from the discal cell. In two specimens the second line passes through this, and in another between it and the termen. The second and third lines are thus more nearly parallel, though remaining quite distinct (fig. 3).

With regard to the marginal band, its distance from the third line is not regular, and its width must therefore vary correspondingly. Of its two halves the outer is more liable to become faint. In fact, in only one have I seen the reverse. In this specimen the inner half gradually fades away as it approaches the costa. In these paler forms the fringes also are lighter. The secondaries show traces of two lines close together at the dorsum, separated by a fine line of ground colour, and there is an additional sign of the outer of these at the discal spot. In a bred male the second or outer of these is visible fairly clearly right across the wing, and the inner can also be traced, though very faint. As in the primaries, they pass on either side of the discal spot, enclosing it between them.

The ground colour of all my captured specimens is pale cold grey, or, in the specimen described in the June number, dark grey (fig. 4). In my few bred specimens I find that in every case except one it is a clear cream colour, giving a richer appearance, especially to the secondaries. This cannot be due to fading in the wild ones, as they were freshly emerged. Possibly the food of the larva may have some effect, the bred ones feeding on birch, and in one case *Calluna vulgaris*, and the captured specimens on *Erica* or *Myrica*.

ODONATA, &c., IN THE NORFOLK BROADS.

BY GEO. T. PORRITT, F.L.S., F.E.S.

FROM June 20th to July 2nd last, in company with a lepidopterist friend, Mr. Arthur Whitaker, of Worsbrough Bridge, Barnsley, I made another visit to the Norfolk Broads, making (as in the previous year, see E. M. M., October, 1903, pp. 251-2) Stalham headquarters. My principal object was to fill up my series of the local, and until last year very rare, *Æschna isosceles*, and also, if possible, to turn up *Agrion armatum*, a couple of specimens of which had been taken in the neighbourhood the previous year by Mr. Balfour Browne. In my efforts for the former I was perfectly successful, but a close search for *armatum* was a complete failure, for no trace of it could I find. The first *isosceles* was taken on June 22nd, or nine days earlier than in 1903, and from then to the 29th, including two captured by Mr. Whitaker, I managed to secure eleven. The nine I captured were all netted from a boat, and most of them, as may be imagined, took a good deal of stalking, in which Mr. Whitaker's assistance was invaluable. But, contrary to my last year's experience, a specimen was now and again seen on the drier ground. One was netted by my friend under very interesting circumstances. He had gone down to sugar on the evening of June 24th, and when almost dark noticed a large dragonfly hawking for insects, just in the same way that *Æ. grandis* has long been known to do, but a characteristic which was not known to be shared by any other British dragonfly. It proved to be an *Æ. isosceles*, thus making a second species which is not averse to somewhat nocturnal habits. Of the beautiful *Libellula fulva*, which in 1903 was quite abundant, we probably did not see more than half a dozen specimens on this visit, and only one male was captured. *Orthetrum cancellatum* was plentiful, chiefly on the drier ground, and *Erythromma najas* was still more abundant; it settled in numbers on the floating leaves of the water-lilies. The pretty *Agrion pulchellum* was in profusion. The other species included *Libellula quadrimaculata*, *Brachytron pratense*, *Pyrrhosoma nymphula*, *Lestes sponsa*, and *Ischnura elegans*, all more or less common except *L. sponsa*, which we had never before seen out so early as June, and which would no doubt be abundant enough later.

The Trichoptera included *Phryganea grandis*, *P. varia*, *Leptocerus senilis*, *L. aterrimus*, *Erotesis baltica*, *Mystacides longicornis*, *M. nigra*, *Trienodes bicolor*, *Limnophilus xanthodes*, *L. luridus*, *L. rhombicus*, *L. sparsus*, &c.

Of Orthoptera, we took *Tettix bipunctata* and *Xiphidium dorsale*.

Mr. Whitaker worked hard among the Lepidoptera, but unfortunately both "light" and "sugar" were almost useless, and when such is the case in the Broads collecting is almost necessarily a failure. *Papilio machaon* was still out in numbers, but was "on its last legs," most of the specimens being tattered or worn; its eggs and young larvæ were, however, found freely, proving that it must have been abundant before our arrival. *Argynnis scelene*, too, was plentiful; this species seems equally at home in wood, on mountain, or on fen. The moths included *Dicranura furcula*, *Cherocampa elpenor* not uncommon at *Iris* flowers, *Nulularia senex*, *Apamea unanimis*, *Dianthæcia cucubali*, *Plusia festuceæ*, *Abrostola urticae*, *Hydræcia unca* abundant, *Acronycta leporina*, the specimens considerably darker than we expected to find them so far south, *Acidalia immutata* abundant, *Timandra amataria* common, *Collix sparsata*, *Lobophora sexalisata*, *Hyria auroraria* just getting well out as we came away, *Phibalapteryx lignata* abundant, *Hydrocampa stratiotalis*, *Herminia cribralis* abundant, *Schænobius mucronellus*, *Chilo phragmetellus* abundant, *Nemophora metaxella* and many others.

Edgerton, Huddersfield: Sept. 9th, 1904.

ON A DARK FORM OF *ISCHINURA ELEGANS* (FEMALE).

By F. W. and H. CAMPION.

ON various occasions during the present season and the last we have noted the occurrence in Epping Forest of a dark form of *Ischnura elegans* (female), which, from the circumstance of its appearing in two different years, we are inclined to regard as a permanent form. We possess six specimens in all; the dates of the several captures being August 23rd and September 1st, 1903, and July 3rd, 17th, and 24th, and September 4th, 1904. The specimen of July 24th last was at the time of capture paired with a normally-coloured male; at the same time we took another pair of the same description, but the female escaped from the net. All these insects are characterized by the total absence (with the exception to be mentioned herein) of the blue colour which ordinarily imparts such a handsome appearance to the individuals of both sexes. The blue of the spots behind the eyes and the blue colour on the thorax observable in the typical females are in our aberrant specimens replaced by an olive-green colour. In normal *I. elegans* the eighth abdominal segment is light blue in both sexes; in the dark females the colour may be described as dark dust-colour or dark biscuit-brown; the remaining segments are black or green-black. The specimen

taken on July 17th, 1904, however, exhibited a distinct trace of blue on the *ventral* surface of segment eight.

Apart from any other points of difference already indicated, our specimens are readily distinguishable from individuals of the typical form, whether in the mature or the immature state, by the dark-brown or blackish colour of the eighth segment. They are separable from the orange variety of the female (to which Stephens gave the name *rufescens*) by the substitution in the former of olive-green for the bright orange of the thorax characteristic of that variety; the first and second segments of the abdomen, instead of being orange, as in var. *rufescens*, exhibit, in our specimens, black or green-black markings of the usual form upon a ground-colour of olive-green.

We are convinced that most, if not all, of the insects under consideration are fully matured; but, as doubts have been suggested as to their maturity, we may say that our conviction is based upon the following considerations:—

(1) We have taken no less than two of them in copulation or connected *per collum*, and we have never known a dragonfly to pair with the opposite sex until full maturity has been attained.

(2) The immature coloration of such species as we are best acquainted with is lighter, not darker, than the mature coloration. Now, the colour of segment eight in the individuals before us is much deeper in tone than the normal blue colour. The colour which usually precedes blue in dragonflies is well seen in immature males of *Agrion puella* and *Enallagma cyathigerum*.

(3) Only a few examples of the dark form are met with. If that form represents a constant phase in the colour-development of the female, it ought to occur very frequently, for the species is quite a common one with us, and we keep it under close observation.

(4) In spite of the circumstance that, quite at the end of the season, other collectors have obtained specimens of *I. elegans* with the immature colouring, we are of opinion that some weight should be attached to the facts that none of our examples have been taken prior to July 3rd, and that one of them occurred so late as September 4th; indeed, the last-named (the dark female of September 4th this year) was the sole representative of the species we had come across since August 7th.

(5) Most of our specimens present, when newly taken, a distinctly dusty appearance, somewhat resembling the bloom upon a black plum; we have sometimes observed the same appearance in specimens of other species taken late in the season.

(6) The wings retain no trace of the high gloss of immature wings.

We think it likely that this form may be a reversion to the ancestral type. The coloration of the normal female approximates to that of the male much more closely than is usual

among British Agrioninæ, and the striking contrast subsisting between our primitive females and the males brings this species into line with other members of the subfamily, and especially with the allied species, *I. pumilio*.

Walthamstow : September 9th, 1904.

BIBLIOGRAPHICAL AND NOMENCLATORIAL NOTES ON THE HEMIPTERA. No. 2.*

BY G. W. KIRKALDY.

WITH great regret I feel it advisable to relinquish the suggestive and characteristic ordinal name "Rhynchota" for the prior "Hemiptera." I am by no means convinced of the necessity or advisability of enforcing priority in names above family rank; indeed in some cases it would appear inexpedient, if not impossible, to do so; but in such a case as the above, where a prior term has been in frequent, though partial, usage, it seems better to adopt it.

Hemiptera is a Linnean term, comprising in 1758 not only the "bugs" but also the Dermaptera (later called Orthoptera); Geoffroy in 1762 restricted "Hemiptera" to the bugs, placing the remainder of the old Linnean assemblage among the Coleoptera.

The following shows the synonymy according to priority; I would be sorry, however, to have to adopt "Siphonata" instead of "Homoptera."

Order: HEMIPTERA, Linné, 1758 (part); Geoffroy, 1762.
type *Cimex*.

= *Rhyngota*, Fabricius, 1775 = *Rhynchota*, Burmeister, 1835.

Suborder 1: HETEROPTERA, Latreille, 1802, type *Cimex*.

= *Dermaptera*, Retzius, 1783 (nec De Geer, 1773).

= *Hemiptera*, Westwood, 1838.

2. SIPHONATA, Retzius, 1783, type *Cicada*.

= *Homoptera*, Latreille, 1802.

I have recently been led to look into the nomenclature of the Sternorrhynchous forms, &c., and find that these researches do not altogether confirm the changes of recent years; in particular it is to be regretted that Mrs. Fernald, in her recently published 'Catalogue of the Coccidæ,'†—a work for which, as a whole, one can find nothing to say but admiring thankfulness for the labour devoted to it during so many years,—it is to be regretted that the typical genus *Coccus* has been grievously misapplied.

* See 'Entomologist,' xxxiii. pp. 238-43. (1900).

† Bul. Hatch, Exp. Sta. Mass. Agr. Coll., 88, pp. 1-360. (1903).

The genera *Aphis*, *Chermes*, and *Psylla* also, in most recent works, are evidently incorrectly determined. *Aphis* was founded by Linné in 1758, and continued undivided till 1801, when Lamarck fixed *ulmi*, Linn., Geoffr., Fab., as the type. This, however, is not *Lachnus ulmi* (Linné), as the addition of "Geoffroy, Ins. i. p. 494, t. 10, f. 3," shows, but is the so-called "*Tetraneura ulmi*, De Geer,"* and therefore, not being a Linnean species, cannot affect the type-fixation. The next year Latreille selected *sambuci*, Linné, as the type, this being available.

Chermes has by some been included in the Coccidæ, by others in the Aphidæ, and by others in the Psyllidæ; the latter is the correct position, and the family should be known as Chermidæ.†

Founded in 1758, the genus was turned aside by Geoffroy in 1762,‡ to include part of *Coccus* (because "Kermes" was the Oriental name for certain Coccidæ!) and *Psylla* formed instead. The latter is therefore a pure synonym of *Chermes*, Linn., the type being *ficus*, Linn., Lam., 1801.

Coccus was divided by Geoffroy in 1762 (see footnote), and although, owing to the local faunistic nature of the work, the type cannot be definitely fixed, he certainly must be considered to restrict it to those forms which are characterized as "*Fœmina insecti formam servans*." The species he removes to *Chermes*, Geoffr., nec Linn., are characterized "*Fœmina folliculi formam induens*"; it is from this group that Mrs. Fernald has unfortunately chosen the type of *Coccus* (Canad. Entom. xxxiv. 232).§

As the type of *Coccus*, Lamarck (1801) selected "*Coccus mexicanus*, Lam. = *Coccus cacti coccinelliferi* Lin., *Coccus cacti*, Fabr., Ent. (= *Dactylopius coccus*, Costa, which it must supersede, the cochennille insect becoming *Dactylopius mexicanus*

* The correct name is *Tetraneura gallarum-ulmi* (De Geer).

† I do not think it is necessary to form this name as Chermidæ. Most entomologists appear to believe that the stem of all words modelled on the third declension of Latin nouns must end in *t* or *d*; hence *Tingitidæ*, instead of *Tingidæ*; *Gerrididæ*, instead of *Gerridæ*; *Chermetidæ*, instead of *Chermidæ*; *Aphididæ*, instead of *Aphidæ*, &c.

‡ A great deal of unnecessary trouble has been caused by the dispute as to the validity of Geoffroy's names. But even if Geoffroy, 1762, be denied, Müller, 1764 (except *Tetigonia*), or Geoffroy in Fourcroy, 1785, must be accepted. I do not know one single Hemipterous genus that is at all vitally affected; for *Tetigonia* one simply has to write 1785 instead of 1762, and, for the rest, "Müller, 1764," instead of "Geoffroy, 1762."

§ As regards the definite fixation of the type of *Coccus*, Geoffroy is excluded, first because he specifies no type, and secondly because his work is not a "Histoire abrégée des Insectes," but a "Histoire abrégée des Insectes qui se trouvent aux environs de Paris;" therefore, apart from types specially noted, or species of genera thereon erected, has no more value for our present purposes than a mere list of captures, the inclusion of certain species being due simply to the faunistic nature of the work. This applies also to Schranck, Scopoli, and other authors, often cited in the type-fixation of genera. "Historical" type-fixation can come into force from 1794 (as regards Hemiptera) when Fabricius instituted the type-system.

(Lam.)), but this is not available, the species being non-Linnean. In fact, I cannot find that the type of *Coccus* has ever been fixed, or that any species but the true Linnean *cacti* is available.

In a recent publication ("Homopteren aus Nordostafrika gesammelt von Oscar Neumann" (Zool. Jahrb., Abth. für Syst., xix. pp. 761-82, pl. 44 (1903)), Dr. A. Jacobi criticises my usage of *Tetigonia*, Geoffroy (p. 779), and proposes a new name—*Tettigoniella*. I regret that I cannot accept this. It is true that the name "*Tetigonia*" is very near the dermapterous genus *Tettigonia*, Linné, but not more so than, say, *Chrysocoris* (Hemiptera) and *Chrysocorys* (Lepidoptera), both of which are generally accepted. Geoffroy nowhere refers to Linné's genus, and indeed mentions that he has used the word for the "procigales" because other authors have employed it for these insects. As to the validity of the Geoffroyan genera, there is not the unanimity for their rejection that Dr. Jacobi supposes; in Hemiptera I mention the names of Champion (also a coleopterist!), Cockerell, Mrs. Fernald, Horváth, E. Saunders, and Stål, among those who accept them; and in fact—especially when genera like *Cylindrostethus* and the other extra-European genera founded by Fieber in the 'Europäischen Hemiptera,' and the Latreillean genera of the 'Précis' (1796), openly erected without any species, are universally accepted—I fail to see how they can be rejected. In the case of *Tetigonia* it was omitted by Müller (1764), but again maintained by Geoffroy in Fourcroy's 'Entomologia Parisiensis' (1785). Thirty-three species are included therein under *Cicada* (pp. 184-93), but on p. 193 he differentiates *Tetigonia* with two ocelli from *Cicada* with three, and adds in a footnote to the latter, "Adduntur hic characteres *Cicadae vere* Gallo-provincialis, nostræ *Cicadae Tetigonia* vocatæ oppositi."

The following synonymy will summarize the above:—

1. APHIS, Linné, 1758; type *sambuci*, Linn., Latreille, 1802.
2. CHERMES, Linné, 1758 = *Psylla*, Geoffr., 1762 = *Homotoma*, Guérin, type *ficus*, Linn., Lamarek, 1801.
3. COCCUS, Linné, 1758 = *Llaveia*, Signoret, 1875; type *cacti*, Linn., Kirkaldy, 1904.
4. CALYMMATA, Costa, 1828 = || *Chermes*, Geoffroy, 1762, nec Linné; = || *Coccus*, Fernald, 1903, nec Linné.
5. DACTYLOPIUS MEXICANUS (Lamarek) = *Coccus mexicanus*, Lam., 1801 = *Coccus cacti*, auctt. = *Dactylopius coccus*, Costa, Fernald.
- 6. TETIGONIA, Geoffroy, 1762 = *Tettigoniella*, Jacobi, 1903; ○ type *viridis* (Linné), Latr.

A few other notes on Mrs. Fernald's Catalogue are as follows:—

- P. 18. To *Drosicha* add *Drosycha*, Signoret (5), v. 351 (1875).

N.B.—This is a synonym of *Monophleba*, Latr., as will be noted shortly by Prof. Cockerell.

P. 31. To *Callipappus* add *Gallipappus*, Sign., 1869, Ann. S. Ent. France (4), ix, 103.

P. 46. To *Opisthoscelis* add *Ophistoscelis*, Sign., *op. cit.* 100.

P. 57. For *Amorphococcus* read *Amorphococcus*.

P. 82. The first citation of *Dactylopius tomentosus* is *Coccus tomentosus*, Lamarck, 1801, Syst. Anim. sans vertèbres, p. 299. N.B.—Lamarck himself gives this as a synonym of *Coccus sylvestris*, Thiéry de Menonville, Traité de la Culture du Nopal, &c., p. 347 (1787), a work unknown to me.

P. 98. To *Calceolaria*, Mask., add var. *minor*, Mask., Tr. N.Z., Inst. xxix. 322.

P. 146. To *Ericerus* add *Eurycerus*, Tozzetti, 1867, Mem. Soc. Ital. iii. no. iii., 19.

P. 158. To *Chelonicoccus* add *Chelinococcus*, Signoret, 1869, Ann. S. Ent. France (4), ix, 104.

P. 166. For “*perforatus*” (line 13) read “*Coccus perforatum*, Kirkaldy,” &c.

P. 167. For *Coccus* use CALYMMATA (see above).

P. 180, no. 906. Read EULECANIUM CURTISI, n. n. = ||*Coccus aceris*, Curtis nec Fabricius.

P. 209. RHIZOBIUM, Tozzetti, 1867, is “described”, though very scantily, and must replace *Lecanopsis*. The type, though not specified, can be nothing but *rhizophila* (Signoret).

P. 244. Replace “*Leucaspis*, Targ.,” by the following:—

LEUCODIASPIS, Signoret, 1869, Ann. Soc. Ent. France (4), ix, 99; type *signoreti*.

= || *Leucaspis*, Sign., 1870, *op. cit.* x. 100.*

P. 314. *Major*, Cockerell nec Maskell.

P. 318. *Parlatoria*, Sign., 1869, *op. cit.*, ix, 99; types *zyzyphus* (sic!) and *proteus*.

N.B.—The genus *Encarsia* was listed under Coccidæ in error in the Zool. Record for 1895!

P. 256, line 29. “*Ohia*” is a species of *Metrosideros*.

P. 277, line 11 from bottom. After “Full.” read “Trans. Ent. S. London, 1897, p.”

P. 304. LEPIDOSAPHE COCKERELLIANA, n. n. for *Mytilaspis albus*, Cockerell, nec Maskell, 1896.

I regret that I cannot admit any names taken from Tozzetti's Catalogue of 1868,† this work being to me of academic interest only, consisting as it does of a confused series of names, without descriptions or intelligible references. The correct references to the following genera appear to me to be as follows:—

* *Leucaspis* is preoccupied by Burmeister, 1835, Arch. für Naturg. i. pt. 2, p. 47.

† Mrs. Fernald cites “1869,” but it is quoted in part of Signoret's “Essai,” published in the volume for 1868.

P. 49. *Asterolecanium*, Signoret, 1869, Ann. S. Ent. France (4), ix. 101.

P. 59. *Pollinia*, Sign., l. c.

P. 246. *Fiorinia*, Sign., l. c., 99; type *arceæ* (Bdv.), Sign. = *fioriniæ* (Tozz.).

P. 295. *Targionia*, Sign., l. c., 100.

P. 301. *Aonidia*, Sign., l. c., 99; type *aonidium* = *lauri*.

P. 304. *Mytilaspis*, Sign., l. c., 99 (syn. of *Lepidosaphes*).

P. 128. *Pulvinaria*, Tozzetti, 1867, Mem. Soc. Ital. iii., no. iii. 30.

The subfamily nomenclature of the Coccidæ seems to be as follows:—

P. 15 (1). COCCINÆ = *Monophlebinae*, Fernald.

P. 28 (2). *Margarodinae*.

P. 33 (3). *Ortheziinae*.

P. 38 (4). *Phenacoleachiinae*.

P. 38 (5). *Conchaspinae*

P. 39 (6). KERMINÆ = *Dactylopiinae*, Fernald.

P. 123 (7). *Tachardiinae*.

P. 127 (8). CALYMMATINÆ = *Coccinae*, Fernald.

P. 213 (9). *Diaspinae*.

P.S.—*Pseudococcus* was founded by Westwood in 1839 (?). (Introduction, ii. 447), type *cacti*, (nec Linn.); it is therefore a pure synonym of *Dactylopius*, Costa; for *Pseudococcus*, Fernald (p. 96), *Trechocorys*, Curtis, must be used, type *adonidium* (nec Linn.) = *longispinus* (Riley).

Honolulu.

NEW RHYNCHOTA-CRYPTOCERATA.

By W. L. DISTANT.

Fam. NAUCORIDÆ.

Subfam. NAUCORINÆ.

Macrocoris transvaalensis, sp. n.

Head and pronotum ochraceous, punctured with piceous, the pronotum with two central piceous lines, which join a subbasal transverse piceous line, behind which the piceous punctures are absent; scutellum black; hemelytra piceous, apex of clavus and anterior lateral margin of corium ochraceous; connexivum ochraceous, with piceous spots at the incisures; body beneath and legs ochraceous, lateral areas of the mesosternum more or less piceous; head shorter than its breadth between eyes, which are anteriorly somewhat convergent; lateral margins of the pronotum broadly convex; scutellum finely granulose; anterior femora more or less strongly fuscously punctate. Long. 10 millim., lat. post. pronot. angl. $5\frac{1}{2}$ millim.

Hab. Transvaal; Lydenburg Distr.

Differs from *M. flavicollis*, Sign., by the much narrower head,

the more convex lateral pronotal margins, spotted connexivum, &c.; from *M. convexus*, Montand., it is distinguished by the head between the eyes being broader than long.

Thurselinus, gen. nov.

Body ovate, moderately convex; head very large, almost as long as pronotum, rather more than one-third broader between eyes than long; eyes elongate, much narrowed, and slightly converging anteriorly; labrum rounded, reaching base of second joint of rostrum; pronotum scarcely broader than base of hemelytra, only slightly narrowed anteriorly, its anterior angles not reaching the middle of eyes; scutellum short, about twice as broad at base as long; hemelytra complete; mesonotum medially carinately longitudinally elevated; anterior femora amplified, inwardly notched towards base.

Differs from *Macrocoris* by the much larger and broader head; anterior angles of pronotum not reaching the middle of eyes; shorter and broader scutellum, &c.

Thurselinus greeni, sp. n.

Ochraceous; scutellum brownish ochraceous; eyes black; basal area of pronotum with some longitudinal piceous lines; body beneath and legs uniformly ochraceous; membrane clouded with pale fuscous; head almost as long as pronotum, its anterior margin convex, with a somewhat flattened central basal space; pronotum transversely striate near anterior margin, very finely and obscurely punctate, the lateral margins slightly rounded, a little narrowed anteriorly, but almost subparallel; scutellum very finely granulose, broadly subtriangular; connexivum piceous at segmental incisures. Long. 6 millim.

Hab. Ceylon; Keshewa (E. E. Green).

ON SOME NEW GENERA AND SPECIES OF
HYMENOPTERA.

By P. CAMERON.

(Concluded from p. 210.)

VESPIDÆ.

ODYNERUS CAMICRUS, sp. nov.

Black; the base of the abdomen with two sutures at the base, the space between them laterally depressed, smooth, shining, and marked with stout keels; the under side of the scape, the clypeus, a mark, longer than broad, and with the lower half much narrowed above the antennæ, the inner half of the eye incision, a large triangular mark on the sides of the pronotum, the tegulæ, post-scutellum, and a line on the first and second abdominal segments, yellow. Legs black, the knees, the four front tibiæ anteriorly, and the tarsi, testaceous. Wings hyaline, the radial cellule smoky, the base hyaline. ♂. Length, 7 mm.

Hab. Darjeeling.

The apical two joints of the antennæ are rufous below, and the last also at the sides. Front and vertex closely rugosely punctured, and sparsely covered with silvery pubescence. Clypeus longer than broad, above broadly rounded, the apex shortly stoutly bidentate; the space between the teeth shallow. Pro- and mesothorax rugosely punctured, the top of the pro- smooth, above margined. Metanotum rugose in the middle at the base, the sides reticulated; the apex smooth; the sides stoutly margined; the metapleuræ, on the upper half, irregularly, rather weakly reticulated. Apical half of first abdominal segment punctured and covered with a fulvous pile, the rest impunctate; the second, third, and the base of the fourth segments closely punctured; the other segments impunctate. The band on the first segment is only on the top; on the second it goes all round. The head and thorax are thickly covered with white pubescence; the base of the mesopleuræ below the middle is impunctate, and there is at the top of the smooth part a short deep oblique furrow; the pro- smooth at the base, the smooth part behind having a distinct border; the apex of the metanotum is deeply roundly hollowed; the apex of the pronotum is very little developed in front of the mesonotum, and is transverse; the apex of the scutellum is almost crenulated. There is a small mark behind the eye.

Cannot well be confounded with any of the Oriental species of the section *Ancistrocerus*.

FOSSORES.

CRABRO TRICHIOSOMUS, sp. nov.

Black; a narrow line on the scape of the antennæ, a broad interrupted line on the pronotum, two irregular transverse marks on the second, third, and fourth abdominal segments—the marks becoming smaller successively—yellow; the head, thorax, and base of abdomen thickly covered with long white, the rest of the abdomen with shorter white pubescence. Legs black, the hinder calcaria large, broad, and yellow. Metanotal area coarsely punctured and deeply furrowed in the middle. Wings hyaline, the nervures and stigma black. ♀. Length, 7 mm.

Hab. Himalayas.

Front and vertex closely and distinctly punctured, the latter more strongly than the front. Front, face, and clypeus covered with silvery pubescence; the face keeled in the middle, the apex of the clypeus broadly rounded. Mesonotum and scutellum closely and distinctly punctured; the post-scutellum is more shining and less strongly punctured. Metanotum deeply depressed at the base; the depression with some stout striæ; the basal area has the punctures larger and more irregular on the sides; the apical slope is coarsely, closely transversely striated. The upper part of the propleuræ is obliquely, the lower longitudinally striated, its apex stoutly keeled. Mesopleuræ punctured, but not strongly or closely; the meta- closely, strongly obliquely striated. Abdomen closely punctured, the second, third, and fourth segments depressed at the base and apex; the first slightly, but distinctly longer than the width at the apex; the pygidium closely, but not strongly, punctured. The apical abscissa of the radius is obliquely bent.

This species will form a new section in Bingham's "B" and *c*, defined by the metanotal area being punctured.

CRABRO AGYCUS, sp. nov.

Black; the base of the median segment with three areas, the central being narrower than the others; the scape of the antennæ, the mandibles above, a broad line on the pronotum, the scutellar tubercles, a large mark on the sides of the scutellum at the base, broadest on the outer side, and with a semicircular small incision in the middle, the post-scutellum, a line on the first abdominal segment, narrowed in the middle, a small mark on the second laterally, and large broad ones on the third to fifth segments, the tubercles, a small mark behind them, and a larger longer mark, narrowed below, behind that, lemon-yellow. Legs yellow; all the coxæ and trochanters, the basal half of the fore femora above and the lower part, the greater part of the middle femora below, the hinder, except on the top, the four hinder tibiæ in front, and at the top and bottom behind, black; the tarsi infuscated towards the apex. Wings hyaline, the stigma fuscous, the nervures darker. ♀. Length, 8 mm.

Hab. Himalayas.

Front and vertex smooth and shining; the front covered with golden pubescence; the vertex sparsely pilose; the face and clypeus covered with silvery pubescence. Mandibles smooth and shining; the two apical teeth stout, clearly separated. Metanotal areas smooth; the central is of almost equal width; the inner lateral become roundly narrowed towards the apex; the outer lateral of almost equal width; the sides of the apical slope are bordered by keels. Pleuræ smooth and shining; the tubercles large, projecting. The mesopleural furrow is obscurely crenulated. Pygidium keeled laterally, and bearing large punctures. The hinder tibiæ become gradually thicker towards the apex, and bear some stout spines; their metatarsus not thickened.

This species may be known from the recorded Indian species by the five clearly defined areas on the base of the median segment.

BEMBEX MEGADONTA, sp. nov.

♂. Black; the apical two-thirds of the clypeus, labrum, mandibles, except at the apex, the outer eye-orbits narrowly, the apex of the pronotum broadly, the edges of the propleuræ all round, the lower narrowly, the sides of the metanotum, the apical half of the meta-pleuræ, and the apices of the scutellum and post-scutellum, pale yellow. Abdomen pale yellow; a broad black band on the base of the first segment, narrowed and roundly incised at the apex, a broad band on its apex, roundly narrowed laterally, two spots broader than long on the base of the second, an irregular band on its apex, a band on the base of the third with two dilatations in the middle, a narrow band on its apex, dilated in the centre; similar bands on the fourth segment, the basal half of the fifth, the band with a shallow incision on the apex, and the whole of the apical two segments, black; the ventral segments black, their sides at the apex irregularly marked with yellow. Legs yellow, all the coxæ, a broad line on the top of the first pair of

femora above, the four posterior broadly above and below to near the apex, a line on the centre of the fore tibiæ before and behind, and on the four posterior, black. Wings hyaline; the costa and basal nervures testaceous, the others darker. ♂. Length, 17 mm.

Hab. Darjeeling.

Head and thorax thickly covered with white longish pubescence; the first transverse cubital nervure is largely dilated backwards below; on the second ventral segment is a large tooth, which commences near the base and extends to the apex; it is roundly broadly curved, and becomes narrowed towards the apex below; the apical part is also roundly curved; the sixth segment is broadly raised in the middle; this raised part becomes narrowed towards the apex, which is rounded, and has there an oblique slope. The last segment is punctured, except in the centre, where there is a smooth shining band; it becomes gradually narrowed towards the apex, the sides being only indistinctly curved. The basal joint of the front tarsi is stout, and is longer than the three following united; the spines are long, pale, and moderately stout; the middle femora are irregularly toothed; the teeth are more numerous on the basal half. Eyes almost parallel, only very slightly divergent below. Front keeled. The yellow bands on the abdomen are sulphur-yellow on the base, paler on the apex.

In Bingham's arrangement the species would come, in his table, close to *B. pinguis* and *B. fossoria*. Characteristic is the very large tooth on the second ventral segment.

NOTES AND OBSERVATIONS.

THE TUBERCLES OF *SATURNIA CARPINI*. — Referring to Mr. Lucas's note respecting the colour of the tubercles in larvæ of *S. carpini* (*ante*, p. 240), I may mention that a half-grown larva of this species was brought to me about six weeks ago, having bright crimson tubercles. After having kept it a week or so, it changed its skin, and also the colour of its tubercles, which were dull orange from then up to the time of its death, which occurred when quite full-grown.—G. F. LYLE; Brockenhurst, Sept. 12th, 1904.

LARVÆ OF *ARCTIA CAIA* SWARMING IN THE SCILLY ISLANDS. — During my stay in the Scilly Islands from the middle of May to the middle of June last, all the larger islands were teeming with thousands of the larvæ of *A. caia*. They swarmed in such myriads that no vegetation escaped them—they fed on any green stuff available from stonecrop to shrubs of various kinds. Bracken seemed in great demand, also various other ferns, &c. Every path and roadway was dotted all over with their crushed bodies.—F. W. FROHAWK.

APORIA CRATÆGI ab.—During last July I found the headquarters of a batch of imagos of *Aporia cratægi*, and captured twenty specimens. There were no varieties, but one of them turned out to be a little bit of a freak, for the hind margins of each wing had two curves instead of one. At first I thought it was a crippled specimen, but it proved

to be quite perfect, though it has an odd appearance.—J. P. BARRETT; St. John's Villas, Margate, Sept. 11th, 1904.

GYNANDROUS EXAMPLE OF LYCÆNA (POLYOMMATUS) ÆGON. — On July 12th I took a fine gynandrous specimen of *L. (P.) ægon* near Canterbury, the left side being male and the right side female.—F. A. SMALL; 95, Westgate, Canterbury.

LYCÆNA ÆGON, var. CORSICA, IN NORWAY. — In may be worth mentioning that, on July 4th last, whilst collecting on the eastern coast of the Christiania Fjord, I took three specimens of this interesting female form of *L. ægon*. I seem to remember that the same, or a very similar, form was taken two or three years ago in the north of England. It would appear, therefore, that M. Bellier de Chavignerie was a little premature in naming it var. *corsica*. — R. S. STANDEN; Lindfield, Sussex, Sept. 6th, 1904.

ENNYCHIA CINGULATA "ASSEMBLING." — On August 20th last Lieut. Jacobs and myself were collecting at Box Hill, and had taken during the day a few *E. cingulata*, including a female. About seven in the evening we sat down to rest and to examine our captures—amongst them the female *E. cingulata*, which was pinned in the box. We were surprised to see in a few minutes numbers of male *E. cingulata* flying around the box. We could have taken a hundred or more, but secured a good series each.—PERCY RICHARDS; "Wellesley," 11, Queen's Road, Kingston Hill, Aug. 23rd, 1904.

THE VARIATION OF EPINEPHELE TITHONUS.—It may be interesting to note that while looking over *E. tithonus* on the downs a few miles from Portsmouth, it was observed that a large proportion of the specimens possessed an additional black spot on the upper surface of the hind wings. This peculiarity was noticed in both males and females, and varied from a mere speck in some specimens to a well-defined spot in others; and in one instance at least this extra spot was white-centred.—G. M. RUSSELL; 3, Homefield Road, Chiswick.

POLIA CHI var. OLIVACEA AND APLECTA NEBULOSA var. ROBSONI.—During a visit to Bishop Auckland, Durham, last year (August 28th to September 8th), walls, &c., were examined, as opportunity offered, for *Polia chi*. Judging by results, however, the species seemed to be scarce, and only eight specimens were noticed, two of these being var. *olivacea*. One of the latter was a female, and furnished about one hundred and twenty eggs. A few larvæ hatched on March 28th, 1904, and others continued to come out until April 9th, when there were altogether some ninety larvæ feeding on dock and dandelion. The remaining ova dried up. At the time the latest larvæ hatched the earliest were about $\frac{3}{4}$ in. long. During May there appeared to be some sort of sickness among the larvæ, and a good many died. Sallow and groundsel were then substituted for the previous food, and the result was marked improvement in the condition of the larvæ. The number finally reaching the pupa state was not ascertained, but forty-three fine examples of *olivacea* emerged between July 10th and 22nd. As no other imago had appeared, on August 1st, the earth was turned out, and on examination ten or a dozen dead pupæ were observed. It is to be regretted that, owing to the various causes adverted to, only

about a third of the batch attained the perfect state. The male parentage was unknown, but, as all the offspring exactly resembled the female parent, it may reasonably be assumed that the male was also of the form *olivacea*. Ova were also obtained from a typical female, but these unfortunately proved infertile. On April 9th, fifty larvæ of *Aplecta nebulosa* were received from Mr. Thompson, of Chester, who informed me that they were from ova deposited by a black female. They were supplied with dock, dandelion, and primrose, but seemed to feed chiefly on the first-named plant. The majority of the larvæ pupated, and on June 21st three moths appeared, all of the black form (var. *robsoni*); these were followed by one black and two darkish grey specimens on the 23rd. Eighteen other examples emerged during the remainder of the month, and two early in July; all these being of the darkish grey form. Fourteen dead pupæ were subsequently found in the breeding-cage. — RICHARD SOUTH; 96, Drakefield Road, Upper Tooting, S.W.

SOME NOTEWORTHY OCCURRENCES IN 1904. — Imagines of *Smerinthus populi* were pretty common in this district during late May and early June this year. On July 20th I captured a fine female in the garden, and on the same date three full-grown larvæ were feeding on a willow-bush in the same place. Several larvæ of the species were noted on the willow-bush on August 17th; these ranged in size from quite small to half-grown. On July 23rd I attended the Field Meeting of the South London Entomological and Natural History Society at Byfleet, where I found a specimen of *Acronycta leporina*. It was resting at the foot of a birch-tree, and apparently had recently emerged. The same day, and at the same place, Mr. Carr beat out some half-grown larvæ of the species. At Oxshott, on August 6th, I found a beautifully fresh male specimen of *Lophopteryx camelina* at rest on a tree-trunk, and on July 30th there was a nearly full-grown larva on the willow-bush previously mentioned. On July 17th a worn female *Timandra amataria* was netted at Oxshott, and a few ova deposited by her were shaken out into an uncovered plant-frame in which a number of weeds luxuriated. On August 19th a small but very fresh male specimen of the species was found in the frame, resting among the weeds.—RICHARD SOUTH.

PAPILIO (IPHICLIDES) PODALIRIUS AS A BRITISH INSECT. — Although I do not for a moment consider that *P. (I.) podalirius* is to-day a British insect, I think perhaps readers of the 'Entomologist' would like to know that there are at least two specimens in different collections which have been caught in England since the time of Haworth. Newman figures it in his 'British Butterflies,' remarking that it was "recorded as British by Haworth, but no British specimen is known." Two British examples, however, have lately come under my notice; one in an old Somersetshire collection, taken near Bridgwater about 1833; and the other, now in my possession, captured at Marlborough in 1870 by a boy at the College. This specimen is, unfortunately, somewhat damaged, which rather points to its being an immigrant; but the Bridgwater specimen is in excellent condition, and is, I think, undoubtedly British, although its progenitors may have been of continental origin. If any reader of the 'Entomologist' knows of any other British examples, I should be very pleased to hear from him. — T. GRISTOCK BRANDE; Southampton, Sept. 21st, 1904.

CAPTURES AND FIELD REPORTS.

DEILEPHILA LIVORNICA IN KENT.—On Sept. 5th a friend brought me a living specimen of *Deilephila livornica*, taken on the Prince of Wales Pier at Dover. It was at rest on the railway metals; one wing was damaged at the tip—evidently it had been run over by the train that morning, otherwise it is a very good specimen. — F. P. ABBOTT; 8, Beaconsfield Road, Dover, Sept. 9th, 1904.

DEILEPHILA LIVORNICA, SPHINX CONVULVULI, &c., IN SOUTH WALES.—On Sept. 11th a splendid specimen of *Deilephila livornica* was discovered at rest upon the turf of a small headland here. The insect is in excellent condition, but for slight rubbing on the upper part of the thorax. As I had only seen dried specimens before, my delight may well be imagined on being presented with a living local specimen of this hawk-moth. It appears to be a male, and measures 3·4 inches from tip to tip of its wings. It was caught by Mr. Bedingfield, of Broad Street, Barry, and added by him to my collection. Sphinges seem well represented here, as I have secured two specimens of female *Sphinx convolvuli* during August, and *Smerinthus ocellatus* in June; while several of the commoner smaller sphinges have been seen by me, but not caught. Larvæ of *S. populi* were freely found on poplars, but all were ichneumonid. — G. J. RANDELL; "Rushbank," Barry, Glamorgan.

SPHINX CONVULVULI IN BERKSHIRE.—On August 25th last I had the pleasure of finding a fine specimen of *S. convolvuli* quietly resting on my front door-step. I have never met with the species here before, though the alleged food-plant of the larva is much too abundant. — W. H. WARNER; Fyfield, near Abingdon, Berks.

SPHINX CONVULVULI AND LEUCANIA ALBIPUNCTA IN DEVONSHIRE.—It may interest the readers of the 'Entomologist' to know that I took a fine specimen of *Leucania albipuncta* on Aug. 29th at sugar near here; and I learn that others, as well as specimens of *Sphinx convolvuli*, have been taken lately in this district. — E. D. MORGAN; 8, Luscombe Terrace, Dawlish, Devon.

SPHINX CONVULVULI IN DERBYSHIRE. — On September 5th I had a specimen of the above brought me in very fair condition, which had been found by a friend of mine here—Little Eaton. This makes the third I have seen this season, taken in this district—one at Langley Mill, one at Bakewell, and now this one—and all of them males. — JOHN HILL; Little Eaton.

SPHINX CONVULVULI IN ESSEX. — Specimens of this species have occurred sparingly in different parts of the country during the past few weeks. One was brought me to-day which was found at rest on a window-sill at Rayleigh, Essex, Sept. 17th.—F. W. FROHAWK.

SPHINX CONVULVULI IN HAMPSHIRE.—On September 11th last a fine specimen of *Sphinx convolvuli* was taken near Sway, New Forest. — E. AWDRY DOBÉE; Udney Hall, Teddington, Sept. 13th, 1904.

SPHINX CONVULVULI IN LANCASHIRE. — On September 10th I took a fine perfect specimen of *S. convolvuli*. It was at rest on the summer-

house door in our garden, exposed to the full blaze of the afternoon sun. It was excessively sluggish, and I transferred it to the killing bottle without the slightest difficulty.—HAROLD S. LEIGH; Brentwood, Worsley, near Manchester.

SPHINX CONVULVULI IN MORAY.—Mr. W. Taylor, Lhanbryde, has sent me a fine specimen of this moth, taken at Lossiemouth, in Elginshire, about Sept. 12th last.—HENRY H. BROWN; Cupar-Fife.

SPHINX CONVULVULI IN SOUTH YORKSHIRE.—On August 26th a fine example of this species was captured on some linen left on a clothes-line all night in a garden at Wincobank, a suburb of Sheffield. It was securely impaled on two large common pins; the wings also were slightly rubbed in the handling before it was given to me.—W. BROOKS; Thundercliffe Grange, near Rotherham, Sept. 10th, 1904.

SPHINX CONVULVULI, &c., IN SURREY.—A fine specimen of *Sphinx convulvuli* was taken recently on *Nicotiana affinis*, and one or two have been seen since. The larva of *Smerinthus ocellatus* has been very plentiful here this autumn. Eight or nine were taken on a small shrub of *Salix alba*, and single specimens seen frequently during first week in September.—WM. DELVES, JUN.; Horeham Road, Sussex.

SPHINX CONVULVULI IN WALES. — On August 17th last I took two specimens of *S. convulvuli* at Fairbourne, Merionethshire. On the following evening I saw six more, all hovering over the flowers of *Nicotiana*. Unfortunately they were all rather worn. Although I saw a few specimens late in the evening, they were most frequent about 7 p.m. — N. G. HADDEN; "St. Elmo," Avenue Road, Malvern, Sept. 18th, 1904.

SPHINX CONVULVULI AT WALMER.—A fine specimen of the above was brought to me to-day. It appears to be freshly emerged, though rubbed from handling. Another was taken by a friend in Deal.—R. A. JACKSON; Chavily Farm, near Hollingbourne.

COLIAS EDUSA IN CORNWALL.—On Sept. 17th I took a female *Colias edusa* on some sandhills near the sea. It was in perfect condition, and there had been a gale blowing for three days from the west, and the wind was blowing very strongly when I took the specimen. It must have been bred near the place where I found it, as it could not have flown far against the heavy wind. The locality was about ten miles north of Newquay. — L. A. M. RILEY; St. Petroc Minor, St. Issey, Cornwall.

COLIAS EDUSA VAR. HELICE, &c., IN DEVON.—Whilst collecting at Dawlish, South Devon, on Aug. 12th, I caught sight of a *Colias edusa* perched on an oak-leaf in a lane, and to my surprise, on netting it, I found it to be a magnificent specimen of the var. *helice*. On searching a good many clover-fields, I could not see any other example of the species, although a small boy at Teignmouth told me he had taken a few *C. edusa* and one specimen of *helice* in a clover-field near that town. During my four days' visit I also obtained five *Callimorpha hera*, including two of the yellow variety (*lutescens*), in grand condition, and a nice set of *Bryophilu glandifera*. — H. O. WELLS; 42, the Avenue, Gipsy Hill, London, S.E., Aug. 30th, 1904.

COLIAS EDUSA IN ESSEX.—During August I visited acres of lucerne and clover, but found *edusa* very scarce, seeing only one specimen on Aug. 9th near Wickford, and three apparently freshly emerged specimens on Sept. 1st. One was seen at Waterford on Aug. 23rd, and I have heard of a few others having been seen in the southern counties. F. W. FROHAWK.

COLIAS EDUSA IN HAMPSHIRE.—I saw about half a dozen examples of *C. edusa* flying along the undercliff at Barton-on-Sea. They were frequently noticed settling on the gravel of the cliff, and when in this position were most difficult to distinguish from their surroundings.—G. F. LYLE; Brockenhurst, Sept. 12th.

COLIAS EDUSA AND C. HYALE IN KENT. — On Sept. 3rd, at Chatham, I came upon some *C. edusa* in a clover-field, and took nine specimens in fine condition; yesterday I visited the same field, expecting to find more *C. edusa*, but not one was to be found. I took, however, twenty-nine *C. hyale*, all quite good. I have never before found the two species on the same ground.—F. A. PARRY; Longport, Canterbury.

COLIAS EDUSA, C. HYALE, SPHINX CONVULVULI, &c., IN KENT.—Autumn butterflies have not turned up here in any numbers. *C. edusa* was captured as early as Aug. 4th, and several specimens were seen. On the 4th inst. I noticed six specimens here. Only one *C. hyale* has been observed, and that was flying on the beach. Worn specimens of *Pyrameis cardui* have been seen from March till July, when their successors appeared, only in small numbers. I have just had *Sphinx convulvuli* brought to me—a wreck. *Macroglossa stellatarum* is rather plentiful.—T. P. BARRETT; St. John's Villas, Margate, Sept. 11th.

COLIAS EDUSA IN SOUTH WALES.—Four male specimens of this butterfly were captured by me in the same field here on Aug. 27th last. Several others were seen. On Sept. 17th I saw flitting rapidly past me on a steep declivity in this neighbourhood a splendid example of *C. edusa*. It disappeared over some bushes ahead of me. About half-a-mile further on, while about 40 ft. on the side, I perceived below me, flying very swiftly before the wind, either the same insect or another, and, following it from my vantage ground, saw it very suddenly settle about 200 yards from where I first noticed it. Hurriedly approaching, I found it egg-laying on birds'-foot trefoil (*Lotus corniculatus*). Before I could net it, I saw it fly about three yards away and deposit another egg. I then quickly effected its capture, and conveyed it home with the eggs it had laid. At ten o'clock this morning (Sept. 18th) I watched the butterfly being aroused from its slumber on a growing plant of trefoil, on which I had placed it overnight and covered with gauze. Its first movement was to wipe its palpi (!) several times with its fore feet, and then, after ineffectual attempts to escape, it fell among the trefoil and immediately laid an egg by arching its abdomen up highly, with wings hanging downwards. At 11 o'clock ten eggs were laid. At 5 p.m. it fed greedily of honey on the gauze, and laid fifteen eggs immediately afterwards. Altogether I can count about fifty eggs, all laid to-day, and each laid singly, with one exception, when two were laid side by side. Is not this proof of the double-broodedness of *C. edusa* as a Welsh native, and not a blown-

over specimen? The spot where the capture was made is very sheltered for about a mile, and always warm, facing direct south across the Bristol Channel. As the insect is alive, well, and vigorous, I hope to obtain more eggs.—G. J. RANDELL; "Rushbank," Barry, Glamorgan.

COLIAS EDUSA IN SUSSEX.—This butterfly was plentiful during August at Bognor, and I took about a dozen specimens of each sex in splendid condition.—M. JACOBY; 1, The Mansions, Hillfield Road, West Hampstead.

COLIAS HYALE IN WILTSHIRE.—I saw a specimen of this insect on Salisbury Plain on Aug. 21st.—N. MANDERS (Major, R.A.M.C.); Netheravon, Salisbury.

HELIOTHIS PELTIGERA AT BOGNOR.—I captured a specimen of this moth at dusk flying over wild flowers. It is the first record of the species at that locality, according to Mr. Guernonprez, the resident naturalist there.—M. JACOBY; 1, The Mansions, Hillfield Road, West Hampstead.

VANESSA ANTIOPA IN KENT.—One specimen captured at Dymchurch while fluttering outside a window of a bungalow on July 26th, as recorded by Mr. J. S. Mackintosh in the 'Field' of Aug. 6th.—F. W. FROHAWK.

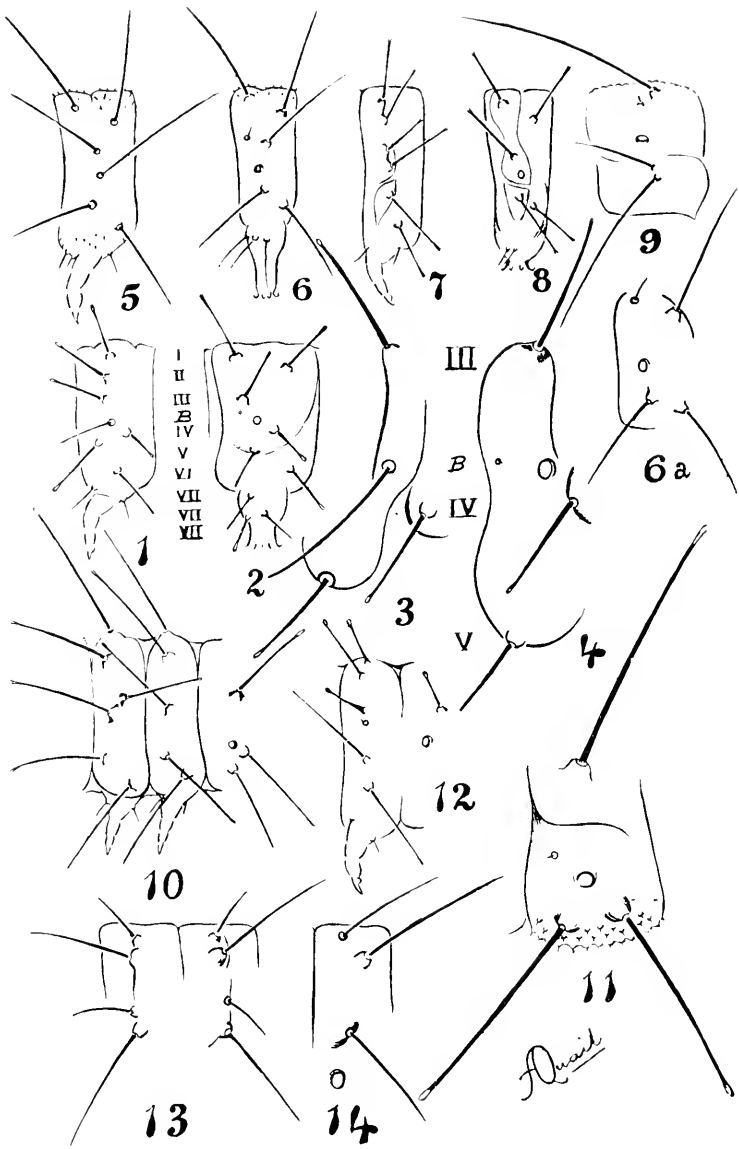
LYGRIS (CIDARIA) RETICULATA IN WESTMORELAND.—I have much pleasure in recording the capture of a specimen of *C. reticulata* near Lake Windermere, Westmoreland. The specimen (a female) was taken on July 30th, and measures $1\frac{3}{16}$ in. (30 millim.) in expanse.—PAUL CORDER; 13, Albion Road, South Hampstead, N.W., Sept. 4th.

STAUROPLUS FAGI IN NORTHAMPTONSHIRE.—I captured a specimen of *S. fagi* in Northants this year.—H. TURNER; Earl's Barton, Northants, Sept. 7th, 1904.

NOTES FROM THE NEW FOREST.—*Sarothripus undulatus (revayana)*: While beating oaks and beech for larvæ yesterday, in one of the large enclosures in the New Forest, if I had had my net with me, I might have captured two or three dozen of this species without much difficulty. I did not see *Pevonea cristana*. Larvæ this year seem plentiful as compared with last season. Among the larvæ obtained were ten *Notodonta trimacula (dodmea)*, and four *Stauropus fagi*, with many commoner things.—W. McRAE; Bournemouth, Aug. 28th, 1904.

ABUNDANCE OF *CATOCALA NUPTA*.—While motoring along the York Road on Sept. 13th and 14th, I was struck by the abundance of *C. nupta*. I only saw those at rest on telegraph-poles, and between London and Peterborough I must have seen dozens, and these all on the south side of the poles. In many places there were two or three quite close together. Had I been able to examine the northern side of the poles, also trees, palings, &c., the number would doubtless have been greatly increased.—B. HARVEY-JELLIE; Hartlepool.

LARVÆ FEEDING ON *CASTANEA VULGARIS*.—On Aug. 30th last I beat out larvæ of the following species of Lepidoptera from sweet chestnut: *Dasychira pulibunda*, *Hylophila prasinana*, *Lophopteryx camelina*, *Acronycta psi*, *Moma orion*, *Amphidasys betularia*, and *Tephrosia extersaria*.—G. F. LYLE; Brockenhurst.



TUBERCLES OF LEPIDOPTEROUS LARVÆ.

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ON THE TUBERCLES OF THORAX AND ABDOMEN IN FIRST LARVAL STAGE OF LEPIDOPTERA.

BY AMBROSE QUAIL, F.E.S.

(PLATE IX.)

THIS is an interesting subject to which for some years I wished to pay attention, but paucity of material and time prevented. Larvæ of Lepidoptera have certain tubercles placed on the segments in approximately definite positions, and the single seta-tubercles of the first larval stage which prevails in many groups appears to be a primitive condition. Some have only single seta-tubercles in all stages (larval)—Hepialidæ, Cossidæ, Noctuæ, Geometræ, &c. Sometimes the first larval stage only has single seta-tubercles—Pieridæ, Sphingidæ, &c.; often in later stages with multisetiferous tubercles—Nymphalidæ, Arctiadæ (*Nystemera*), &c. More rarely in the first larval stage some tubercles have more than one seta—Liparidæ (*Porthesia*), Lachneidæ (*Lasiocampa*), &c.

Dr. Dyar established the value of the larval tubercular arrangement as an aid to classification of Lepidoptera, and gave us a system of identification numbers for the abdominal tubercles based on the adult larval stage; this is in general use. In duplicate the abdominal segments have the tubercles numbered from the anterior one near the medio-dorsal line downwards i to viii (fig. 2); the last being ventral, and vii including more than one seta on the base of abdominal feet; *tubercle vi* is not usually present in the first larval stage.

One *must* study the *first larval stage* when the condition and arrangement of the tubercles is most primitive; conclusions based on later larval stages when the tubercles are slightly, but nevertheless, specialized may only mislead.

The prothoracic tubercles exceed in number, and their arrangement differs widely from, the other thoracic tubercles.

The meso- and post-thoracic tubercles approximate in number, differing in arrangement from the abdominal tubercles, are not usually treated as homologous with them. This probably is due to the earlier opinion of Dr. Dyar, who did not consider them to be so, and gave a different set of identification numbers. Later authors, using Dyar's work as a foundation, repeat the formula. Apparently this has been done in the 'Catalogue Lep. Phalænæ,' vol. i., thus: meso- and post-thorax adult characters, "a sub-dorsal tubercle i with two hairs ($i_A + i_B$); ii with two hairs often separate ($ii_A + ii_B$); iii, iv, v in line iv and v conjoined; vi subspiracular with one or two hairs. . . . In first stage . . . tubercles iii and iv of thorax and vi of abdomen absent."

Dr. Dyar now admits* the thoracic and abdominal tubercles are homologous, but because it is *fourth* in sequence makes ii_B of thorax = iv of abdomen. I submit the homologue of ii_B of thorax is a minute anterior supraspiracular tubercle of abdomen, called by me iii_B ; that Dyar's iii of thorax = a subspiracular tubercle of abdomen; and so on. As stated by my friend Mr. Bacot (*ante*, p. 94), my iii_B "is of very general, if not universal, occurrence on the abdominal segments of lepidopterous larvæ"; but I persist in my opinion, and after examination of more material in the first larval stage, the conclusion is more irresistible that it is correct.

When the system of numbering the abdominal tubercles originated, the minute tubercle (iii_B) was overlooked, or considered of no importance; but in *Melanchra*, second stage (figs. 3 and 4), the positions, by actual measurement, of the fourth thoracic (ii_B) and my iii_B are identical in longitudinal line. Furthermore, ii_B , equally with iii_B , is invariably above the spiracular line (figs. 5, 6, 7, 8, 10, 12, 13, 14). Indeed, the positions of larval tubercles are not absolutely fixed in the Lepidoptera, the characteristic dorsal trapezoidal pattern of the

abdomen, formed by i and ii thus $\begin{matrix} & & \cdot ii \\ & & \vdots \\ i & & \cdot ii \\ & & \vdots \\ & & \cdot ii \end{matrix}$, is subject to modification; and in Psychidæ the pattern is reversed, thus $\begin{matrix} & & \cdot ii \\ & & \vdots \\ & & \cdot ii \\ & & \vdots \\ i & & \cdot ii \end{matrix}$.

Hepialidæ (fig. 5) first larval stage has the trapezoidal pattern on meso- and post-thorax; my notes give *Pterophorus* also. But the corresponding tubercles of the thoracic segments are usually one above the other, but in longitudinal line with i and ii respectively of abdomen—Cossidæ (fig. 7), Pieridæ, Tineidæ, &c.

In Hepialidæ, tubercle iii_B has a longer seta than usual (fig. 6a), and in later stages the tubercle is normal in size and seta. The various positions of iii_B may here be pointed out, as shown in Hepialidæ (fig. 6a), Tineidæ (fig. 9), and Rhopalocera (fig. 11). iii_B is always minute, so far as my observations go, and often extremely difficult to detect (except in Hepialidæ).

* 'Entomologists' Record,' vol. xiii. p. 40.

Although the meso- and post-thoracic segments of the first larval stage are usually duplicates—Hepialidæ, Cossidæ, Noctuæ, Pyralidæ. Some evidence of the identity of ii_B of thorax with iii_B of abdomen may be observed in Rhopalocera (*Pieris*, *Terias*); the former is present on mesothorax, but absent, or minute, on post-thorax; while in *Plutella* (fig. 12) the fourth tubercle of the mesothorax is normal, but marvellously reduced on the post-thorax to a minute tubercle similar to iii_B of abdomen, affording what appears to be a complete gradation.

I have attempted to show in the foregoing, that in the first larval stage, above the line of spiracles, there are four separate normal tubercles on the meso- and post-thoracic segments, which are identical with three normal and one minute tubercles on the abdominal segments—this is clearly shown in the illustrations of *Zeuzera** (figs. 7–8) larvæ kindly sent me by Mr. Littler, of Tasmania—and should be known by the same identification numbers, thus i, ii, iii, iii_B—the latter is necessary to prevent confusion; the two tubercles below the line of spiracles are unquestionably iv and v. Usually, if not invariably, the anterior subspiracular tubercles of both thorax and abdomen are higher than the post-subspiracular in the first larval stage, curiously in later stages among Noctuæ (figs. 1–2) the posterior subspiracular is the highest.

I commend anyone to a study of the Lycænidæ first larval stage. It does not come within the scope of the present paper, as the tubercles, though with single seta only, are more numerous than our more usual and accepted primitive form; but the first abdominal segment has a tubercular arrangement like that of the meso- and post-thoracic (*Lampides*), an alteration taking place on second abdominal segment among the subspiracular tubercles—clearly thoracic and abdominal tubercles are homologous.

EXPLANATION OF PLATE IX.

FIG.

1. *Melanchra mutans*, Second larval stage, mesothorax, × 80.
(Identification numbers of tubercles.)
2. *M. mutans*, Second stage, third abdominal segment, × 80.
- 3, 4. " " " " showing exact position of tubercles iii, iii_B, iv, v, and spiracle, × 300, on post-thorax and first abdominal segment.
5. *Porina despecta*, First stage, mesothorax, × 200.
6. " " " " third abdominal segment.
- 6a. " " " " tubercles iii, iii_B, iv, v, × 300.

* The number and position of tubercles appear to be the important characters; specialization of setæ is apparently of no general value, and I was in error in attaching importance to certain setæ of *Cossus* (*ante*, p. 94), as the setæ of *Zeuzera* seem to be all that form.

FIG.

7. *Zeuzera eucalypti*, First stage, mesothorax, $\times 200$.
8. " " " " " " third abdominal segment.
9. *Tinea pellionella*, First stage, tubercles iii, iii B, iv, v, $\times 300$.
10. *Pieris rapa*, First stage, meso-, post-thorax, and iii, iv, v, first abdominal, $\times 200$.
11. *P. brassica*, First stage, exact position of tubercles iii, iii B, iv, v, and spiracle, $\times 300$.
12. *Plutella cruciferaurum*, First stage, post-thorax and position of spiracle, and iii on first abdominal segment, $\times 300$.
- 13, 14. *Nesarcha hybreadalis*, First stage, tubercles above line of spiracles, on meso-, post-thorax and first abdominal, $\times 300$.

All figures with anterior direction to the left.

PARARGE ACHINE ON THE MENDEL.

BY THE REV. F. E. LOWE, M.A., F.E.S.

ON several occasions I have been over most of the ground mentioned by Mr. Rowland-Brown in his account of "Butterfly Hunting in S. Tyrol" (*ante*, p. 222). In the main I agree with him that Brenner and Mendel are disappointing. But if insects are not so abundant they are often finer, or show interesting differences when compared with Swiss specimens. The one before me now is *P. achine*. Of a long series, beautifully fresh, taken on the Mendel, July 4th, 1903, I find a uniform difference from any of my other specimens. I have the species from Aigle, Liestal, Waldenberg, Freiburg in B., &c. All these, on the under side of the secondaries, have a broad white irregular band, in which are placed the ringed eye-spots, very much after the manner of *C. arcania*. And such, I suppose, is the type form. But the examples from Mendel have *no* white band, but the eye-spots (perhaps, on the average, larger than in the type) stand in the ground colour, which is, if anything, darker towards the border than in the centre. The white band is represented only by an interrupted faint white streak on the *inner* side of the eye-spots. This, since all mine are alike in their peculiarity, looks like a *local* race, which might be dignified with a varietal name—say "Mendelensis." It would be interesting to know whether Mr. Rowland-Brown's Mendel specimens show the same features. Perhaps, as unfortunately he found it just going over, he did not think it worth taking. An earlier visit would, of course, have given Mendel a better place as regards number of species, notably two nice things—viz., *Libythea celtis* and *Lycena amandus*. Brenner, as a hunting-ground, appears to suffer from chronic bad weather. In 1902 I stayed at the Hôtel Post from 17th to 25th July, and it rained almost without ceasing. In June, 1901, I had only slightly pleasanter impressions, looking at things with an entomologist's eyes.

St. Stephen's Vicarage, Guernsey.

A PRELIMINARY LIST OF THE LEPIDOPTERA OF MALTA.

BY THOMAS BAINBRIGGE FLETCHER, R.N., F.E.S.

THE Maltese group of islands consists of the main island of Malta and the smaller one of Gozo, separated by a narrow channel some three miles in breadth, in which lie two small islets, Conino and Cominotto, whilst off the southern shore of Malta is an isolated rock called Filfala. The area of the whole is some 116 square miles.

The group is situated in latitude 36° north and longitude $14\frac{1}{2}^{\circ}$ east, on a submarine bank which connects Sicily with Africa, and which here divides the Mediterranean into an eastern and a western basin. The distance from Sicily is about sixty miles, and from the nearest part of Africa some two hundred. In former days, there is little reason to doubt, this bank must have formed a land connection between what are now Africa and Sicily, and the Maltese Islands are the insignificant remnants of land, now submerged, which must then have nourished an extensive flora, and have been the home of many remarkable mammals, birds, and reptiles, whose remains have been discovered in the rock-fissures and caves of Malta.

At the present time the flora much resembles that of Sicily. The indigenous mammalia include the hedgehog, rabbit, and weasel. Large numbers of migratory birds visit the islands on their passage across the Mediterranean, but only some half-dozen species remain throughout the year. The reptiles include two snakes (*Coronella austriaca* and *Callopettis leopardina*), and three or four lizards, the commonest of which (*Lacerta muralis*) is to be seen everywhere, running over the fields and clambering about the walls.

A noteworthy feature is the low elevation and flatness of the islands. Although the land rises considerably in the western parts, the highest point in the group is only some 800 ft. above sea level. The country is, however, traversed in many districts by deep and narrow valleys, which have apparently been scooped out of the rock by torrential rains. These valleys, locally called "wieds," are the principal home of the native vegetation, and therefore form the best collecting-ground for the biologist.

Owing to the flatness of the land and the scantiness of the soil, the fields are enclosed by high walls of sandstone in order to protect the crops from the strong winds which often prevail in the winter months. On first approaching from the sea the whole country seems nothing but rock, since these walls are seen rising one above another, and to trudge along a high road is

a most depressing performance, for the route, as a rule, lies between two stone walls the whole way. But, looking down from a hill-top, the whole appearance of the country is changed, for the prospect embraces innumerable little fields, each one cultivated to the utmost foot in the endeavour to support the enormous population of the islands. Yet only some three-fourths of the whole area is under cultivation, the remainder consisting of expanses of bare rock, or of such barren soil as to render agriculture impracticable. Cotton, potatoes, oranges, and cereals appear to be the most important products, but immense quantities of vegetables and fruit are also grown, and no account of Maltese agriculture would be complete without mention of the clover-like "sulla" (*Hedysarum coronarium*), whose dark purple flower tinges the fields in March and provides rich store of nectar for numberless insects.

In Valletta and its suburbs there are several small public gardens, the most important of which are the two contiguous gardens, called Maglio and Argotti, at Floriana. These are usually gay with flowers throughout the year, and prove a great attraction to many species of Lepidoptera, such as *P. atalanta* and the Sphingids. There is a larger garden in the country at San Antonio, but this is principally devoted to orange-culture.

A short railway running from Valletta to the ancient capital, Notabile, will be found of service in order to reach various collecting-places in the centre of the island. As already indicated, the most suitable localities are to be found in the various wields, the best of which is that running from the back of the Marsa out to Boschetto. Within the narrow confines of this valley will be found nearly every indigenous species of plant and insect.

The climate of Malta may be divided roughly into a wet and a dry season, the former extending from mid-November to mid-February, and the latter comprising the remainder of the year. From May to September rain is rare, and the rainfall is mainly limited to passing showers during the remaining months of the dry season. The average annual rainfall is about 19 inches. Frost and snow are very rare phenomena, the winter temperature seldom falling below 40° F., whilst in summer it seldom rises above 90° F. The average annual temperature is 64·5° F.

The average temperature from March to May is 60·8° F.; June to August is 72·6° F.; September to November is 68·4° F.; December to February is 54·4° F. The diurnal variation of temperature is much greater in the country than in the towns. Few regions are less liable to calms than Malta, especially by day. A calm of twenty-four hours' duration has, perhaps, never been experienced there in the memory of man. In the winter a very strong north-east wind (locally called "Gregale"), sometimes blows for two or three days at a time, and it is chiefly to

guard against this wind that it is found necessary to enclose the fields with walls.

From February to May is the period during which the entomologist in Malta will find most occupation. At this time the ground is carpeted with greenery; the fields are full of the early crops of beans and cereals and the dark scarlet-flowered "sulla," and are brilliant with poppies, buttercups, narcissi, asphodel, and other wild flowers; even the rocky sides of the wields are gay with clumps of the Mediterranean heath sprouting from cracks and crannies in the bare rock.

After about the end of May the vegetation begins to get withered up, and in some places dies away altogether, leaving a bare, dusty, glaring surface of rock which looks, as if it never had supported, nor ever again could bring forth, even the most hardy of weeds. But with the first rains, at about the end of September, vegetation makes a sudden reappearance, and previously dusty wastes soon become green with grass, and especially with a species of *Oxalis*, which springs up everywhere with marvellous rapidity, and which has a remarkably lush and verdant appearance.

With regard to this drying-up of the herbage in the summer months, it seems at present a mystery what becomes of some of the larvæ at this period of the year. The wild fennel, for instance, absolutely disappears so far as green leaves are concerned. It must, therefore, be supposed that the imagines do not oviposit until the autumn, or that the ova do not hatch out until vivified by the autumn rains. In this connection, it is a notable fact that my pupæ of *Diloba cæruleocephala*, which pupated at the beginning of April, did not emerge until December, and then only when damped; in Central Europe, of course, this species emerges in August. In this case, however, it is desirable to have an observation on the period of emergence in a state of nature, as the time may have been affected by the conditions inseparable with confinement.

Some evidence as to the manner in which species modify their habits in response to the environment produced by the long spell of dry weather is afforded by the length of time during which most species (and presumably specimens) are on the wing. The life of an individual *Epinephele jurtina* (*ianira*), for example, appears to average about six months, as compared with less than half that period in England. This is, doubtless, of value to the economy of the species, as it is important that the eggs should not be deposited until the autumn, when the young larvæ may feed on the fresh vegetation brought forth by the early autumnal rains. Any such modification in length of life, of course, would be of value only to species whose pabulum (*e. g.*, grasses) is not available as food during the dry weather. Cabbages, for instance, do not dry up very

much, so we find *Pieris brassicæ* with three or four broods as compared with the two broods in England.

At present our knowledge of the Lepidoptera of Malta is very incomplete, the list of local forms only including a little over a hundred species; but new ones are constantly turning up, and it is safe to say that the list when properly worked out will not be far short of two hundred indigenous species. Considering the size of the islands, this seems a fair average for the Palearctic Region as a whole; but, taking into consideration their southerly position and proximity to both Europe and Africa, the number seems a small one. This is probably due to two main causes—firstly, to the flatness of the country, whereby only one fauna can find a foothold (cp. Sicily and Corsica with their rich yield of mountain species); and, secondly, to the comparative scarcity of vegetation, a large proportion of the islands being practically a barren waste.

The published information on the Lepidopterology of Malta is most disappointingly scanty. Of the thousands of naval and military officers and visitors who have resided in the island during the British occupation, scarcely one seems to have taken any interest whatever in the local fauna, and by the native inhabitants very little appears to have been accomplished. If these brief notes help to arouse any interest in the subject, their purpose will have been served.

In his 'Notes of a Naturalist in the Nile Valley and Malta' (1870), Professor Leith Adams gave us a most interesting book on the Natural History and Archæology of Malta; in it occur long lists of fossils and birds and fish, but he contented himself with a few casual and almost useless notes on the insects.

Dr. Gavino Gulia published, in 1858, a book entitled 'Corso Elementare di Entomologia Maltese, data nel Palazzo di St. Antonio,' but it is quite valueless so far as relates to information concerning indigenous species, owing to the inaccuracy of the determinations. Indeed, it only seems to have been intended as a popular introduction to entomology in general.

In 'Nature' of January 2nd, 1890, is a short article by Mr. Fraser on Maltese butterflies; in this he mentions some half-dozen species by their English names, and notes their small proportions as compared with Continental examples, an observation, by the way, which is quite inaccurate; amongst others he names the "Tortoiseshells" as flying about the garden of his hotel at Sliema. These, however, must have been *Pyrameis cardui* (or less probably *P. atalanta*), which are often so torn and bleached by exposure to wind and weather as to render them almost unrecognizable.

(To be continued.)

"UNDESCRIBED RHYNCHOTA."

BY W. L. DISTANT.

Fam. LYGÆIDÆ.

Subfam. HETEROGASTRINÆ.

IN 1874 Scott founded the genus *Chauliops*, for the reception of a Japanese Lygæid. This species I have also received from Ceylon, collected by that indefatigable economic entomologist Mr. E. E. Green, and I have figured it in my second volume on the 'Rhynchota of British India' (p. 36, fig. 24). I have now to add a West African species, which I have just discovered in some specimens collected for me by my late friend D. G. Rutherford, some years ago.

Chauliops rutherfordi, sp. n.

Pale brownish or brownish luteous; pronotum with two discal longitudinal fasciæ widened anteriorly, and a spot near each lateral posterior angle piceous; scutellum, excluding basal lateral margins, piceous; corium with an inner discal series of very coarse dark punctures, and with its apical margin piceous; membrane dark fuscous; antennæ pale luteous, first and fourth joints pale castaneous; femora castaneous, their bases luteous; tibiæ and tarsi luteous, bases of the tibiæ castaneous; scutellum strongly attenuated posteriorly, its lateral margins concavely sinuate, its apical half longitudinally sulcate. Long. $2\frac{1}{2}$ millim,

Hab. Old Calabar (D. G. Rutherford).

This species, in general appearance, is closely allied to the eastern *C. fallax*, Scott, but is structurally separated by the totally different shape of the scutellum.

Fam. PHYMATIDÆ.

Glossopelta dudgeoni, sp. n.

Black; anterior lateral margins of pronotum, connexivum, a longitudinal spot on each side of head beneath, rostrum, sternum—excluding lateral angles, abdomen and legs, stramineous; head granulose, area of the ocelli and the eyes castaneous; antennæ with the first joint robust, granulose, almost as long as second and third joints together, second and third joints short, more slender than the other joints, subequal in length and attenuated at their bases, fourth joint incrassate, pyriform, with its base castaneous, and longer than second and third together; pronotum with the anterior lobe finely and sparingly granulose, the posterior lobe very coarsely punctate, with two ventral discal ridges commencing on posterior margin of anterior lobe, anterior lateral margins strongly crenulate, posterior angles produced, their apices broadly concavely truncate; scutellum very finely densely and obscurely punctate, and with a central longitudinal raised line; connexivum broadly and convexly produced to second segment and then sinuately narrowed to its apex. Long. 10. Exp. pronot. angl. 4. millim.

Hab. Brit. India; Kangra Valley—4500 ft. (G. C. Dudgeon).

Allied to *G. truncata*, Dist. by the truncate posterior angles to the pronotum, but these in *G. dudgeoni* are more produced and outwardly concavely sinuate; the scutellum is less sinuate near base, and the colour is also of a very distinctive character.

Fam. HENICOCEPHALIDÆ.

Henicocephalus pugnatorius, sp. n.

Ochraceous; hemelytra a little more opaque, incomplete, its apical area fuscous, and only reaching to about half the length of abdomen; head with the antecular area slightly shorter than the postocular, transversely constricted behind eyes, transversely carinate between antennal bases, antennæ somewhat longly and finely pilose, second and third joints longest, almost subequal, the second slightly longer; middle and posterior lobes of pronotum about equally wide, middle and anterior lobes with a central longitudinal incision, base of posterior lobe concave; scutellum with a subobsolete central longitudinal carination on each side of which at base is a small foveation; hemelytra with prominent longitudinal veins; rostrum clothed with fine long hairs or setæ, almost reaching eyes; body long and slender; anterior and posterior femora somewhat strongly incrassate. Long. 4 millim.

Hab. Cape Colony; Hex River Valley.

Mr. Mally, who forwarded specimens of this species, contributed also some observations on the pugnacious character of the males (*cf.* 'Zoologist,' 1903, p. 466). Dr. Bergroth (Wien. Ent. Zeit. xxii. p. 254), who has recently described a species from Port Elizabeth, tells me, on a comparison with a specimen of *H. pugnatorius* I sent him, that the two species are quite distinct.

Fam. NEPIDÆ.

Cercotmetus fumosus, sp. n.

Uniformly somewhat dark fuscous; head with a pointed tubercle between the eyes; hemelytra not reaching the apex of the fifth abdominal segment, the coriaceous portion with some amount of brownish ochraceous pubescence; abdominal appendages mutilated in type; abdomen beneath strongly keeled, the keel continued on sternum as far as anterior coxæ; prosternum with two long deep furrows; intermediate and posterior tibiæ and tarsi inwardly moderately prominently pilose; pronotum as long as intermediate femora.

By the last character this species is to be distinguished from *C. asiaticus*, in which the intermediate femora are longer than the pronotum; from *C. pilipes*, Dall., it is separated by the much less longly pilose inner margins of the intermediate and posterior tibiæ, and the darker colour; the central carination of the body beneath only reaches the anterior margin of the metasternum, which also separates it from *C. compositus*, Montand. Length excl. abdom. append. 47 millim.

Hab. Ceylon (Green—Brit. Mus.).

BIBLIOGRAPHICAL AND NOMENCLATORIAL NOTES
ON THE HEMIPTERA.—No. 3.

BY G. W. KIRKALDY.

ALTHOUGH we have recently been favoured with Waterhouse's 'Index Zoologicus,' how much we are still in need of a thorough revision of generic names is evident by the following list of names not included in either Scudder or Waterhouse. I have added various notes which appear to me likely to be of use, and also a list of seventy-seven names, which must be employed instead of the same number previously used, which were preoccupied. It is remarkable that a considerable proportion of these come from the subfamily Membracinae (sometimes raised to family rank), which has quite recently been monographed either wholly or in great part; the authors, however, did not, apparently, deem it necessary at the same time to revise the nomenclature.

I have completed a "Nomenclator Hemipterorum," which may possibly be published at an early date.

(A). NECESSARY NEW NAMES.

FAM. APHIDÆ.

Panaphis = *Ptychodes*, Buckton, 1881; *Dryaphis* = *Dryobius*, Koch, 1855-7; *Hamadryaphis* = *Kessleria*, Lichtenstein, 1886; *Dryopia* = *Endeis*, Koch, 1855; *Hyadaphis* = *Siphocoryne Passerini*, 1863 (not 1860) (type *xylostei*).

FAM. TETIGONIDÆ.

Alchisme = *Triquetra*, Fairmaire, 1846; *Mysolis* = *Norsia*, Walker, 1869; *Thrasymedes* = *Phacusa*, Stål, 1864; *Gelastogonia* = *Oxygonia*, Fairmaire, 1846 (subg.); *Boëthoos* = *Parmula*, Fairmaire; *Eteoneus* = *Anomus*, Fairmaire; *Kronides* = *Argante*, Stål, 1867; *Sundarion* = *Pyranthe*, Stål, 1867; *Zanophara* = *Daunus*, Stål, 1866; *Gelastophara* = *Hypselotropis*, Stål, 1869; *Hesperophara* = *Leptophara*, Stål, 1869; *Dioclophara* = *Lucilla*, Stål, 1867.

FAM. FULGORIDÆ.

Kareol = *Anagnia*, Stål, 1861; *Colgorma* = *Temora*, Kirkaldy, 1901; *Proutista* = *Assamia*, Buckton, 1896; *Xosophara* = *Rhinortha*, Walker, 1851 (subg.); *Southia* = *Paulia*, Stål, 1860; *Florichisme* = *Pacilostola*, Stål, 1870; *Micromasoria* = *Cona*, White, 1879; *Bergias* = *Bergia*, Scott, 1881; *Hesperophantia* = *Carthæa*, Stål, 1861; *Thanatophantia* = *Alisca*, Stål,

* I have much pleasure in thus remembering my friends, Mr. R. South and Mr. L. B. Prout, who have given me much assistance in clearing up several nomenclatorial points.

1871; [✓]*Gelastophantia* = [✓]*Cyarda*, Stål, 1866; [✓]*Xosias* = [✓]*Eteocles*, Stål, 1866; [✓]*Amfortas* = [✓]*Gastrinia*, Stål, 1859; [✓]*Gelastyra* = [✓]*Cibyra*, Stål, 1861; [✓]*Thanatophara* = [✓]*Clonia*, Walker, 1858.

Fam. CICADIDÆ.

Xosopsaltria = *Pydna*, Stål, 1861.

Fam. CHERMIDÆ.

Trichohermes = *Trichopsylla*, Thomson, 1877.

Fam. MIRIDÆ.

Metriorrhynchomiris = *Metriorrhynchus*, Reuter, 1875 (subg.); *Zanchisme* = *Schizonotus*, Reuter, 1892; *Kalania* = *Baracus*, Kirkaldy, 1902; *Bertsia* = *Berta*, Kirkaldy, 1902; *Reuterista* = *Brachybasis*, Reuter, 1900; *Ragnar* = *Melanocoris*, Champion; *Poronotellus* = *Poronotus*, Reuter, 1871.

Fam. REDUVIDÆ.

Westermannias = *Westermannia*, Dohrn., 1860; *Isachisme* = *Algol*, Kirkaldy, 1901; *Peregrinator* = *Microleptes*, Stål (subg.); *Mestor* = *Lamus*, Stål, 1859; *Brontostoma* = *Mindarus*, Stål, 1859.

Fam. TINGIDÆ.

Phyllochisme = *Physatochila*, Leth. & Sev., 1896; *Mæcenus* = *Tingis*, Leth. & Sev., 1896; *Gelchossa* = *Leptostyla*, Stål, 1873.

Fam. PYRRHOCORIDÆ.

Antilocoris = *Pygæus*, Uhler, 1894; *Botocudo* = *Salacia*, Stål, 1874 (subg.); *Probergrothius* = *Odontopus*, Laporte, 1832; *Peggichisme* = *Davila*, Distant, 1893; *Polychisme* = *Imbrius*, Stål, 1874.

Fam. LYGÆIDÆ.

Althos = *Margus*, Dallas, 1852; *Nauichisme* = *Nesiotes*, Stål, 1873 (subg.); *Dersagrena* = *Dalcera*, Sign., 1863; *Elachisme* = *Elathea*, Stål, 1867; *Ouranion* = *Bardistus*, Dallas, 1852; *Mari-chisme* = *Phidippus*, Stål, 1876; *Hæckelia* = *Microphyllia*, Stål, 1870.

Fam. CIMICIDÆ.

Damellera = *Damelia*, Distant, 1899; *Montandoncus* = *Gabonia*, Montandon, 1894; *Atelias* = *Aetius*, Distant, 1900; *Texas* = *Melanostoma*, Stål, 1872; *Grimgerda* = *Macrothyreus*, Fieber, 1852; *Menuthias* = *Ilerda*, Stål, 1869; *Bergthora* = *Cryptoporus*, Uhler, 1877 (subg.); *Xosa* = *Anubis*, Stål, 1864; *Acanthidiellum* = *Acanthidium*, Montv., 1864; *Stictocoris* = *Stictonotus*, Stål (subg.); *Liodermion* = *Lioderma*, Uhler, 1871 (subg.); *Gueriniellus* = *Platycoris*, Guérin, 1838; *Burma* = *Paramecus*, Fieber, 1852; *Eupododus* = *Pododus*, Am. Serv. 1843; *Ochisme* = *Trachyops*, Dallas, 1851; *Dolichisme* = *Tetrisia*, Walker, 1867.

(B.) OBSERVATIONS ON THE ABOVE NAMES AND OTHER NOTES.

Fam. LYGÆIDÆ.

Cletus, Stål = *Peniscomus*, Sign., 1861 (Ann. Soc. Ent. France, p. 66).

Fam. TINGIDÆ.

Champion has restricted (Tr. Ent. Soc. London, 1898, p. 58) *Stephanitis*, Stål, to *mitrata*, Stål, without providing a proper name for the remaining Palearctic species. The type of *Tingis* is *cardui*.

Lethierry and Severin admit (1896, Cat. Gén. Hém. iii.) as separate genera, *Monanthia*, *Phyllotochila* (sic!), *Tropidochila* (sic!), and *Physatochila* (sic!); the three latter were founded by Fieber as subgenera of the first, which was not, at the same time, also subgeneric. It is obvious that three genera only can result from these four names, and that one must sink as homotypical with *Monanthia*; this will be *Physatocheila*, which contains the type of *Monanthia*; the synonymy will be:—

Monanthia, Lep. Serv., 1825; *teehii*, 1832 = *Physatocheila*, Fieber, 1844.

Onchochila, Stål, 1874.

= subg. (*Phyllochisme*, Kirkaldy = || *Physatochila*, Leth. & Sev.

Tingis, Fabr., 1903, t. *cardui* (L.), Fabr.

= *Phyllotocheila*) Fieber, 1844; *Macrothyreus*, Westwood, 1841.

= || *Macrocephalus*, Swederus, 1797.

Fam. ARADIDÆ.

Aradus, Fab. = || *Stenopterus*, Sign., 1865.

Fam. CIMICIDÆ.

Erga, Walker, 1868 = || *Axona*, Stål, 1870; *Lelia*, Walker, 1867 = || *Prionochilus*, Dallas, 1850; *Eurysaspis*, Sign., 1851 = *Euryaspis*, Stål, 1876; *Eurus*, Dallas = || *Eurys*, Leth. & Sev.; *Eysarcoris fabricii*, n. n. = || *Cimex melanocephalus*, F. nec. L.

(C.) ADDITIONS TO SCUDDER AND WATERHOUSE.*

Acantischium, Am. Serv., 1843; † *Aphidioides*, Motschulsky, 1856; † *Aphioides*, Rondani, 1847; *Brysocrypta*, Westwood, 1840; *Dakulosphaira*, Shimer, 1866; *Diaphorina*, Loew, 1879; *Asera*, Say, 1832; *Dysepicritus*, Reuter, 1885; *Dimorphella*, Reuter, 1885; *Forda*, Heyden, 1837; *Eurysthethus*, Mayr, 1865; *Embotophora*, Stål, 1853; *Euhadrocerus*, Reuter, 1885.

Gonionotus, *Acotropis*, *Cyllocoris*, *Physodera*, *Melanocoris*, *Psamnocoris*, *Myrmedonobia*, *Tropidostethus*, *Ceratoleptus*, *Myr-*

* Not recently seen.

† Full particulars will be given in 'Nomenclator Hemipterorum.'

mecocoris, *Eusarcocoris*, *Tropidocoris*, *Rhaphidogaster*, *Elasmastostethus*, *Platypus*, *Systolonotus*, *Stethotomus*, *Tmetostethus*, *Piestostethus*, *Piestodorus*, *Harma*, *Aparyphe*, *Cephalotenes*, *Cephalotonus*, *Embolimus*, *Piosomus*—Marshall, 1868. (These are all "emended" spellings properly proposed). || *Arytæna*, *Cybus*, *Dicranoneura*, Douglas & Scott, 1876; [†]*Dikraneura*, Hardy, 1850; * *Pendulinus*, Vieillot, 1816 (Aves); *Ancylopus*, Flor., 1860; *Clinocoris*, Fallén, 1829; *Corixidea*, Reuter 1891 (incorrectly cited *Corixidæ*! by Leth. & Sev.); *Mesocerus*, Reuter, 1888; *Kermaphis*, Maskell, 1866; * *Loewia*, Lichtenstein, 1886 (not *Lowia* ?); *Trama*, Heyden, 1837; *Sacchiphantes*, Ruricola, 1844; *Hoplobates*, Leth. & Sev., 1896; *Phlæophthiridium*, *Rhizophthiridium*, Vander Hoeven; * *Pineus*, Shimer, 1869; *Stictosynechia*, *Orthosolenia*, *Wollastoniella*, Reuter, 1885; *Physatocheila*, *Tropidocheila*, Fieber, 1844; [†]*Stroggylocephalus*, Flor., 1861; *Peniscomus*, Signoret.

(D.) NOTES ON SCUDDER'S 'NOMENCLATOR ZOOLOGICUS.'

P. 2, for *Acanthocephalus*, Lap., read *Acanthocephala*.

P. 43, for *Brachysteles*, Fieb., 1861, read Muls. Reg., 1852.

P. 148, for *Heterotoma* read *Heterotoma*.

P. 186, for *Magoura* read *Megoura*.

P. 95, *Dieretus*, Forst., is *Hym.*, not *Hem.*

P. 337, *Xylococoris*, 1871, not 1879; *Xerobia*, *Hem.*, not *Orth.*

P. 246, for *Phyllopsis*, Löw, read *Psyllopsis*.

P. 278, *Rhizophis*, 1877. N.B.—In the Zool. Rec. v. p. 394 (for 1868), there is cited "*Phylloxera vastatrix* (nuper *Rhizophis*, Planch.)", but I cannot trace any such prior usage.

P. 243, for *Phlegmatoptera* read *Plegmatoptera*.

P. 250, delete *Plagiostylus*.

P. 272, delete *Pycnos*.

P. 312, delete *Telesnemia*.

P. 8, *Ætalion*, 1810, not 1816.

P. 11, *Aleyrodes*, 1795, not 1807.

P. 179, *Livia*, 1798, not 1809.

P. 160, for *Ilburina* read *Alburnia*.

(E.) NOTES ON WATERHOUSE'S 'INDEX ZOOLOGICUS.'

P. 99, *Darthula*, Kirkaldy, not *Dartrula* (nor, as in Zool. Record, *Darrhula*).

P. 1, *Abrieta* not *Abrieta*.

P. 2, *Acanonicus*, 1842, not 1852.

P. 120, *Elatiptus* not valid (mononymic).

P. 3, *Acantholybas*, not *Acantholybas*.

P. 76, *Cicadatra*, *Cicadetta*, *Kolenati*, 1857. Amyot's names are not valid.

P. 136. Signoret spelt his genus, "*Eurysaspis*," and this

* In the English translation these are spelt without the second "h."

was not altered to *Euryaspis* till 1876 (Stål). The Acarid genus *Euryaspis* is therefore not preoccupied.

P. 158, for *Handlirschiella* read *Handhirschiella*.

P. 176, for *Hygyops*, Am. Serv., read "Stål, 1866."

P. 208, for *Macrocephalus*, Swederus, 1887, read 1787.

P. 216, for *Melampsalla* read *Melampsalta*.

P. 276, for *Penthirus* read *Penthicus*.

P. 341, for *Semiotoscles* read *Semiotoscelis*.

P. 358, for *Stronachlachar* read *Sronachlachar*.

P. 372, for *Thaumtopsalia* read *Thaumastopsalia*.

P. 378, for *Tongorina* read *Tongorma*.

P. 287, &c., for *Phyllontochila*, *Campylostira*, and *Orthostira*, read *Phyllontocheila*, *Campylosteira*, and *Orthosteira*.

Pp. 371 and 376. *Tettigia*, Am., and *Tibicina*, Am., are not valid.

P. 371, for *Thalasia* read *Thlasia*.

P. 260, delete *Pachygrontha*, Reuter, 1881. This was due to a double misapprehension in the 'Zoological Record.'

NOTES AND OBSERVATIONS.

ARGYNNIS EUPHROSINE, var.—I received from a correspondent a very fine variety of this species, taken by him in the New Forest this season. It somewhat resembled that figured in Entom. xxvii. p. 1, fig. 1; but in my specimen the black area of hind wings is rather more extended, and the discoidal spots are larger, one on each wing being quite a blotch. The insect is a male in first-class condition, and was sent to me unset soon after capture.—E. SABINE; Erith.

EPINEPHELE JURINA AB. ANOMMATA (Verity). — I have a specimen of *Epinephele jurina* (*janira*), male, which agrees with the form described by Mr. Verity (*ante*, p. 56) as a new aberration. I captured the specimen near Brockenhurst on June 23rd, 1904. The usual apical pupilled spot is absent from the fore wings, and there is only a slight indication of the tawny patch usually present. On the under side of the hind wing there are only minute black specks in place of the usual spots.—PHILIP J. BARRAUD; Bushey Heath.

SPRING DRAGONFLIES FROM THE SOUTH OF FRANCE. — I have received from Dr. T. A. Chapman a small collection of dragonflies made by him in the spring, in the South of France. From Hyères (March 20th till April 17th) there are one female *Brachytron pratense*; one female *Pyrhosoma nymphula*; seven *Ischnura elegans*, one male only; and eighteen *Sympyga fusca*, five males and thirteen females. All except the last are British species, which in early seasons do not appear with us till the latter part of April, seldom so early; in fact, I have no record of *I. elegans* till May 17th. At Draguignan, from May 3rd till May 8th were taken one male *Gomphus simillimus*; three *Libellula depressa*, one teneral male and two females; and one female *Cordulegaster*

annulatus, rather immature. Of these *G. similimus* is the only species not found in Britain. Perhaps the most interesting of all is *Sympyena fusca*, an agrionid about as large as our *Agrion puella*, but brown in colour. It is the only dragonfly that is known to hibernate in the imaginal condition, though perhaps *Sympetrum scoticum* may sometimes do so on the Continent; it does not, however, do so here. — W. J. LUCAS; Kingston-on-Thames.

ALLEGED OCCURRENCE OF PAPILIO PODALIRIUS AT MARLBOROUGH.—Referring to Mr. Brande's note on this on p. 264, I may say that I was at Marlborough College as a boy from 1868 to 1873, and had charge of the Entomological Section of the Natural History Society during most of that time; whose records I still supervise. No report of any such capture was made to me or the officials of the Society at the time, nor does any record of it appear in our Reports, published annually, and giving all captures of Lepidoptera every year in an unbroken succession from 1865. So striking a capture could not have been unnoticed, and would not have been concealed. I have no doubt the supposed record is erroneous, and due to some confusion of memory in the mind of the owner, after the lapse of years. — E. MEYRICK; Thornhanger, Marlborough, Oct. 5th, 1904.

EREBIA GLACIALIS VAR. NICHOLLI, Obth., AND LAMPIDES TILICANUS, Lang.—In my note on "Butterfly Hunting in the South Tyrol" (p. 224), I remarked that the form of *Erebia glacialis* taken by me on the Groste Pass, above Campighi, merited a distinctive varietal name. Mr. Hamilton Druce has since drawn my attention to a note published by Mr. Charles Oberthur in the 'Entomologist's Monthly Magazine' for 1896, p. 3, where the butterfly—then thought to be a form of *E. melas*—was given by him the name of var. *nicholli*. Notwithstanding the later identification with *E. glacialis*, the validity of this name is of course unaffected, and our captures should therefore have been designated accordingly. I may add that Mr. Lemann tells me he took both *Lampides tilicanus* and *Lycana orion* in some numbers at Botzen during the last days of July. I have myself observed *tilicanus* at St. Martin-Vésubie, in the Alpes-Maritimes, at about 3200 ft.; and Mr. F. B. Norris records a single specimen at 6000 ft., above Boscolungo, in the Apennines (Entom. xxiv. 228); so that, while not precisely an alpine species, it must be regarded as occurring on the high mountain regions as well as on the lower lands, therein resembling its congener, *L. baticus*, which in some localities—for example, the Pyrenees—ranges from sea-level up to 8000 ft., as noted by Mr. H. J. Elwes on the Pic du Midi (Trans. Ent. Soc. 1887, p. 391), though I am unable to trace a similar distribution in the Swiss alpine regions.—H. ROWLAND-BROWN; Oxhey Grove, Harrow Weald, Oct. 13th, 1904.

BRITISH SPECIMENS OF HYDROTEA WANTED.—I propose to publish as soon as possible an account of the British species of *Hydrotæa* (Diptera—Fam. Anthomyiidae), and would be grateful if readers of this magazine would send me for examination any specimens belonging to this genus which are in their possession. All help in this way will be fully acknowledged, and the material returned, labelled with specific names, as soon as practicable.—PERCY H. GRIMSHAW; Royal Scottish Museum, Edinburgh.

CHRYSOPHANUS PHLÆAS AND VAR. SCHMIDTII AT ERITH.—This species has been decidedly scarce this season; but I obtained a few ova from females of the first brood, and reared some sixty imagines—all very normal. From some of these and some captured females I got a much larger supply of ova, and during the month of August had many hundreds of larvæ feeding; but the chilly September weather checked the growth of many of them, so that only two hundred reached the perfect state. Among these imagines is a small series of golden forms, nine in all, which are a striking contrast to the type. I should mention that my son took a very fair male *schmidtii* in one of his expeditions after females of the second brood for ova, and obtained several of this latter sex at the same spot, and most probably *the* one that had paired with said *schmidtii*—hence, I think, these golden forms. Amongst other abnormal forms I bred a large female of the ordinary type, but minus the left fore wing, and with the left hind wing suffused very much after the style of *C. dispar*. The remainder of the larvæ—some hundreds—are many of them half-fed and more, but, I fear, will not get through the coming winter. I judge so from past experience, although I have once got a very small percentage through all right.—E. SABINE; Erith.

ABERRATIONS OF DRAGONFLIES.—With reference to the article by Messrs. F. W. and H. Champion (*ante*, p. 252), I may say that during the second half of July this year I saw a number of olive-coloured females of *Ischnura elegans* at Wicken. A corresponding variety of a more abundant species, I think (*Enallagma cyathigerum*), was also very common; in fact, in thirty-five couples which I saw attached *per collum*, twenty of the females were of the greenish variety. I also saw several green females of *I. elegans* in copulation. I tried to get both species to lay eggs, in the hope of breeding from them, but was unsuccessful. Should anyone be successful in breeding from one of these varieties, valuable results might be obtained on the question of heredity in its relation to sex.—LEONARD DONCASTER; Zoological Laboratory, Cambridge, Oct. 7th, 1904.

CAPTURES AND FIELD REPORTS.

COLIAS EDUSA AT ERITH.—This species has put in an appearance in and around this neighbourhood this autumn, but not in any numbers. The only female netted kindly deposited a few ova, which duly hatched out, and the larvæ fed up on growing white clover, and I have half a dozen pupæ dating from 8th inst. I suppose they will emerge this season. The rest of the larvæ seem to have disappeared save one half-grown specimen.—E. SABINE; Erith, Oct. 20th, 1904.

COLIAS EDUSA IN CORNWALL.—On Aug. 24th I noticed a freshly-emerged male of *Eurymus croceus* (*Colias edusa*) at Donnderry, a small seaside resort midway between Rame Head and Looe.—THOS. BAINBRIGGE FLETCHER; Sept. 25th, 1904.

COLIAS EDUSA IN HAMPSHIRE.—I have seen a few specimens of *C. edusa*, and have heard of others having been observed in this neigh-

bourhood—perhaps a dozen specimens in all.—A. DRUITT; Christchurch, October, 1904.

COLIAS EDUSA AND CIRRHÆDIA XERAMPÉLINA AT BROMLEY, KENT.—On Sept. 11th I saw a male specimen of *Colias edusa* flying in a lane between Bromley and Grove Park, and when sugaring at Bromley on Sept. 1st, I took a very worn *Cirrhædia xerampelina*. The occurrence of these insects so near to London this year is perhaps interesting.—B. W. ADKIN; Trenoweth, Hope Park, Bromley, Kent.

SPHINX CONVULVULI IN SURREY.—I took a fine pair of this insect hovering over *Nicotiana affinis* shortly after dark on Sept. 21st.—A. B. THOMPSON; Garlands, Red Hill, Sept. 26th, 1904.

SPHINX CONVULVULI AT CHICHESTER.—*Sphinx convolvuli* has not been uncommon in this locality during the autumn. The first specimen recorded in my diary was taken on Aug. 6th. The moths continued appearing throughout that month till the beginning of October.—JOSEPH ANDERSON.

SPHINX CONVULVULI AND LAPHYGMA EXIGUA NEAR TUNBRIDGE WELLS. The only specimen of *S. convolvuli* I have seen this year was brought to me at the end of August—a fine male example in very good condition; the largest of that sex I have ever had. The expanse of wings is $4\frac{1}{2}$ in. I also have the pleasure to report the capture of a perfect specimen of *L. exigua* at Southborough on Sept. 23rd, 1903. It is the first I have taken, and I was very much surprised, as I always thought it was a coast insect.—M. M. PHIPPS; Woodside View, Victoria Road, Southborough, Kent.

SPHINX CONVULVULI AND COLIAS EDUSA IN DEVONSHIRE.—A specimen of *S. convolvuli* was taken by my brother off a telegraph-post here on Aug. 25th, and another example was brought to me in a tin by some lads, who found it in some allotment-grounds in this neighbourhood. *Colias edusa* was taken by us on three occasions in August this year (one female and three males).—S. L. & J. WALKER; 3, Goodwin Terrace, Bronshill Road, Torquay, Oct. 13th, 1904.

SPHINX CONVULVULI IN SELKIRKSHIRE.—A specimen of this insect was taken in good condition on a wall in Galashiels on Aug. 18th.—B. WEDDELL; Selkirk.

CAPTURES AT SUGAR AT CHICHESTER.—Sugar has not been very productive here this season. Amongst my captures may be mentioned *Acronyctu aceris*, *A. psi*, *Cucullia verbasci*, *Calymnia trapezina* (one very pale), *Cosmia diffinis*, and *Miana strigilis*—a meagre list, season after season showing little signs of improvement in this mode of collecting. JOSEPH ANDERSON.

CLEORA GLABRARIA, &c., IN DORSETSHIRE.—In July this year I took a very good specimen of *Cleora glabraria* at Carne Wood, near Weymouth, and have reason to believe that this is a new locality for this species. I was beating in one of the footpaths when I captured it, and I have seen no other specimens taken around Weymouth. In the same month I here took four very fresh specimens of *Argynnis paphia*

var. *valesina*. As the New Forest is a favourite locality for both insects, this would lead one to suppose that Carne Wood originally formed part of that large forest, though they are distant from each other about forty miles.—W. A. BOGUE; Spring Cottage, Shepton Mallet, Somerset, Oct. 2nd, 1904.

HELIOTHIS PELTIGERA AT DEAL.—I caught a female *H. peltigera* on the sand-hills at Deal at dusk on June 17th. It was so much worn that I was not quite sure of its identity at the time. However, the moth deposited several eggs, and I reared the larvæ on wild convolvulus till the end of July. The moths came out during the last week in August and the first week in September.—W. S. PEARCE; St. Mogue's, Romsey, Hants, Oct. 11th, 1904.

ACHERONTIA ATROPOS IN KENT.—On Sept. 29th a good specimen of this insect flew towards the light in a greengrocer's shop in the centre of Margate, and was captured without injury. As I have not yet heard of any larvæ or pupæ having been found in the neighbourhood during the present autumn, I am inclined to think it is an "immigrant."—J. P. BARRETT; St. John's Villas, Margate.

TRICHOPTILUS PALUDUM IN SURREY.—On one of our entomological excursions together to Claygate last August, Mr. Arthur J. Scollick netted a "plume-moth" which we both failed to recognize at the time. This I have since identified as a specimen of *T. paludum*, one of the least generally known of the British Pterophoridae, and an addition, I believe, to the Surrey list. Meyrick ('Handbook,' p. 431) gives Surrey to Dorset, Cambridge, York, as the range of the species in this country. Barrett ('British Lepidoptera,' ix. p. 397) omits Surrey, and mentions Sussex, in addition to the other counties noted by Meyrick.—RICHARD SOUTH.

O ROBENA (EVERGESTIS) STRAMINALIS IN SURREY.—I had not met with *O. straminalis* since 1879, when I netted a fine series in August whilst exploring a small, but very dense and somewhat boggy, wood about two miles north-east of Ventnor, in the Isle of Wight. It was therefore with great pleasure that I found this pretty little Pyralæ in the Esher district on July 16th last. Only one specimen was seen, but this was so fresh that it had probably emerged from pupa on the day of capture. No further example was detected, although a close search was made at the time, and on several visits to the locality later in the month. The only other Surrey localities that I have any knowledge of are Haslemere and Redhill, given by Goss in 'Victoria History of the Counties of England,' vol. i.—RICHARD SOUTH.

LEPIDOPTERA AT CHRISTCHURCH, HANTS.—I have used a moth-trap on favourable evenings throughout the summer. The insects taken have not been large in number. On Aug. 7th the captures included one specimen each of *Diasemia literata* and *Ebulea stachydalis*. Later in the month one *Macaria alternata* was taken. Is this species double-brooded, or was the specimen a belated one? On Sept. 10th one *Campptogramma fluvjata* and one *Acidalia imitaria* were taken. This seems a late date for the latter, several of which were attracted in July. On Sept. 28th one specimen of *Galleria melonella* flew in. Leech gives

the time of appearance as July and August.—A. DRUITT; Christchurch, October, 1904.

[*Macraria alternata* and *Acidalia imitaria* are not perhaps normally double-brooded in this country, but in favourable summers, such as that experienced this year, a few imagines of these species (and of others), representing a second generation, seem to be developed.—ED.]

DEILEPHILA LIVORNICA AND SPHINX CONVULVULI IN HAMPSHIRE.—On May 28th I received a post-card from Major Robertson as follows: "Look out for Livornica on your rhododendrons"; and on the same evening, at 8.30, I saw a specimen darting from tree to tree in my garden at Christchurch. On the following evening it appeared at 8.20, on the 30th and 31st at 8.30, on June 2nd at 8.45, and on June 3rd at 8.20, after which date the specimen was not again seen. The specimen seen was probably the same on each of these six evenings, for I failed to catch it, and more than one specimen was not seen on any evening. It showed a preference for deep-coloured blossoms, and in its flight seemed to hover but the fraction of a second over any one bloom, darting from plant to plant with a rapidity which made its capture impossible. It seemed to be fully aware of my hostile intentions, and did not once come within reach of my net. I soaked pieces of sponge in amyl acetate, and placed them in blooms easy of access, but, although the scent was noticeable at some yards distance, *livornica* took no notice whatever of the bait. It is very possible that this specimen had visited my garden on evenings prior to May 28th, for specimens had been taken at Bournemouth, six miles from here, on May 22nd. *Sphinx convolvuli* has been plentiful in this neighbourhood throughout September and the early part of October, but none of the specimens taken by me can be described as being in grand condition. *S. convolvuli* can fly fairly briskly, but its flight is slow when compared with that of *D. livornica*. — A. DRUITT; Christchurch, October, 1904.

SIREX JUVENCUS IN SELKIRKSHIRE.—A good specimen of this insect was brought to me by a little girl on Sept. 30th. She had found it on the public road near her cottage. *S. gigas* is not uncommon, several being brought to me every summer, but this is the first *S. juvencus* I can guarantee taken here. It was alive when I received it.—B. WEDDELL; Heath Park, Selkirk.

LATE APPEARANCE OF OURAPTERYX SAMBUCATA.—Yesterday my son took a specimen of this moth in the playground of his school in this town. It was somewhat dwarfed, but in perfect condition, and evidently freshly emerged. Is not this very late? — H. HUGGINS, JUN.; 13, Clarence Place, Gravesend, Oct. 22nd, 1904.

NOTES ON SPHINGIDÆ IN WALES.—In addition to the *Deilephila livornica* and *Sphinx convolvuli* I took this month, and previously reported (*ante*, p. 265), a fine pupa and pupating larva of *S. convolvuli* were turned out of the ground by the spade of one of my friends here. The larva unfortunately was badly wounded by the spade, and could not possibly live, while the pupa, though bruised slightly, is vigorous and lively. These insects, found in potato-land where field bindweed

grows freely, are interesting, as another link in the chain of evidence that we may call *S. convolvuli* a native of Wales, and of Barry in Glamorganshire. On the same small plant (lady's-bedstraw) I found, on Sept. 13th, a larva of *Macroglossa stellatarum*, and another larva of *Hemaris (Macroglossa) fuciformis*. The latter differed from Mr. Lucas's description of the larva of *H. fuciformis* in having the red patches around the spiracles developed into one continuous streak. It is now pupating under a web of rough loose threads under bedstraw. Shortly before spinning its web it ate a little hedge-convolvulus.—R. RANDELL; "Rushbank," Barry, Glamorganshire, Sept. 18th, 1904.

COLLECTING IN THE NEW FOREST.—On Aug. 3rd I arrived, with a young friend, at Brockenhurst for a fortnight's collecting, and put up with Mr. E. Morris, whose courtesies in pointing out the best localities and in providing comfortable accommodation at an extremely reasonable rate added not a little to the pleasure of a first visit to the New Forest. Seven evenings were devoted to sugaring, when the following insects were taken:—*Calligenia miniata*, *Thyatira derasa* and *T. batis*, *Hydræcia nictitans*, *Xylophasia hepatica*, *Cerigo cytherea*, *Apamea oclea*, *Agrotis exclamationis*, *Noctua plecta*, *N. baja*, *Amphipyra pyramidea*, *Mania typica*, *M. maura*, *Calymnia trapezina*, *Dianthæcia capsicola*, *Euplexia lucipara*, *Phlogophora meticulosa*, *Gonoptera libatrix*, *Piusia iota*, and *Catocala sponsa*: and the acetylene lamp attracted, or enabled us to take, the following:—*Porthesia similis*, *Psilura monacha*, *Odonestis potatoria*, *Zanclonatha grisealis*, *Epione apiciaria*, *Selene illunaria*, *Crocallis elingaria*, *Ennomos tiliaria*, *Boarmia rhomboidaria*, *Ephyra porata*, *E. omicronaria*, *Acidalia bisetata*, *A. aversata*, *Ligdia adustata*, *Eupithecia navata*, *E. absinthiata*, *Melanthia ocellata*, *Cidaria russata*, and *C. testata*. On the evening of Aug. 4th, after a heavy and prolonged thunderstorm during the afternoon, searching among the heather yielded larvæ of *Macrothylacia (Bombyx) rubi*, *Saturnia carpini*, *Hadena pisi*, and *Anartia myrtili*; and imagines of *Agrotis porphyrea*, *Gnophos obscuraria*, *Pseudoterpna cytisaria*, and *Selidosema plumaria*: in addition to many of those mentioned above. On Aug. 5th a number of pupæ and a few full-fed larvæ of *Nonagria typhæ* were taken from the stems of "bulrushes," and the imagines emerged at intervals during the next fortnight. Many Rhopalocera were observed on this day, including *Gonepteryx rhamni*, *Argynnis paphia* and *valesina* (both very much worn), *Vanessa cardui*, *Limenitis sibylla* (worn), *Apatura iris*, and *Pararge egeria*: and on other days we noticed *Argynnis adippe*, *Vanessa io*, *V. atalanta*, *Pararge megara*, *Satyrus semele*, *Thecla quercus*, *Lycæna egeon*, and *L. argiolus*, *Gonepteryx rhamni* being very plentiful, and in splendid condition. *Eubolia pulumbaria*, *Cidaria testata*, and other small geometers were also taken. Several days were devoted to larva-beating, with excellent results, notably on Aug. 9th, with Mr. Morris, and on Aug. 15th, with Mr. W. J. Cross. Larvæ of these species were taken or observed:—*Macroglossa fuciformis*, *Hylophila prasinana*, *Lithosia aureola*, *Gnophria rubricollis*, *Euchelia jacobææ*, *Dasychira pudibunda*, *Orgyia antiqua*, *Drepana lacertula*, *D. falcula*, *Stauropus fagi*, *Lophopteryx camelina*, *Notodonta dromedarius*, *N. ziczac*, *N. chaonia*, *N. dodonea*, *Phalena bucephala*, *Thyatira batis*, *Moma orion*, *Acronycta psi*, *A. alni*, *Amphidasys betularia*, *Cleora lichenaria*, *Boarmia roboraria*,

B. consortaria, *Tephrosia extersaria*, and other geometers. On the evening of Aug. 15th, when examining the sugar, I found a very large pupa of *Psilura monacha* spun up in the bark of an oak-tree, and a very fine female emerged from it on Aug. 24th. The larva of *Acronycta abni* was nearly full-grown when taken, and went down to pupate on Aug. 17th. Mr. W. J. Cross had a larva of *Stauropus fagi* pupating on Aug. 14th, but at the time of writing mine is only about half-grown, though to all appearance perfectly healthy. The larvæ of *Moma orion* were very plentiful, and seemed to be widely distributed, but *Catocala sponsa* was scarce, and *C. promissa* entirely absent during our visit. With regard to *Argynnis paphia*, which was swarming in every glade, it was noticeable that not a single specimen was worth taking, some being literally in tatters, and that the var. *valesina* occurred in some numbers.—F. A. OLDAKER; Parsonage House, Dorking, Sept. 5th.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, October 5th, 1904.* Professor E. B. Poulton, M.A., D.Sc., F.R.S., President, in the chair. The Rev. W. Beresford Watson, of St. Martin's Vicarage, Barbados, West Indies, was elected a Fellow of the Society.—Mr. G. H. Verrall exhibited specimens of (a) *Callicera yerburyi*, Verr., a Syrphid new to science, taken this year in Scotland by Col. J. W. Yerbury, and (b) *C. ænea*, F., the other British species of the genus, together with three European species of *Callicera* from the collections of Bigot and Kowarz, *C. macquati*, *C. spinola*, and *C. porrii*, Rand.—Mr. H. St. J. Donisthorpe, *Tetropium fuscum*, L. (male and female), and eight specimens of *Abdera 4-fasciata*, Curt., all taken by him at Market Bosworth, Leicestershire, in July, 1904.—The Rev. F. D. Morice, cells constructed by two wasps, *Polistes gallicus* and *Eumenes coarctatus*, found by him in the Balearic Islands.—Mr. A. J. Chitty, specimens of the earwig *Apterygida media* (*albipennis*), taken at Huntingfield and Charing, Kent, this year.—Mr. W. J. Lucas, a living specimen of *Labidura riparia*, male, from the shore near Christchurch, Hants, kept alive for more than a month, and fed upon fruit, meat, &c.; also a lantern-slide, depicting the threatening attitude assumed by this earwig when disturbed.—Professor T. Hudson Beare, on behalf of Mr. C. J. C. Poole, who was present as a visitor, specimens of *Aulonium sulcatum*, Oliv., a species of Coleoptera new to the British fauna.—Mr. W. Dannatt, a specimen of *Papilio homerus* from the Blue Mountains, Jamaica, together with coloured drawings of the larva painted by Lady Blake, and lent him by Mrs. E. M. Swainson, of Baltimore, U.S.A., who had bred the species. He also exhibited three new butterflies figured and described by him in the 'Entomologist,' viz. *Chlorippe godmani*, from Venezuela, *Delias hempeli*, from Gilolo, *Monethe johnstoni*, from British Guiana.—Dr. T. A. Chapman, for Mr. Hugh Main, a unique teratological specimen of *Arctia caia*, bred this year. The insect had a threefold hind wing on the left side. Immediately below the costa the wing divided into three layers, each of which was apparently a normal wing so far as form, colour

and markings went, but which, when the insect was alive, were so closely applied to each other as to look like one normal wing, till by blowing between them, or in some other way, they were separated.—Mr. F. Merrifield, some pod-like galls found on a terebinthine shrub in the limestone region of Auvergne.—Mr. Norman H. Joy, the black variety of *Bledius taurus*, Germ., taken at Wells, Norfolk, August, 1904; *Bledius femoralis*, Gyll, from Wokingham, Berks.—a species that has not been taken in the British Isles for over fifty years; *Polydorus sericeus*, Schall., from Hampshire; *Neuraphes carinatus*, Mul., from Bradfield, near Reading; a small form of *Dyschirius politus*, Dej., taken by Canon Fowler at Bridlington, and himself at Wokingham; and a *Rhizotrogus* (? species) taken in some numbers flying by day near Streatley, Berks, August, 1904.—Dr. F. A. Dixey, some preparations of the scent of male Pierine butterflies, and read a note descriptive of the same.—Mr. H. Turner, living examples of the larva of *Phorodesma smaragdaria*, which he had met with in some numbers on the Essex marshes while searching for Coleophorid larvæ. He also contributed notes on the life-histories, and exhibited living larvæ and cases of several Coleophorids, including *C. vibicella*, a species only recorded from a few English localities. Mr. Gilbert J. Arrow read a paper on “Sound Production in the Lamellicorn Beetles.” Professor Christopher Aurivillius, F.M.Z.S., communicated a paper on “New Species of African *Striphnapterygidae*, *Notodontidae*, and *Chrysapalonidae* in the British Museum.” Mr. A. H. Swinton communicated a paper on “The Droughts and Weather, and Insect Increase and Migration.” Mr. E. Ernest Green communicated a paper on “Some New Mosquitoes from Ceylon,” by Frederick V. Theobald, M.A.—H. ROWLAND-BROWN, *Hon. Sec.*

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*July 14th*, 1904.—Mr. E. Step, F.L.S., Vice-President, in the chair.—Mr. Stonell exhibited two series of *Triphæna jimbria*, one of light forms and the other of dark forms, bred in two successive years from New Forest larvæ; and a series of *Lalia cænosa* from various old collections.—Mr. Enock, on behalf of Mr. Newman, living hybrid larvæ from male *Notodonta ziczac* and female *N. dromedarius*, with typical larvæ for comparison.—Mr. Priske, examples of the Coleoptera *Apoderus coryli*, *Rhynchites æquatus*, and *Otiorrhynchus sulcatus*, all from High Wycombe.

July 28th.—Mr. E. Step, F.L.S., Vice-President, in the chair.—Mr. Percy Richards, of Kingston Hill, was elected a member.—Mr. Enock, for Mr. Newman, exhibited a cocoon of *Eutricha quercifolia*, in situ.—Mr. Edwards, specimens of *Voluceila bombylans* and *V. pellicens* from Leatherhead, taken at the Field Meeting on July 9th.—Mr. West (Greenwich), a large number of insects collected at Great Yarmouth from June 13th to 25th, comprising eighty-four species of Coleoptera, eighteen species of Hemiptera, and three species of Tenthredinidæ. Among the Coleoptera were *Donacia dentipes*, *D. thalassina*, *D. simplex*, *D. vulgaris*, *D. sericea*, *Galeruca calvariensis*, *Polydorus confusus*, and *Scirtes hemispharicus*. Among the Hemiptera were *Plagiognathus pulicarius*, *P. saltitans*, and the rare *Pæcilocyttus vulneratus*, a species recently added to the British list.

August 11th.—Mr. E. Step, F.L.S., Vice-President, in the chair.—Mr. Ashby exhibited a specimen of one of our rarest weevils, *Liparus germanus*, taken at Folkestone in July.—Mr. West reported that from July 10th to 23rd he had paid a very successful visit to the New Forest, obtaining *Strangalia quadrifasciata*, *Telephorus testaceus*, *Phyllobrotica quadrimaculata*, and *Orchestes iota*, the most notable of the Coleoptera; *Picromerus bidens*, *Monanthia dumetorum*, and *M. humuli* among the Heteroptera; and the very rare homopteron, *Otiarus leporinus*.—Mr. Main, pupæ and small larvæ of *Ereves argiades*, from ova deposited by a female sent by Dr. Chapman from the South of France. The larvæ were boring the seed-pods of *Lotus corniculatus*.—Mr. Priske, a specimen of *Cicadetta montana* from the New Forest, and a specimen of *Dicranura bijida*, which had just emerged from a this year's larva.—Mr. Carr, a dead larva of *Smerinthus ocellatus*, from which parasites had emerged in 1883, and which retained its normal green colouration.—Mr. Adkin and several other members noted the unusual abundance of *Mania maura* this year.—Mr. Edwards, a long series of variations of the polymorphic *Papilio*, *P. memnon*, and called attention to the forms and their distribution.

August 25th.—Mr. Hugh Main, B.Sc., F.L.S., Vice-President, in the chair.—Mr. Barnett, a short series of *Strenia clathrata*, showing stages in the darkening of the transverse bands, and also of *Ematurga atomaria*, with considerably suffused markings. He also showed larvæ of *Smerinthus populi*, which were feeding on white poplar, and which assimilated wonderfully to the colour of the food-plant. Mr. Main, a curiously spotted cockroach, obtained from a ship which had brought sugar from Java.—Mr. West, two rare species of Hemiptera from Darenth—*Corizus capitatus*, obtained by sweeping *Hypericum*, and *Aneuris lavis*, under oak-bark.—Mr. Tutt and Dr. Chapman made a few remarks upon their continental rambles in July and August.—HY. J. TURNER, *Hon. Report Sec.*

MANCHESTER ENTOMOLOGICAL SOCIETY.—In the Manchester Museum, Owens College, on September 7th, before a large gathering presided over by Dr. W. E. Hoyle, the proceedings took the form of an exhibit meeting.—Mr. Geo. O. Day exhibited a box of Lepidoptera collected in Vancouver Island, B.C., mostly taken during May, 1904.—Mr. H. S. Slade, specimens of *Leucoma salicis* from larvæ taken at Urmston (Lancs), also *Abraxas grossulariata* from the same locality; specimens of *Polia chi* taken at Glossop.—Mr. L. Krah, lepidoptera from Bex, Canton Vaud, Switzerland, and included *A. eratagi*, *P. egeria*, *E. ianira*, *M. galatea*, *P. mera*, *A. cardamines*, *L. amanda*, &c.—Mr. R. Tait, Jun., *Agrotis ravida* taken at Monkswood, Hunts; specimens of *Aplecta advena*, *Acronycta ligustri*, *Mamestra anceps*, *Angerona prunaria*, *Xylophasia hepatica*; *Dianthæcia conspersa*, including ochreous form, bred from Welsh larvæ; *Agrotis ashworthii*, a fine series, bred this year from hibernated larvæ.—Mr. C. Oldham, specimen of *Prionia coriarius* from Chelford (Cheshire), July 27th, 1904.—Mr. G. Kearey, ova, pupæ, and perfect insect of *Orayia antiqua*, and illustrations pointing out the difference of the situation selected by the sexes for pupation.—Messrs. A. Binns and W. Buckley also exhibited Lepidoptera.—ROBERT J. WIGELSWORTH, *Hon. Sec.*

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DESCRIPTION OF SOME NEW SPECIES OF PHYTOPHAGOUS COLEOPTERA.

BY MARTIN JACOBY.

CHLAMYS SEMICRISTATA, sp. n.

Pale fulvous, with closely-placed black punctures; thoracic elevations rounded, the top with a circular and two short oblique ridges, the sides with others of transverse shape; elytra with about ten isolated tubercles and the usual longitudinal costæ. Length 3 millim.

Head pale fulvous, sparingly punctured with black; anterior edge of the clypeus black; antennæ flavous; thorax punctured, like the head, with a gradually-raised posterior round elevation, the top of which is furnished by two oblique ridges; in front of these another short ridge includes a semicircular space when viewed sideways, while three others extend down the sides of the elevation for a short space; the rest of the surface is unevenly reticulate and punctured; the basal lobe is divided into two points; scutellum short, piceous; elytra with closely-placed black punctures and the following pointed tubercles:—three at the base, placed triangularly; a larger one near the suture at the middle; two smaller ones opposite, nearer the lateral margin and connected by a transverse ridge; the posterior portion has three tubercles placed transversely, and three or four others near the apex more or less connected by ridges; longitudinally these tubercles are likewise connected by the usual four costæ; pygidium rugose, carinate at the middle; breast foveolate-punctate; abdomen with black punctures; legs with a small dark spot at the femora; prosternum gradually narrowed and posteriorly.

Hab. Venezuela.

CHLAMYS BALYI, sp. n.

Obscure fulvous, more or less spotted with black or black with fulvous spots; thorax with a moderate rounded elevation, the top with two feeble ridges closely and deeply punctured, the sides subtuberculate; elytra deeply punctured, with feebly-raised tubercles and longitudinal ridges, the largest tubercle near the suture below the middle. Length 1 line.

Head flat, fulvous, with black punctures or entirely black with a fulvous spot at the middle; antennæ fulvous, the fifth and following joints transverse; thorax with the middle portion raised into a regularly-rounded elevation, which is surrounded at the base by a distinct sulcus; the top of the elevation has two feeble short ridges, and at the sides several small blunt tubercles are placed; the entire surface is closely impressed with black punctures, but the amount of fulvous is very variable; elytra punctured like the thorax, generally black, with the tubercles and ridges generally of fulvous colour; of the first-named, two are placed near the suture, one before, the other below the middle; the ridges are confined to the sides, and the one from the middle of the base to the suture is interrupted by some short transverse raised tubercles before the middle; the posterior portions of the elytra are reticulate, and have a few small tubercles; the pygidium is carinate at the middle, and to a less extent at the sides; the legs are black, spotted with fulvous, or the anterior ones only are of the latter colour; prosternum strongly triangularly widened at the anterior half, suddenly reduced to a ridge below the middle.

Hab. Mexico.

I am afraid it will not be easy to distinguish this small species from its numerous congeners, on account of its variability in regard to coloration, and it is so closely allied to so many others that it is difficult to name its nearest ally; it may, however, be compared perhaps best with *C. signaticollis*, Lac., which is of very nearly similar coloration, but differs in the ridges at the sides of the thorax; this part in the present species has the outer sides very closely punctured, and the punctures are only here and there interrupted by feeble callosities; at the top of the elevation two short narrow ridges are seen, which do not extend to the anterior margin, the elytra are punctured like the thorax, and all their tubercles and ridges are small or not strongly indicated; a more highly raised and somewhat elongate tubercle, however, is placed near the suture, at some distance from the apex. This species was not known to me during the publication of the *Biolog. Centr. Amer.* dealing with the *Phytophaga*, but I have since received five specimens.

SAGRA HUMERALIS, sp. n.

Short, oblong, purplish black, the shoulders golden cupreous, the thorax and elytra very finely granulate-punctate.

Mas. The posterior femora strongly ovately widened, with three small teeth, their tibiæ with a long spur-like tooth at the middle. Length 11 millim.

Head very closely and finely punctured throughout, opaque, the oblique anterior grooves very shallow; antennæ scarcely extending to the middle of the elytra, purplish black, the basal joint subquadrate, the second small, the third and following joints very gradually lengthened, terminal joint elongate, subcylindrical, its apex conical; thorax scarcely one half broader than long, the anterior angles strongly thickened and produced outwards, the surface finely and closely punc-

tured, opaque, scutellum shining, black; elytra without basal depression, opaque, the punctuation nearly obsolete, very fine near the base and the suture, purplish black, a subquadrate spot surrounding the shoulders only, golden cupreous; under side and legs nearly black, the intermediate femora widened below the middle, their tibiae strongly curved; posterior femora short and thick, their lower margin furnished with three small teeth near the apex, the basal portion deeply and broadly sulcate and furnished with short and dense pubescence; posterior tibiae curved at the base only, provided with a long spur at the middle of the outer edge, the lower portion broadly sulcate, absolutely toothed on the inner side, the apex produced and pointed.

Hab. Mouy-Tsi, Tonkin.

Of this remarkable species, so different in its coloration from any of its allies, I received a single male specimen from M. Donckier, in Paris. It is no doubt allied to *S. peteli*, Lac., from Java, which has likewise a long tibial spur; the general colour of the present insect might almost be described as black, but the golden humeral spot is highly characteristic.

MOUHOTINA SALOMONENSIS, sp. n.

Fulvous, the intermediate joints of the antennae and the tarsi black; thorax subquadrate, scarcely perceptibly punctured; elytra punctate-striate at the base only, metallic purplish, a large patch at the base and the sides near the shoulders, more or less fulvous. Length 10-11 millim.

Broad and robust, the head impunctate, with a fovea between the eyes, fulvous, the latter broadly emarginate; mandibles black; antennae very slender, extending below the middle of the elytra, the lower four joints and the apical two fulvous, the rest black, third and fourth joint equal, elongate, the following joints scarcely longer; thorax one half broader than long, the sides perfectly straight, the angles pointed, the surface with a few very fine punctures, fulvous; elytra wider at the base than the thorax, with a deep depression below the base, the shoulders very prominent, the basal portion with short rows of fine punctures, the posterior portion nearly impunctate, purplish or violaceous, the base more or less fulvous round the scutellum and at the sides, the latter with one or two purplish spots on the shoulders, more or less connected with the posterior dark portion; under side and legs fulvous, the tarsi blackish, the intermediate and posterior tibiae deeply emarginate near the apex, the posterior femora with a small tooth, claws bifid, prosternum very broad, subquadrate, the anterior margin of the thoracic episternum convex.

Hab. Florida; Solomon Islands.

Of this well-marked large species I possess four specimens, somewhat variable in regard to the amount of the purplish portion of the elytra; the insect is allied to *M. rufum*, Clark (sub *Nodostoma*), but both species are not typical of the genus; this latter has for the type a small species described by Baly, having the general appearance of one belonging to *Typophorus*, and in which the anterior and posterior femora are dentate and

the claws appendiculate. The present species and the one described by Clark are large insects in which the claws are much more bifid than appendiculate, but possessing otherwise the structural characters of the genus, for which reason I have included this insect in it.

LUPERODES LATERALIS, sp. n.

Flavous; the breast black; thorax transverse, impunctate; elytra with feeble longitudinal sulci, very obsoletely punctured, flavous, the base and the sides with a deep black band. Length 6 millim.

Of broadly oblong shape, the head impunctate, flavous, deeply transversely grooved above the eyes, the latter large, frontal elevations feebly indicated; carina short, but distinct; antennæ long and slender, flavous, the apex of the intermediate joints slightly blackish; the second, third and fourth joints gradually elongate, terminal joints more slender and elongate; thorax about one half broader than long, the sides rounded at the middle, the angles slightly prominent, posterior margin rounded, the disc entirely impunctate, flavous, scutellum black; elytra slightly wider at the base than the thorax, rather broad, the disc with feeble longitudinal sulci, the latter impressed with rows of fine punctures (absent in one specimen) of the same colour as the head and thorax, the base with a narrow transverse black band which joins the marginal one at the shoulders, the latter band wider than the basal one and rather suddenly dilated at the middle; the breast, the intermediate and the posterior femora likewise black, the rest of the under side and legs flavous; the metatarsus of the posterior legs very long and slender; anterior cotyloid cavities open; elytral epipleuræ broad, black.

Hab. Solomon Islands.

Of this very distinct species two specimens are contained in my collection, but the precise name of the island of the group they were obtained at I do not know.

A VISIT TO FRESHWATER, JUNE AND JULY, 1904.

BY JAMES DOUGLAS.

Much has from time to time been written about the Isle of Wight as a happy hunting-ground for the entomologist, but it may yet be that an up-to-date account of the possibilities of the neighbourhood of Freshwater will be of interest.

Arriving about the middle of June and putting up with William Rogers, himself a wide traveller for Lepidoptera, and son of one well known some years ago in the entomological world for his expeditions to South Africa and other places, I was fortunate in being able to acquire much useful information.

Next day I started for a locality, not yet generally known, for *Melitæa cinxia*, where I found a nice colony well established, and,

the season being late, I netted a good series in remarkably fine condition—most of the females being allowed to go. In the same locality later on I found *Acontia luctuosa* sparingly, but this species seems to have disappeared from the immediate neighbourhood of Freshwater, where it was formerly plentiful. *Lycena alsus* swarmed almost everywhere during the whole of my visit.

Towards the end of June I visited the reputed haunts of *Acidalia emutaria*, but either it was a bad year or it has been cleared out, for two specimens only rewarded more than a week of wearisome evening tramps in the moist and odoriferous swamps of the Yar. N.B.—Don't forget your fishing-boots.

During this time sugaring in the woods yielded *Acronycta tridens*, *Leucania pallens*, *L. comma*, *Xylophasia rurea*, *X. lithoxylica*, *X. sublusttris*, *X. polyodon*, *X. hepatica*, *Mamestra anceps*, *Apamea gemina*, *Miana strigilis* (in endless variety), *M. furuncula*, *Grammesia trigrammica*, *Agrotis segetum*, *A. exclamationis*, *Noctua triangulum*, *N. festiva*, *Euplexia lucipara*, *Hadena dentina*, *Cidaria truncata*, &c.

On June 26th one of my boys brought in a specimen of *Setina irrorella* from the downs; so, fired by the glowing accounts which appeared some years ago in one of the entomological papers, I got Rogers to call me one morning before four o'clock, and away we rowed for the desired spot, some miles along the cliffs. It was absolutely calm, and nothing could exceed the beauty of the morning and the scene; but, alas! after a rough scramble up the cliffs, a thorough search of the locality revealed not a single *irrorella*. For some reason or other it has entirely ceased to frequent the spot; whether some change in the set of the tide has caused the lichens on which it feeds to fail, or whether having been so recklessly hunted it has been exterminated, I am not able to say; possibly the former, as I was told that no one had visited this particular spot for at least five years.

However, I subsequently became well acquainted with *S. irrorella* and its habits in other localities along the cliffs, and came to the conclusion that it is not the early bird that catches the worm—*irrorella*. It emerges from 6 to 7 a.m. onwards, and the newly emerged imagines do not, so far as I know, fly that morning, but sit quietly on the short grass stems; consequently a visit from 8 to 9 a.m., by which time their wings are dry, results in the boxing of absolutely perfect and unfaded specimens, while those taken on the wing are imagines of the previous day and are generally somewhat faded and worn. I was fortunate in taking several well-marked specimens of the 1VI variety, and others showing part of the letters—mostly males, as usual—for, though I made a most exhaustive search, I only found one female which showed any tendency towards this variety.

Cultivation is responsible for the disappearance of many insects, and it is the cause of the practical disappearance of *Cucullia verbasci*, the mulleins which used to be so plentiful along the foot of the downs having been entirely destroyed in the operation of making and plashing the hedges and ditches.

At the beginning of July I started sugaring on the downs, and at once commenced taking *Agrotis corticca* and *A. lunigera* in abundance. *A. exclamationis*, which was one of the earliest arrivals each evening, was a nuisance, but I got some good varieties, as also of *Noctua festiva*. *A. lunigera* was exceedingly plentiful, and during about ten days I took some four hundred specimens, about half of which were worth setting, many being in perfect condition. I found it a most uneasy insect when boxed, quickly breaking the cilia and otherwise damaging itself, so much so that I ultimately adopted, with success, a course which I should recommend to all who wish to take this species in grand condition. I took out two good sized killing bottles—one of which I used for boxing, the other as a reserve; and, after capturing and stupifying a few insects, I transferred them to the reserve bottle, and so on. By this means, and with a little care in carrying home the full killing bottles to prevent friction, the insects were kept in perfect condition.

Amongst other things which came to sugar here were *Thyatira derasa*, *Acronycta megacephala*, *Leucania conigera*, *L. lithargyria*, *L. comma*, *Axylia putris*, *X. rurca*, *X. sublustris*, *Dipterygia pinastri*, *Apamea oculo*, *Miana strigilis*, *M. fasciuncula*, *Caradrina morpheus*, *C. taraxaci*, *Rusina tenebrosa*, *Agrotis cinerea* (worn), *Noctua plecta*, *Hadena dentina*, *Erastria fasciana*, *Acidalia aversata*, *Eubolia palumbaria*.

Sugaring along the foot of the downs did not pay. *A. lucernea* was late; I did not meet with it, but just before I left a friend took a specimen at the flowers of valerian.

Day visits to the woods produced *Melanargia galatea* (plentiful), *Limenitis sibylla*, *Argynnis paphia*, &c.; the downs, *Hipparchia semele*, *Iodis vernaria*, *Eubolia palumbaria*, *E. lineolata*, &c.

Strenia clathrata swarmed at Totland in the afternoons in early July, but, owing to the fresh breeze and the very rough ground, was very difficult to net. I found the best way was to wait until the sun was getting low, and then slowly walk through the thick herbage, placing the net at once over anything observed to be stirring, being careful not to disturb the insects, as in that case they dropped to the ground and were lost, the markings on the wings simulating the crossed stems of grasses to perfection. Another common species at Totland about the second week in July was *Eubolia bipunctaria*, which occurred on the cliffs under the fort, and was somewhat difficult to follow and net. It also occurred on the military road at Freshwater, together with *Gnophos obscurata*.

A visit to the haunts of *Acidalia humiliata* was fruitless; perhaps I lacked the necessary patience and perseverance.

The morning I left, *Bryophila perla* and *B. muralis* put in an appearance, and I obtained a good green specimen of the latter.

On the whole I had a very satisfactory visit, considering that it was not entirely an entomological one, and that there were other claimants to make imperious demands on my time and attention.

ON THE PRESENT CONDITION OF ENTOMOLOGY IN THE HAWAIIAN ISLANDS.

BY G. W. KIRKALDY.

THE Hawaiian Archipelago, consisting of a series of tiny specks in the lonely waste of the North Pacific, is far in advance, not only proportionately, but almost actually, of any other country or territory in the world, as regards the number of professional entomologists it supports. There are three institutions, all centred at Honolulu, which have an Entomological Division or Department, viz., the Hawaiian Sugar Planters' Association, the Territorial Bureau of Agriculture and Forestry, and the Federal Agricultural Experiment Station.

The Hawaiian Sugar Planters' Association has a staff of five entomologists, shortly to be increased to six. Of these, two remain principally at Honolulu, to investigate the material which is constantly pouring in from outside and to supervise the breeding-up and distribution of predaceous and parasitic insects; two are constantly travelling around Australia, the South Pacific, America, &c., searching for beneficial insects; while two will visit, in rotation, the various sugar plantations, report upon conditions, and send in material for investigations. This work, however, is not altogether specialized, but is, more or less, interchangeable. The five are Albert Koebele, R. C. L. Perkins, G. W. Kirkaldy, F. W. Terry, and Otto Swezly. This division will very shortly commence publication of the results of its researches.

The Territorial Bureau is largely concerned with the Inspection of the Plants and Fruits which arrive in the islands by almost every steamer. The present head of the Entomological Division is Alexander Crow, lately of San Francisco; he has one assistant. The Federal Station has also one entomologist, D. L. Van Dine, who has recently meritoriously devoted his attention to mosquito extermination. There are thus now eight professional entomologists, shortly to be increased to at least nine.

THE DRAGONFLIES OF EPPING FOREST IN 1904.

By F. W. & H. CAMPION.

OUR work during 1904, although prosecuted with unabated vigour, has added no fresh species to our list, but it has yielded several interesting variations from the typical forms. The species taken by us, mentioned in the order in which we made the first captures, are as follows:—

(1) *Pyrrhosoma nymphula*.—Our work began on May 1st with the taking of *P. nymphula*, immature. This species emerged earlier and remained on the wing longer than in any previous year within our experience, for we continued to take single specimens as late as August 1st. On June 5th we obtained a male which was resting on a bush, and which was in the act of preying upon a tiny moth; we subsequently identified the moth, so far as its damaged condition left it determinable, as *Laspeyresia (Grapholita) ulicetana*.

(2) *Agrion puella*.—We took this species abundantly between May 15th and August 7th. A female taken on July 10th exhibited on each of segments three, four, five, and six a pair of conspicuous light-green markings at the basal end in the middle line. On the same date we obtained a male with a round black spot within the curve of the *v* on the second segment.

(3) *Ischnura elegans*.—The range of date of our captures of individuals of the typical form was from June 5th to August 7th. Between July 3rd and September 4th we took four specimens of the dark form of the female, of which a detailed account has already appeared (*ante*, pp. 252–254).

(4) *Enallagma cyathigerum* was taken constantly from July 10th to September 4th. On the first-named date we procured two specimens of the blue form of the female, and another specimen was taken on July 17th. The variation from the normal female consists in the fact that on both thorax and abdomen the ground colour, instead of being yellow or greyish-green, is blue—blue as pronounced as that seen in the male. The markings on the abdomen are black, not bronze. All our specimens were procured at some ponds near Loughton, and one of them at least was taken connected *per collum* with a male. The blue colour fades away very rapidly, but we have preserved the colour of the latest specimen to a considerable extent by treatment with methylated spirit, in the manner recommended by Mr. S. W. Kemp (see *Entom.* xxxvi. 34–35). On July 31st we obtained two interesting mature males, one with the stem of the goblet-shaped marking on segment two attenuated to a mere thread, and the other with segments one and two chocolate-brown, and with some chocolate on thorax and between segments three and four.

(5) *Lestes sponsa* was fairly plentiful in certain localities. Our first specimens were taken on July 10th, and our last on August 21st.

(6) *Sympetrum striolatum* was not so common as usual; our captures ranged from July 17th to September 24th.

(7) *Libellula depressa*.—Although this active species had been on the wing for about six weeks, we were unable to obtain an example until July 24th. Our specimen was a male, and the yellow lateral spots on the dorsal surface were confined to segments three and four, instead of being extended to segments five and six, as in the typical form.

(8) *Æschna cyanea* fell to our net on several occasions between August 13th and October 9th.

(9) *Æ. grandis* we found to be scarcer than usual; we collected only one specimen (August 28th).

We have again to report the apparent absence of *Sympetrum sanguineum*, at one time tolerably abundant near Chingford. This year *Æschna mixta* seems to have disappeared entirely from our locality. Another species remarkable for its seeming total absence was *Anax imperator*, a specimen or two of which may usually be seen, in the proper season, hawking over a certain pond in the neighbourhood of Loughton.

33, Maude Terrace, Walthamstow, Essex:
November 3rd, 1904.

NOTES ON A MONTH'S COLLECTING IN NORMANDY.

By G. MEADE-WALDO, F.E.S.

THIS year I spent a month (July 5th to August 5th) in a charming out-of-the-world village called Gacé, in the Department of Orne; it is what the guide-book for Normandy calls a "petite ville industrielle," though what Gacé has for industries I never found out. The chief crop was hay, generally combined with an orchard. The crop of apples this year was enormous. The house where I was staying had a large overgrown garden, and in this the greater part of my moth-collecting took place. Of flower-border plants there were practically none, but the wild flowers were well represented.

Among Rhopalocera, I noticed very little, except the ordinary "whites" and commoner Vanessids. *V. egea* was, however, tolerably common, and easily to be caught when feeding on my "sugar" of the previous evening.

A visit to the Forêt d'Évroults, distant about seven kilometres, ensured the capture of *Limenitis sibylla*, *Thecla ilicis*, and *Cronomypha arcana*; while towards the end of the month

Limenitis populi was fairly numerous, but very difficult to catch. I caught a worn female, however, sitting on a damp heap of mud, and from her got several ova, which, to my great disappointment, dried up instead of hatching. Hardly any *Lycænideæ* were noticed at all. *Colias edusa* and *C. hyale* had just made their appearance at the time I left for England.

For moths I employed three methods at various times—dusking with a lantern and net, “sugaring,” and light from my bedroom window; all these were attended with a certain amount of success. By means of a light in my window I obtained the following:—*Lithosia lurideola*, *Gnестis* (*Gnophria*) *quadra* (male and female), *Arctia caja*, *Phragmatobia* (*Spilosoma*) *fuliginosa*, *Zeuzera pyrina* (male), *Porthesia chrysoorrhœa* (*auriflua*), *Malacosoma* (*Bombyx*) *neustria*, *Odonestis potatoria*, *Pterostoma palpina*, *Thyatira batis*, *Acronycta strigosa* (were quite common, but unfortunately had begun to wear), *Xylophasia hepatica*, *Mamestra persicaria*, *Apamea oclea* (*didyma*) (in many varieties), *Miana bicoloria*, *Hadena oleracea*, *Habrostola tripartita* (*urticeæ*), *H. triplasia*, *Plusia chrysitis*, *P. gamma*, *P. iota*, *P. r-aureum*, *Chariclea marginata*. And of the Geometræ, *Uropteryx sambucaria* (very abundant for a few nights only), *Rumia luteolata*, *Selenia bilunaria* (*juliaria*), *Boarmia gemmaria*, *Geometra papilionaria*, *G. vernaria*, *Hemithea strigata*, *Angerona prunaria* (*corylaria*), *Acidalia ornata*, *Abraxas grossulariata*, *Hypsipetes sordidata* (*elutata*), *Scotosia dubitata*, *Cidaria dotata*, *C. fulcata*, *C. prunata* (*ribesiarum*), *Eubolia mensuraria*.

Sugaring, as is always the case, was very uncertain, but on the whole I was fortunate in my choice of nights, and got the following species:—*Thyatira derasa*, *Cymatophora octogesima* (*ocularis*)—these I got only on one tree (a large poplar), probably their food-plant; *Acronycta psi*, *A. megacephala*, *A. rumicis*, *Leucania impura*, *L. pallens*, *L. lithargyria*, *Axylia putris*, *Xylophasia sublustris*, *X. monoglypha*, *Cerigo matura* (*cytherea*) (very dark specimens), *Mamestra brassicæ*, *Caradrina ambigua*, *Noctua plecta*, *N. ditrapezium*, *N. stigmatica* (*rhomboidea*), *Triphena ianthina*, *T. comes*, *T. pronuba*, *Amphipyra pyramidea*, *A. trago-pogonis*, *Mania maura* (I once counted six on the aforementioned poplar), *M. typica*, *Calymnia trapezina*, *C. pyralina* (in plenty), *C. affinis*, *Euplexia lucipara*, *Aplecta nebulosa*, *Hadena oleracea*, *H. dentina*, *Gonoptera libatrix*, and *Catocala nupta*.

While after butterflies during the daytime, I got *Lasiocampa quereus* (males), and saw those of *Saturnia carpinii*; I also got *Acontia luctuosa*, in bright sunshine, and *Callimorpha hera*.

Of larvæ or pupæ I saw nothing, with the exception of a pupa of *G. libatrix* in some willow-leaves, and some pupæ of *P. rapæ*, but I did not spend much time searching. Frequently, of course, the same species turned up at sugar and light, but in

much the greater number of cases one only got them at one or the other.

The weather left nothing to be desired, the first three weeks being cloudlessly fine, and the last week was varied by a most terrific thunderstorm, during which the church-tower in the village was struck by lightning.

Stonewall Park, Edenbridge, Kent.

CURRENT NOTES.

BY G. W. KIRKALDY.

(Continued from p. 161.)

1. H. A. BALLOU: "Insects attacking Cotton in the West Indies" (W. I. Bulletin, iv. pp. 268-86, text-figs. 1-4 (1903)).

2. T. D. A. COCKERELL: "A Summary of the Coccidæ" ('American Naturalist,' xxxvii. pp. 800-6, Nov. 1903, publ. Jan. 1904?). [Rhynchota].

3. F. H. CHITTENDEN: "A Brief Account of the principal Insect Enemies of the Sugar-beet" (Bull. U. S. Dep. Agr. Entom 43, pp. 1-71, text-figs. 1-65 (1903)).

4. F. M. WEBSTER: "Some Insects attacking the Stems of growing Wheat, Rye, Barley, and Oats" (*op. cit.* 42, pp. 1-62, text-figs. 1-15 (1903)).

5. E. P. FELT: "Insects affecting Forest-trees" (7th Rep. Forest, Fish, and Game Com., New York, pp. 479-534, pls. 1-16, and 26 text-figs. (1903)).

6. T. D. A. COCKERELL: "South-Western Geographical Names" (Ent. News, xv. p. 24 (1904)).

7. "THE INSECT WORLD," vol. viii. no. 1 (1904).

8. J. H. FABRE: "Souvenirs Entomologiques" (8me série). (Paris) pp. 1-379 (a few text-figs.). [1903?].

9. E. E. GREEN: "On the Nesting Habits of *Trypoxylon intrudens* and *Stigmus niger*" [Hym.] (*Spolia zeylanica*, i, pt. 3, [sep. pp. 1-3], text-figs. 1 and 2 (1903)).

10. Mrs. MARIA E. FERNALD: "A Catalogue of the Coccidæ of the World" (Hatch. Exper. Sta. Massachusetts Agr. Coll. Bull. 88, pp. 1-360 (1903)).

Ballou's (1) report on the insect pests of cotton in the West Indies, although necessarily largely a compilation, will be useful since the revival of cotton-growing in the Islands. Two of the worst mainland pests, viz., *Heliothis armiger* (cotton-boll worm) and *Anthonomus grandis* (Mexican cotton-boll weevil), are absent, but the remainder (except the Leafblister mite—*Phytoptus* sp.—which is apparently distinctive) is the same as or closely related

to the pests of the mainland cotton-growing districts. The presence of *Dysdercus discolor*, Walker (or as it is termed "an-nulliger (sic!) Ubler), is very interesting, forming the fourth known cotton pest in this genus, the others being *suturellus* from the mainland, *andreae* in company with *discolor* and *cingulatus* from the Orient.

Cockerell (2) has summarized Mrs. Fernald's recent Catalogue of the Coccidæ. The same author (6) notes two grave errors in geographical names. "Arrayo," a name universally used in the south-west of North America for a dry watercourse, occupied by water only after heavy storms, has come into use in recent entomological literature as the name of a town, and finally metamorphosed into "Arrogo, New Mexico." "Baja" has become the name of a supposed place in California, whereas it simply means "lower," *i. e.* "Baja California" = Lower California, in Mexico.

The first attempt to manufacture beet-sugar in the United States was made in 1830 (3), but there were only three factories in operation sixty years later; in 1902, however, there were forty-two, and these are steadily increasing. Estimates made in the U. S. Dep. of Agriculture place the world's production of sugar in 1902 at nearly ten million tons, of which nearly six millions were manufactured from sugar-beets. Some 150 species of insects are noted as using beets for food, and, while comparatively innocuous so far, will probably become more injurious each successive season. In a similar bulletin of the U. S. Division of Entomology, various Diptera, especially species of *Isosoma*, destructive to cereals, are fully dealt with (4).

The Seventh Report of the Forest and Fish Commission of New York contains an account of the insects affecting forest trees, prepared in the sumptuous manner now expected from that State (5). Species affecting the pine, to the number of some forty, receive the most attention, and are considered at more or less length, the Scolytidæ in particular, with their associated insects. The other trees discussed are the balsam, spruce, arbor-vitæ, and oaks. The account is illustrated by three beautifully coloured plates of insects affecting hard-pine, white pine, and oak, by five photographs of injured trees or forests, and ten plain plates, principally representing Scolytid work.

With January, 1904, the 'Insect World' commenced its eighth volume (7) under a slightly altered title, 'The Insect World: a Monthly Magazine devoted to the useful application and scientific study of Entomology,' edited by Yasushi Nawa; Director of Nawa Entomological Laboratory, Gifu, Japan; with this, the insect accompanying the title is also changed, the new-comer being the remarkable moth, *Epipyrops nawai*, Dyar. K. Nagano's descriptions, in English, of imago and larva of

Japanese Sphingidæ are continued, the present number describing *Ampelophaga rubiginosa*, Brem. et Grey.

J. H. Fabre has published recently (8) the 8th series of his "Entomological Souvenirs." Of these there are twenty-three, four being devoted to *Aphidæ*, three to *Bruchus*, three to *Halictus*, two to *Vespa*, and one each to *Cetonia*, *Pentatomas*, *Reduvius personatus*, *Lucilia*, *Sarcophaga*, *Dermestes*, &c., *Trox*, *Volucella*, *Epeira fasciata*, *Lycosa narbonensis*, and the geometry of insects.

The observations are made with precision, and apparently, so far as they go, a great deal of exactitude; but the author, as in previous series, displays great ignorance of previous literature, and his interpretation of the facts is often fantastic. The fifth essay, "Les Pentatomes," is reprinted from a Belgian periodical (it is possible that some of the other essays are reprinted, like the above, without acknowledgment), and has been criticized at some length already.* In the fourth essay he attempts to overthrow the opinion held since Linnæus, that the lava of *Reduvius personatus* preys on the bed-bug, and declares such occurrences to be entirely fortuitous. Fabre says: "Son régime est tout autre que ne le dit Linné et que ne le répètent les compilateurs"; on the contrary, Amyot and Serville (1843, "Histoire Naturelle des Insectes—Hémiptères," p. 338), among others, say: "*nous pouvons assurer qu'elle fait particulièrement la guerre à l'Acanthie des lits; ainsi que l'ont attesté Linné, De Geer et Fabricius.*" Unfortunately *Reduvius personatus* does not occur in the Hawaiian Isles; perhaps some one who can observe it in nature, and who has a readier command of the literature than I now have, will make renewed observations on the subject.

In a new periodical (9), E. E. Green discusses the nesting habits of two Sinhalese wasps.

Mrs. Fernald's valuable Catalogue of Coccidæ (10), which has been a quarter of a century in making, enumerates 1449 recent species, with from one to more than a hundred references each, with localities and food-plants. Besides these there are noted sixty-six uncertain species, and thirteen described as Coccidæ which belong to other families, orders, or even classes. The labour involved in such a Catalogue is very great, how much so can be appreciated only by those engaged on similar work. Mrs. Fernald is to be congratulated on having completed her undertaking, and coccidologists are to be congratulated also on now having their labours so materially lightened.

* See 'Entomologist,' 1903, pp. 113-120.

DESCRIPTIONS OF A NEW GENUS AND SOME NEW SPECIES OF EAST INDIAN HYMENOPTERA.

BY P. CAMERON.

BRACONIDÆ.

AGATHIDINÆ.

LISITHERIA, gen. nov.

First cubital, prædiscoidal and third discoidal cellules not separated; the recurrent nervure only indicated on the lower side. The præbrachial and the pobrachial cellules not separated; the transverse median nervure interstitial. Malar space short, but distinct. Parapsidal furrows distinct. Post-scutellum keeled. Metanotum with an elongated area in the centre. Mesopleuræ without a rugulose furrow. Maxillary palpi five-jointed. The radius in the hind wings is faint, but distinct; the cubitus is almost obliterated, there is a distinctly closed cellule at the base of the anal. Areolet broadly rounded at the top, the cubital nervures clearly separated. Parapsidal furrows deep. Anterior claws cleft.

The head is not rostriform, as it is in the *Agathidini*, but there is a clear malar space, the eyes being distinctly separated from the base of the mandibles. Palpi longish; the joints not dilated. Antennal scape about three times longer than wide. The pobrachial nervure in the hind wing is entirely obliterated, as is also the transverse pobrachial; the pobrachial, anal and discoidal cellules are obliterated. The long spur of the hinder tibiæ extends beyond the middle of the metatarsus. Abdomen without furrows or depressions; its ovipositor short, hardly projecting. The eyes are large. Labrum projecting; its apex rounded.

LISITHERIA NIGRICORNIS, sp. nov.

Luteous, shining, smooth, the thorax punctured; the metanotum more closely than the rest; the antennæ black, the scape for the greater part rufous, the flagellum closely covered with a pale pile; the hinder tarsi fuscous; the wings clear hyaline, iridescent, the stigma fuscous; the nervures darker. ♀. Length, 6-7 mm.

Hab. Deesa (Nurse).

Antennæ longer than the body, slender. Face closely and distinctly punctured; the clypeus almost impunctate; immediately below the antennæ are two longish, rounded tubercles. The ocellar region and the middle of the occiput above are blackish. There are two stout keels on the scutellar depressions. The keels forming the central area on the metanotum are stout, oblique, and are united on the top; they are more distinct on the upper than on the lower half; there is a distinct keel below the spiracles. Legs thickly covered with white pubescence.

ICHNEUMONIDÆ.

HALIPHERA FLAVOMACULATA, sp. nov.

Black; the inner orbits broadly below to the clypeal foveæ, narrowly above to the top of the eyes, a curved mark on the outer half

above, half of it below the eyes, the palpi, the edge of the pronotum, the scutellum, a line on the middle of the median segment, half on the areola, half on the posterior median area, a curved, narrow line on the under side of the propleuræ, the tubercles, a large mark shortly below the middle of the mesopleuræ, obliquely truncated in front, rounded behind, an irregular mark on the apex of the metapleuræ—rounded above, straight below and at the base and apex—touching the keel, the apex of the petiole, widest in the centre, behind the stigma, a line on the sides of the apex of the second segment, obliquely narrowed on the inner side, a smaller square mark on the apex of the third and the middle of the seventh segment, lemon-yellow. Legs black; the apices of the four front coxæ, the four front trochanters, and a large mark on the hinder coxæ above, lemon-yellow; the fore tibiæ almost entirely, the middle on the basal half, the hinder to beyond the middle, and the greater part of the tarsi, yellowish. On the hinder femora in the middle above is a short lemon-yellow line. Wings hyaline, with a slight fuscous tinge; the stigma and nervures testaceous. ♀. Length, 12–13 mm.

Hab. Darjeeling.

The middle of the antennæ has a broad white band, the apex brownish. Face closely and distinctly punctured, and sparsely covered with short pale pubescence; the clypeus is more sparsely and strongly punctured. Mesonotum closely and uniformly punctured, as is also the scutellum, which is covered with pale pubescence. The base of the median segment is closely rugosely punctured; the posterior median area closely transversely striated; the lateral basal areae are coarsely transversely striated at the apex; the lateral apical areae bear some stout, irregular transverse keels. Pleuræ closely and irregularly punctured; the meta- below closely and distinctly striated.

The three known species of *Haliphera* may be separated as follows:—

- 1 (2). The centre of the metanotum not marked with yellow, its sides largely yellow; the second and third abdominal segments broadly banded with yellow *fuscitarsis*.
- 2 (1). The centre of the metanotum marked with yellow, its sides immaculate; the second and third abdominal segments marked with yellow on the sides only.
- 3 (4). The mark on the centre of the metanotum large, the centre of the hinder femora yellow *maculipes*.
- 4 (3). The mark on the centre of the metanotum small, the hinder femora entirely black *flavomaculata*.

OXYURA.

EPYRIS ALBOPILUSUS, sp. nov.

Black; a rufous band behind the mandibular teeth, the four posterior trochanters testaceous, the wings fuscous hyaline, with a violaceous tinge, the stigma and nervures black. ♂. Length nearly 10 mm.

Hab. Darjeeling.

Antennæ thickly covered with pale pubescence, the scape with long silvery hair; the basal half of the flagellum sparsely with long pale hairs. Front and vertex, except behind the ocelli, closely covered with large, round punctures. Apex of clypeus smooth and shining; the raised central part finely, closely longitudinally striated. The lower half of the mandibles covered sparsely with large deep punctures; beneath with long white hair. The base of the pronotum in part rufous, and irregularly transversely striated; the apex closely punctured. Mesonotum coarsely, but not closely punctured; the furrows complete. The sides and apex of the scutellum strongly punctured, the base in the centre smooth. Post-scutellum keeled laterally, and with an irregular V-shaped area in the centre. Metanotum at the base irregularly reticulated on the sides, the centre irregularly transversely striated, with two lateral keels in the centre, originating from the base and a shorter one, not issuing from the base; the apical slope closely, strongly irregularly reticulated. Propleuræ irregularly striated in the centre; the meso- closely covered with large, round, clearly separated punctures; the metanotum closely and strongly striated; the striæ less strong and interrupted near the base; the upper part with a distinct bordering keel, with a similar keel below it; the space between bears some irregular striæ. The cubital, transverse cubital, and recurrent nervures are clearly indicated in white. Femora sparsely, the tibiæ and tarsi thickly covered with white hair.

The head is fully one-third longer than wide, keeled between the bases of the antennæ, the top of the keel being smooth and dilated. Mandibles large, four-dentate, the apical being the longer and sharper and the basal broader and more rounded than the middle ones. Scutellum flat. Prothorax shorter than the head. Apex of median segment rounded. Mesopleuræ with a wide, crenulated furrow near the apex. The radial cellule is long and narrow; the radius has an oblique slope at the base, and extends close to the apex of the wing; the transverse median nervure has a straight, oblique slope, and is received distinctly beyond the transverse basal, the third basal cellule being completely closed in front; the second discoidal cellule is clearly indicated.

DIPLOPTERA.

ODYNERUS RHIPHEUS, sp. nov.

Black; a broad mark on the pronotum extending to the middle and a line on the apex of the second and third abdominal segments, red; the wings dark fuscous-violaceous, the nervures and stigma black; the basal slope of the first abdominal segment smooth, irregularly margined above. ♀. Length, 8 mm.

Hab. Darjeeling.

Front and vertex closely, strongly punctured and sparsely covered with a white pile; there is a small yellow spot in the eye incision and two on the top of the antennal keel. Upper half of clypeus closely and strongly punctured, the lower more sparsely punctured and with the punctures longer; the apex shortly toothed laterally, the space between smooth and rounded at the apex. Apex of pronotum broadly, bluntly rounded, the sides of the basal part margined laterally. Pro- and mesothorax closely rugosely punctured; the post-scutellum stoutly

rugosely punctured; its apex with an oblique slope, opaque, and closely, finely rugose. Base of metanotum irregularly rugose, the rest alutaceous. Pro- and mesopleuræ closely, finely, but distinctly punctured; the meta- alutaceous. First and second segments of the abdomen closely and distinctly punctured; the first with a not very distinct suture on the top of the basal slope; the second is smooth and depressed at the base; the third to fifth segments are minutely punctured, the apical two smooth; the second ventral segment is obliquely produced downwards at the base. The second cubital cellule is much narrowed at the top, being not one-fourth of the length of the third.

A species not unlike *O. sikhimensis*, but is smaller and more slenderly built; that has the post-scutellum not so prominently raised; the second cubital cellule longer compared with the third above; the keel on the base of the first abdominal segment is much more prominent, the base of the mesopleuræ is not smooth and shining, and it wants the wide-curved crenulated furrow.

ODYNERUS TYTIDES, sp. nov.

Black; a line on the scape of the antennæ beneath, a large mark on either side of the top of the clypeus, a line along the lower margin of the eye incision, a trilobate mark above the base of the antennæ, a mark, longer than broad, behind the top of the eyes, the top of the pronotum, the mark narrowed in the middle, tegulæ, two marks, almost united on the base of the scutellum, a mark on the pleuræ below the tegulæ, the apex of the first abdominal segment above, of the second all round, a narrow indistinct line on the third, the apices of the fourth and fifth, of the sixth narrowly and the whole of the seventh, red. Legs black, the apices of the four front femora, the four front tibiæ except in the middle behind, the base of their tarsi and the hinder tibiæ in front rufous. Wings fuscous-violaceous, the nervures and stigma black. ♀. Length, 10-11 mm.

Hab. Darjeeling.

Head and thorax closely and distinctly punctured, except on the metanotum, the base of the mesopleuræ, and the lower part of the metanotum at the base. The upper part of the clypeus with large, longish, clearly separated punctures, the lower part with the punctures smaller, rounder, and closer together; its apex with a shallow incision, its sides not forming teeth. Pronotum transverse. Base of scutellum rugosely punctured, the apex closely, strongly longitudinally striated. Post-scutellum strongly rugosely punctured, raised, its sides slightly raised above into blunt teeth, the apex with a steep oblique slope. Metapleuræ closely, irregularly striated, above almost reticulated, at the base above is a space with clearly separated, fine striations; the lower part at the apex laterally projecting into a longish tooth. The first and second abdominal segments are closely, distinctly, but not very strongly punctured, as are also the third, fourth, fifth; the last is impunctate. The second cubital cellule is narrowed at the top, being there less than the length of the space bounded by the first transverse cubital and the first recurrent nervures.

The male is similarly coloured; the tibiæ and tarsi are of a

brighter, more uniform testaceous colour; the clypeus is deeply incised in the middle at the apex; the sides of the incision forming stout teeth; there is a yellow spot on the sides of the post-scutellum.

Comes near to *O. sikhimensis*, Bingh. *O. prudens*, Nurse, may be known from it by the sides of the post-scutellum not being raised into blunt teeth.

(To be continued.)

SOME TASMANIAN CASE-BEARING LEPIDOPTERA.

BY FRANK M. LITTLER, F.E.S., M.A.O.U.

THE study of the life-history of case-bearing lepidopterous larvæ is always a subject of interest to entomologists, as there is so much mystery attaching to them. One never knows what unexpected trait is next going to be brought to light. For some time past I have been closely investigating the habits of two species — one a Psychidæ, and the other one of the Tineidæ. Other species have been less studied, owing to paucity of material; these will be touched on in due course.

It is my intention to give an account of my investigations as far as they go, in the hope they will be of some little interest to my fellow-entomologists. To say that I was surprised at some of the unexpected phases observed is no exaggeration.

CLANIA LEWINII, Westw.

♂. 25–28 mm. Head, thorax, and antennæ blackish; face white; thorax with two white moderate longitudinal stripes; patagia white, abdomen black; legs black. Fore wings elongate, moderate; costa nearly straight; termen oblique, semi-hyaline, finely irrorated with black scales, especially on margins; cell almost clear transparent. Hind wings with termen rounded, very faintly sinuate beyond middle; colour as in fore wings; a few blackish hairs towards base.

♀. 12–14 mm. Rich cream colour, with the exception of the head and thoracic segments, which are brown. Quite naked, except for a slight pilose fringe of yellowish-white hair on the anal segments, which has the appearance of a tonsure in miniature. The legs, save for the first pair, are rudimentary, and they are but apologies, quite powerless for locomotion. The mouth-parts are very indistinct, and appear coalesced. Eyes absent, merely dark marks where they should be.

That it should be sightless, and without power of locomotion, is not surprising, seeing that it never leaves the case, even for a short time. When the maggot-like imago is taken from its case, and turned on its back on, say, a table, it has a curious method of righting itself. Commencing at the anal extremity, the contents of the body are seemingly forced up towards the head in a

diminutive wave-like manner, which turns it over on to its face again. The body then regains its normal size. I have found, after repeated experiments, that the wave-like motion will propel the body forward 1 mm. on a smooth surface.

This species is the most plentiful of any case-builder moth in Tasmania. The larvæ feed on various species of eucalyptus and acacia, also sweet-brier, and occasionally other plants. I have lately been studying the habits and development of this species, and have been both surprised and delighted at what I saw.

For some time entomologists could not agree as to whether the members of the family Psychidæ did really lay eggs, or whether the young hatched from within the body of the parent. Prof. McCoy, in Decade IV. of 'Prodromus of the Zoology of Victoria,' says:—" . . . Immense numbers of young are brought forth, not in the egg-state, as hitherto supposed for all moths, but as exceedingly minute perfect larvæ. In confirmation of this unexpected discovery, I may mention that no eggs are ever found in the cases of the species observed in this colony, and the myriads of young produced by each female may be observed emerging in a continuous stream as minute larvæ, under circumstances which render it impossible to suppose that eggs could have been deposited."

Entomological science has advanced much since the above quotation was penned, and we have learned that the females of the Psychidæ really do lay eggs; but the manner of laying them, and the behaviour of the females after the operation, is not so well known to the bulk of entomologists. Before proceeding to the actual egg-laying, let me say that the females of the particular species under discussion are enclosed in brown pupa-cases tapering at the anterior end, but rounded at the other extremity. They are fixed midway in the case. The segments are distinctly marked. *When the females are ready to copulate the bottoms of the pupa-cases drop off.* Copulation then takes place; the males have to insert at least two-thirds of their abdomens into the outside cases in order to reach the females. The abdomens of the males are capable of great extension. *After copulation the females wriggle out of their close-fitting prisons, turn head downwards, and wriggle back again, so that their heads just project beyond the posterior extremity of the pupa-cases.* Egg-laying then commences, and continues until one-fourth to one-third of the cases are filled. The eggs are bright yellow and round; with them is packed a little short yellow fluff from round the ovipositor of the females. By the time egg-laying is finished, *the females are but shadows of their former selves; they then drop out of the pupa-cases, and fall to the bottom of the "cases" or "sacks," and there shrivel and die.* In a few days they are mere tiny scraps of brown dried skin. The number of eggs laid varies from two hundred to five hundred. Several writers on the

Psychidæ mention the fact that the females lay eggs, but omit to give any details as to the *modus operandi*. In a Bulletin (No. 6) issued in 1899 by the Cape of Good Hope Department of Agriculture is an illustration of a "sack" of a bag-worm, cut open to show the female within depositing her eggs. The female is depicted out of her pupa-case, depositing her eggs in the bottom of the sack. This is either a mistake, or else the species illustrated has totally different habits to the one I am at present discussing—*Oeceticus ignobilis*, or *Metura elongata*, found on the mainland of Australia.

Although I have had several hundred pupa-cases full of eggs in my possession from time to time, I have never noted the number of days the eggs took to hatch. The bulk commenced to emerge on February 2nd. The young, as they hatch from the eggs, find their way out of the cases by the posterior opening. They let themselves down by means of long threads, and soon spread all over the tree or shrub. They are then 1.5 mm. long, and of a dark chocolate colour, especially the head and thorax, which are nearly black. The posterior extremity of the body is carried erect. In a few hours the first "case" is formed. Mr. G. V. Hudson, when speaking of *Oeceticus omnivorus* in his fine work, 'New Zealand Moths and Butterflies,' says that not for three days is the first case formed. This is quite contrary to my experience with other Psychidæ. But, to return. The first case is constructed of very fine scales of bark and lichen from the boughs of the trees, and fastened together with silk. This case is the same length as the larvæ, *viz.* 1.5 mm., and shaped like a miniature inverted earthenware crucible as used by metallurgists. I say "inverted," because the case is always carried over the back on the posterior segments until it becomes too heavy; it then hangs downwards. It was not until sixty-three days after the first case was formed by bred specimens that it got too heavy to carry upright.

In the 'Cambridge Natural History,' vol. ii. p. 393, it is stated that Psychidæ larvæ are thought by some to make a first meal on the body of their parent. This is most certainly not the case with this or any other species of the family whose habits I have investigated. I have had many opportunities of watching a larva in captivity construct its first case. To give a typical example: The case was made out of grains of cork, and took two hours to complete. First, a mass of cork-grains, loosely fastened together with silk, was formed; through the centre of this mass the caterpillar thrust its head, then worked, by means of its mandibles, the mass into the form of a narrow closely woven band, round what might for the sake of convenience be called its neck. Slowly fragment after fragment of cork was gnawed off, and fastened by means of silk to the front edge of the broadening band, which was gradually being pushed down and round the

body. At the expiration of one hour and three-quarters the case was finished, all but drawing the posterior aperture closer, by means of the anal claspers, and finishing off the edge of the anterior opening. Until the posterior opening was drawn together the case was cylindrical. Afterwards it approximated to a miniature crucible rather than a cone. As the larvæ grow they first add to their cases fragments of leaves, and then, as their mandibles acquire greater strength, short lengths of sticks. The operation of enlarging the case by the addition of more sticks is a very curious and interesting one, and one but seldom witnessed. In the 'Entomologist' of August last year I described the process as witnessed by me, but, to make this article complete, and at the risk of being tedious, I will redescribe what occurred. First, the edge of the mouth of the case was tightly attached with silk to the twig from which a portion was to be cut. The caterpillar then protruded itself half out of its case, and commenced nibbling round the twig. In a very short time it was severed. I should have before remarked that the top of the twig and several leaves were bitten off before cutting a piece the required length (about one inch). As soon as the portion was severed it was grasped by the caterpillar in its legs, which acted in the capacity of hands, and then given a coating of silk. This occupied two or three minutes. It was marvellous to watch the ease with which the piece was handled, being turned over and over, backwards and forwards, without a seeming effort. It was nearly always grasped in the middle. After the coating process was finished the caterpillar retreated inside its case, laying the twig lengthwise across the mouth. It then bit an opening about a quarter of an inch from the top, came half-way out through the opening thus formed, and pulled down the piece of twig. It was then lightly fastened by one end near the top of the case. The caterpillar then proceeded to fasten it securely for half its length among the other bits of twigs already there. This done, it retreated into its case, and fastened up the rent made in the fabric, at the same time securely attaching the top of the twig. Unfortunately, I never witnessed the lower portion being fastened down, but should imagine the process was the same. Next day it was impossible to distinguish this twig from the others. Its thickness was that, say, of a two inch wire-nail.

I have not yet ascertained the exact length of time the larvæ take to come to maturity, nor how long the males remain in the pupal condition. I have had several opportunities of timing the latter, but, owing to press of other work, it has been neglected. However, I hope to complete my observations this coming summer. The males nearly always emerge during the night; after drying their wings they either fly off to find a mate, or, if there are female "cases" on the same tree, they copulate without delay. The same thing occurs when there are cases of both

sexes in a breeding-cage. The males are very swift flyers, and soon dash themselves to pieces in a breeding-cage. When ready to emerge, the pupæ work their way, with the aid of the short sharp spines on some of the rings, half out of the bottoms of the cases; the moths, on hatching, crawl on to the cases and dry their wings. In many of the cases one, two, and sometimes three extra long pieces of stick project beyond the bottom of the cases. Some writers have advanced the opinion that these sticks are placed designedly in order to help the males emerge. Out of curiosity I examined the cases in one of my breeding-cages, with the following result: 227 cases, 127 males, 100 females; 45 of the former had projecting ends, and 24 of the latter. This result seems to indicate that whether the cases have projecting ends or no is just a matter of chance.

I have watched many males emerge, and always found they had no difficulty in leaving the pupa-case, and crawling on to the "case" when there were no projecting ends. Before turning to pupæ the male larvæ turn upside down inside the cases, so say the majority of writers on the subject. This may be quite correct, but I have made one or two observations of my own on the subject. One of the two species of Braconid flies that infest this species of case-moth always emerges from the upper end of the case, coming through a hole in the head of the male pupæ standing upright in the cases. It may be that being parasitised prevented the larvæ turning before pupating, but it did not prevent them from turning to externally perfect pupæ. *It seems quite possible, and very probable, that it is the pupæ that reverse, and then only when ready to emerge.* The other species of Braconid fly always emerges from the lower end of the cases, killing the larvæ before it pupates. A third parasitic fly is a true *Musca*; it also kills the larvæ, but emerges from the upper end. Sparrows may often be seen tearing open the cases and devouring the larvæ. Out of 256 cases examined, twenty-nine were struck by one of the three species of parasitic flies.

[Note by Dr. T. A. Chapman:—The observations in italics on pp. 311, 314 are so contrary to those made on so very many other Psychids, that it would be extremely valuable if Mr. Littler would repeat these observations with every care. Though actual observation has been made on very few species, as to the actual occurrences whilst they are taking place, the fact that female Psychid cases of very many species show the eggs to be laid in the undamaged female pupa-case (no bottom dropped off), and the absence of any trace of the female herself shows that she dropped out of the mouth of the case, strongly support the idea that the mass of species have very similar habits in this respect. The habits of insects are so various and unexpected that it is impossible to say what habits might not occur, but one would like

to see the pupa-case with the bottom dropped off—especially one would like to see the female reversed in her pupa-case—and one would like to see her dried remains in the attached end of the case at the anal extremity of the pupa-case. The infertile female often dies in her pupa-case, but when she has laid her eggs she is at the free end of the case, and almost invariably drops out. Clear evidence that *C. lewinii* has the habit described would be most interesting.]

(To be continued.)

A PRELIMINARY LIST OF THE LEPIDOPTERA OF MALTA.

By THOMAS BAINBRIGGE FLETCHER, R.N., F.E.S.

(Continued from p. 276.)

A local magazine, the 'Mediterranean Naturalist,' which was unfortunately but short-lived, contains several notes on Lepidoptera. An article entitled "Notes on the Lepidoptera of Malta"—*Medn. Nat.*, vol. i., pp. 85 and 106 (1891),—by Alfred Caruana-Gatto, contains the first really useful information on the subject.

The only other published information which I have been able to find is comprised in two papers on Mediterranean Lepidoptera by Messrs. Gervase F. Mathew and Philip de la Garde ('*Entomologist*,' vol. xxxi. p. 80, and vol. xxxii. p. 8). On these papers I have drawn freely, as there are many species mentioned therein which I personally have not met with in Malta.

Mr. Prout has also lately published in the '*Entomologist*' a few remarks on some Geometrids collected by Mr. Mathew in Malta (*Entom.* xxxvi. 204).

The numbers preceding each species are those in Staudinger's '*Catalog*,' 3rd edition. I have followed the order therein given, except that I have commenced the butterflies with the Nymphalidæ.

152. *Pyrameis (Vanessa) atalanta*, Linn. Maltese name, *farjett-tal-horriek*.—Common throughout the year, especially in gardens, &c. A new brood is on the wing at the end of May, and specimens of this brood probably survive until the following March.

154. *P. cardui*, Linn.—Abundant everywhere throughout the year.

157. *Aglais (Vanessa) urticae*, Linn. — Mr. Gervase F. Mathew informs me (*in litt.*) that he noticed one specimen on March 23rd, 1892. It must, however, be a rare species in Malta, and is probably only a casual immigrant.

385. *Pararge egeria* Linn. — The ordinary South European form occurs commonly in Malta, but is local, confining itself to gardens and valleys. Gneina, Boschetto, Intahleb, Ghirgenti, Wied-el-Kbir, Wied

Kratul, and Wied Kurda may be mentioned as localities. It is fond of flitting about in the shade of carob trees, and is found from March to October.

390. *Satyrus (Pararge) megera*, Linn. — Very common. The first brood appears at the beginning of March, the second at the beginning of June, and a third in the late autumn; but probably the broods so overlap that it may be said to be continuous-brooded throughout the year, fresh specimens being met with in any month. The individuals disclosed in March are fairly typical, but those emerging from June onwards are var. *tigellus*, Bon.

392. *S. (Pararge) mæra*, Linn.—“On Jan. 3rd, 1897, I have a note in my journal that I saw *L. mæra* in a ravine beyond Zeitun, but, as I did not catch it, I did not include it in my list” (Gervase F. Mathew, *in litt.*, April 13th, 1904). I have never met with this species in Malta, nor heard of its occurrence, except as noted above.

402. *Epinephele jurtina*, Linn. (*E. ianira*, Linn. var. *hispulla*, Hb.).—Maltese specimens all belong to the form *hispulla*, and are much larger than typical English examples. The species is abundant in wields all over the island from the end of April to the end of September, there being practically no variation according to date of emergence. In the males the ocellation on the under side of the hind wings varies from nil to five. The females represent a very extreme form of *hispulla*, the fulvous marking extending over practically the whole of the fore wing. Aberrations with the apical spot bipupilled are of frequent occurrence.

440. *Canonympha pamphilus*, Linn.—Abundant. I have met with this species as early as February 27th, and as late as November 14th. The specimens taken from February to early June seem fairly typical, the form *marginata* occurring frequently, and the form *thyrsides* occasionally. From June onwards the specimens are mostly referable to var. *æst. iyllus*. It is, however, often very difficult to decide to what form any particular example is to be referred, as it frequently combines the characters of two, or even of three, forms.

529. *Polyommatus batiscus*, Linn. Maltese name, *farfett ikhal*; Italian, *azzurina*. — Not uncommon from March onwards. I have generally taken it in the wields in company with *L. icarus*. Mr. Caruana-Gatto notes its especial preference for flowers of *Duranta plumerii* and *Phaseolus caracalla*.

589. *Lycæna astrarche*, Bergst.—Common throughout the whole of the warm season. Freshly-emerged specimens are met with at the beginning of March, in May, and at the end of September. Maltese examples are large. Mathew states that they are typical, but here I must disagree. Those taken from March to May are referable to gen. vern. merid. *ornata*, Stdgr., whilst specimens emerging from June onwards fall under gen. *æst. merid. calida*, Bell.

604. *L. icarus*, Rott.—Abundant from the beginning of March until the autumn. Freshly-emerged specimens are found from the beginning of March to the middle of April, and again from the middle of May until the middle of June; I do not know of any autumn brood. Spring (March to May) specimens are fairly typical, although the blue of the male is generally of a more brilliant hue than in North European examples, and in the female the blue markings are very restricted. The aberration *melanotoxa* is not uncommon. The form *celina*, Aust.,

occurs in the vernal broods of the male as an occasional aberration, but all the summer (June onwards) examples are referable to this form. Substituting the name *rufina*, Oberth., for *celina*, the same remarks apply to the female also, and (at least in the case of these Maltese specimens) it seems to me that we have two names for the two sexes of the same emergence, and that they should both be united under the name *celina*.

512. *Chrysophanus (Polyommatus) phlæas*, Linn. — Abundant, and occurs throughout the year, though of course only occasional examples are to be met with in the winter months. Early spring specimens are typical, but the hind wings beneath are generally greyer than in the North European form. Those found from May onwards are referable to gen. *æst. eleus*, Fb.

45. *Pieris brassicæ*, Linn. Maltese name, *farfett tal cromb*; Italian, *grande carolaia*.—Abundant all over the island. The larvæ infest the cabbage-fields and do great damage, so that the country-people, before cutting the plants, find it necessary to examine them several times one by one. Occasional specimens are to be seen on the wing on warm days throughout the three winter months, but the first week in March is the usual time of emergence of the spring brood. A second brood appears in May, a third in July, and probably a fourth in September. Mathew states that “the females of the early autumn brood have the tip of their anterior wings broadly black, and the black spots are much larger than in those of the earlier broods.” All my specimens are quite normal, and exhibit no seasonal variation.

48. *P. rapæ*, Linn. Maltese name, *farfett tal cromb zghair*; Italian, *rapaiuola*.—Abundant throughout the year. The first brood emerges in the middle of February, the second in the middle of May; there is a third in July, and a fourth (perhaps partial) in September and October. Specimens of the first brood are similar to our English spring examples (var. *metra*, Steph.), and those of the May brood are the same as our own August specimens (*rapæ*, Linn.). But Maltese specimens taken in July and August have very dark tips to the wings (var. *messanicensis*, Zell.), and some of the females of the autumnal brood are of a deep olive-yellow.

57. *Pontia (Pieris) daphidice*, Linn.—Common in uncultivated places from March to November.

113. *Eurymus (Colias) croceus*, Fourcroy (*E. edusa*, Auct.). Maltese name, *zolfina*.—Common throughout the year. Freshly-emerged specimens are to be found in March and April, and again in June. Vars. *helice*, Hb., and *helicina*, Oberth., occasionally occur with the type; as also do var. *minor*, Costa, and ab. fem. *obsoleta*, Tutt.

124. *Colias (Rhodocera, Gonepteryx) rhamnii*, Linn. — “Prof. Gulia says that this species is common in gardens, together with *R. cleopatra*; on the contrary, it is very rare, and I have only seen it in the collection of Mr. Briffa, who took it in spring-time in the Hastings’ garden in Valletta, and he saw another flying over the terrace on March 16th; and on the same day another of the same species was seen near Pembroke Camp by Mr. Phillip (*sic!*) de la Garde” (Alfred Caruana-Gatto in *Medn. Naturalist*, vol. i. p. 87). “Of the seventeen butterflies known to inhabit Malta . . . between March and May . . . I have seen *Gon. rhamnii* . . . leaving unaccounted for *G. cleopatra*”

(P. de la Garde, *l. c.* p. 133). These records are the only information I possess regarding the occurrence of *rhamnii* in Malta. It is not a species at all likely to occur, and I strongly suspect an error in determination.

125. *C. cleopatra*, Linn. — Scarce, and confined for the most part to the gardens and valleys of the western side of the island. Mr. Mathew observed the females ovipositing on a stunted thorny buckthorn in February and March. Mina-Palumbo and Failla-Tedaldi (Mat. per la Fauna lepidott. della Sicilia, p. 25) state that "nelle nostre contrade, Madonie, questa specie ha tre apparizioni; la prima in gennaio, la seconda in giugno e luglio, la terza in sett. et ott. . . . Le diverse generazioni non offrono notevoli differenze." Arguing from analogy, this species should also be triple-brooded in Malta, but there is not sufficient evidence to show whether this is the case. I have only once met with it, on June 14th, 1902, when the specimens, all males, seemed freshly emerged. Caruana-Gatto records a specimen taken in June. Mr. Mathew—who gives (*in litt.*) dates captured or noted:—Feb. 27th, 1897; March 22nd, 1897; March 18th to May 30th, 1898; June 25th, 1892; and July 10th, 1897—considers that there is only one brood, the specimens emerging in June, hybernating, and ovipositing in the spring.

4. *Achirus (Papilio) machaon*, Linn. Maltese name, *farfett tal feijel*; Italian, *macaone*.—Fairly common between the middle of March and the middle of November. There appears to be a succession of broods, and it is usually most plentiful in April and September. The larvæ are to be found upon fennel, which grows commonly about the island. The later emergences seem to tend more and more to var. *sphyrus*, Hb., to which the majority of the specimens on the wing in the late summer may probably be referred.

735. *Agrius (Sphinx) convolvuli*, Linn.—Mr. Caruana-Gatto says: "This moth is never a rare species here, but I have been struck by the great numbers I have seen in September and October in all places where there were *Pancretii* in flower" (Medn. Nat. vol. ii. p. 287; Dec. 1st, 1892). I have only once met with this species in Malta, and that was on May 26th, 1902. It appears, therefore, to be double-brooded.

749. *Hyles (Cherocampa) euphorbiae*, Linn.—The moth is common in May, and the larvæ are abundant during the autumn.

752. *Phryxus (Deilephila) livornica*, Esp.—Not uncommon in May. I have seen it hovering over flowers in the Argotti Gardens just before sunset.

753. *Hippotion (Cherocampa) celerio*, Linn. — Scarce. I have one specimen, taken on Nov. 26th, 1902. Mr. Caruana-Gatto records one on October 11th, 1892, and three others taken about the same time (Medn. Nat. vol. ii. p. 287); and Mr. J. C. Sciortino records another taken at light in August, 1892 (*l. c.* p. 330).

768. *Sesia (Macroglossum) stellatarum*, Linn. — Abundant throughout the year. Fresh broods appear in May and October, the latter surviving until about the end of March, and constantly appearing on the wing throughout the winter.

970. *Lasiocampa quercus*, Linn. — Mr. De la Garde records both type and var. *sicula*: the latter emerged in July. I have only met

with the species in the larval state, when it was feeding on ivy at Boschetto. Mr. Mathew also (*in litt.*) notes its occurrence at the same locality.

976. *Pachygastris trifolii*, Esp.—Larvæ are abundant in the spring, spinning up about the first week in April. The moth occurs in the late summer and autumn. Mathew notes a specimen (taken on October 26th) as probably referable to var. *iberica*, Gn.

1152. *Agrotis (Triphena) pronuba*, Linn.—Not common. Occurs in April and May.

1345. *A. puta*, Hb.—Common at light in October, 1903.

1399. *A. ypsilon*, Rott. (*suffusa*, Hb.).—One specimen on Corradino Hill, February 24th, 1902. Mr. Mathew also took one.

1400. *A. segetum*, Schiff.—Probably common throughout the summer. June 5th and October 22nd, 1902.

1401. *A. trux*, Hb. — One specimen; June 13th, 1902. It seems referable to var. *terranea* Frr.

1402. *A. saucia*, Hb.—One specimen; March, 1897 (Mathew).

1405. *A. crassa*, Hb.—One specimen; to light; October 10th, 1903.

1477. *Mamestra trifolii*, Rott. — One specimen; Argotti Gardens; October 3rd, 1903.

1599. *Bryophila muralis*, Forst.—Larvæ common on lichen-covered walls, the moths appearing in July and August. Cittia Vecchia (Mathew); Argetto Gardens.

1600. *B. perla*. — Previously recorded from Malta in error, the specimens being referable to the preceding species.

1610. *Diloba cæruleocephala*, Linn. — The larvæ are abundant on fruit-trees in spring, and pupate about the first week in April. The moth does not appear to have been noticed at large. My bred specimens emerged in December, and only then when the pupæ were damped, so it seems probable that in its natural state the imago does not emerge before the autumn rains. This extended pupal period, if my theory be correct, precludes oviposition from taking place until the end of the year, when the fruit-trees are again coming into leaf, thus insuring a provision of pabulum for the young larvæ on emergence.

1664. *Hadena solieri*, Bdv. — Common in November. Comes to light freely.

1787. *Polia canescens*, Dup. (*xanthomista*, Hb., var.; *nigrocincta*, Tr. (Mathew)).—The larvæ occur in December and January on various flowers, especially those of a sweet-smelling narcissus. The moth appears in October (Mathew).

2181. *Calocampa exoleta*, Linn.—The larvæ are common in spring, especially on *Oxalis*, and pupate in March. The moth appears in July.

2327. *Heliothis armigera*, Hb.—Generally common from March onwards; but this species seems to be one whose abundance is very intermittent. In some years it is common, even abundant; in other years scarcely one is to be seen.

2380. *Acontia luctuosa*, Esp.—Common from April to June, and again in October.

2428. *Thalpochares ostrina*, Hb.—Common in March and June. As a general rule, March specimens seem referable to var. *astivalis*, Gn., and June examples to var. *carthami*, H.S.; but intermediate forms occur.

NOTES AND OBSERVATIONS.

PERONEA HASTIANA FROM SURREY AND THE LANCASHIRE COAST.—Towards the end of August last I collected some two dozen larvæ of *P. hastiana* in the Ockham district, and from these fifteen moths were reared in October. The specimens are mostly reddish brown or blackish brown in colour. One of them has a broad whitish streak on costal area (*divisana*, Steph.); another is a modification of *leucopheana*, Bent.; a third is referable to *autumnana*, Steph., but it has the black discal streak of *leucopheana*; whilst a fourth example is *centrorittana*, Steph., with a black longitudinal discal streak as in *leucopheana*, thus combining the characters of the two forms. The more variegated forms, such as *coronana*, were not represented, except by two examples which perhaps are more correctly to be referred to typical *hastiana* as figured by Clerck. Possibly, if a larger number of larvæ had been secured, a more extended range of variation would have been obtained. From a number of larvæ of *P. hastiana*, estimated at about five hundred by Mr. Baxter, who kindly collected them for me on the Lancashire coast, I have reared two hundred and sixty moths. The bulk of these, as regards the fore wings, are black or fuliginous; some with obscure markings, but mostly unicolorous. Of the named forms there are twenty *mayrana*, about a dozen *centrorittana*, three *divisana*, two *leucopheana*, and one *combustana*. A few specimens are modifications of the typical form (*hastiana*), but there is no example of var. *coronana*, and only one or two are referable to var. *autumnana*. A few specimens are leaden-grey, with darker but ill-defined markings, a form of the species I had not met with before.—RICHARD SOUTH; 96, Drakefield Road, Upper Tooting, S.W.

ON "ASSEMBLING" IN LASIOCAMPA QUERCUS.—I bred *L. quercus* in some numbers this season, from eggs deposited by a female in 1903, and made a number of experiments in assembling in the garden, the results of which appear below. The females usually emerged between noon and 3 p.m., and in each case were exposed in a large leno cage in the middle of the lawn, so that there was a clear space of over fifty feet all round. It was a pretty sight to see a male pick up the line of scent, which he did instantly if released dead to leeward, otherwise he would fly across wind until he found the line.

July 12th, exposed four females bred on 11th, and (in another cage) three females bred on 12th; released seven males, all of which returned to the females bred on 11th, although the others were sometimes placed just to leeward, and in their line of flight. 13th, exposed one female bred on 11th, and two bred on 13th; released four males, all of which returned to females bred on 13th. 15th, exposed nine females bred same day, and assembled three wild males; three females were left until they died, for the purpose of the following experiments. 16th, assembled six males. 17th, no wild males assembled, but some bred ones, when released, all returned to above nine females, after some delay, though they appeared to be not so strongly attracted, and would often fly away again after a few minutes; they declined to assemble to two females bred on 17th. 18th, four males assembled.

19th, one male attracted. 20th, none seen, but I was away for part of the day. 21st, one male attracted. 22nd, four males assembled. 23rd, one male attracted; after this date none were seen, and the females were all dead by the 29th.

The conclusions I arrive at from above are, that the attractiveness of the female reaches its zenith on the day after emergence, and lasts in some degree for a week afterwards. The experiments of July 13th and 17th are apparently contradictory; I can only assume that the single female on the first date was not "calling"; this possibility I minimised later on by using several females.—A. U. BATTLE; Kingsfield, Herne Bay.

NATIONAL COLLECTION OF BRITISH LEPIDOPTERA.—Mr. Louis B. Prout has recently contributed six specimens of *Tephroclystis* (*Eupithecia*) *jasioncata* reared by him from larvæ obtained in North Devonshire. It may be noted here that the Museum series of several British species in this section are sadly in need of improvement, and this is more particularly the case with the following:—*T. campanulata*, *T. munitata*, *T. trisignaria*, *T. constrictata*, *T. subciliata*, *T. pusillata*, *T. exigua*, *T. irriguata*, *T. insignata* (= *consignata*), *T. fraxinata*, *T. helveticaria*, *Chloroclystis coronata*, *C. rectangularata*, and *C. debiliata*. Scotch and North English forms of *T. satyrata*, *T. sobrinata*, *T. nanata*, and *Gymnocelis pumilata*, would be exceedingly useful. Fresh Southern specimens of *T. venosata* are also desirable.

DESCRIPTION OF A VARIETY OF THE LARVA OF *Calocampa vetusta*.—On the night of June 11th last, I was surprised at taking a female *Calocampa* at sugar, but she was in such bad condition I could not distinguish which of the species it was. Both occur here, *vetusta* being rather the more common of the two. She was kept in a chip-box, and in the course of a week deposited about three dozen eggs. These hatched on June 24th, and the larvæ fed up very rapidly on knot-grass, and by July 24th were all full-grown, and were as fine and healthy-looking lot of larvæ as I have ever seen. But they puzzled me exceedingly, for they in no way resembled the figures of either species as represented in Buckler's plates. However, on Sept. 29th, the first moth (a fine *vetusta*) emerged, and subsequently five others, three of them being cripples; and these were all I bred—rather a poor percentage out of thirty-one larvæ. The following is a description of the full-grown larva:—Head pinkish olive-green; second segment the same colour, with a dark transverse olive-green stripe across the anterior part; dorsal stripe conspicuous and pale lemon-yellow, or pinkish yellow; below the dorsal stripe comes a broad very dark, almost black, olive-green stripe, having a soft velvety appearance, and near the lower edge of this upon each segment are three conspicuous white dots arranged in an obtuse angle; this stripe is bordered below by a narrow lemon-yellow line, followed by a broad greenish olive stripe, which is gradually clouded towards its lower edge, where it becomes an intense dark olive-green, and in this the minute orange spiracles are seated; below the spiracles there is a broad lemon-yellow stripe; the under surface and claspers are pale olive-green. It is an

extremely beautiful larva.—GERVASE F. MATHEW; DOVERCOURT, ESSEX, NOV. 16th, 1904.

PARARGE ACHINE ON THE MENDEL PASS.—I have read with much interest the note on *Pararge achine* (*ante*, p. 272). As Mr. Lowe surmises, I did not take the species in sufficient numbers to determine whether or not his description of a local race holds good in the case of those observed on the Mendel Pass by me and my friends this year. In fact, I brought home only two females, and have never come across the species elsewhere in my entomological rambles, though I know it is common enough in many parts of the Continent, and notably in the Forest of Fontainebleau. I have therefore no material to compare, and all I can say is that the two specimens in my cabinet correspond with Mr. Lowe's characterisation of his Mendel forms. Under the circumstances, I asked Mr. F. C. Lemann if he would be good enough to look over the series taken by him in the South Tyrol during this and other years, and he reports that undoubtedly most of these specimens have a much more interrupted band of white on the under side than those taken elsewhere. On the other hand, though they are extreme in this respect, there is one from Mendel, and another from the Uetliberg, which are intermediate, and appear to link the two extreme forms. He further remarks that it is curious that another specimen from the Uetliberg is the most distinctly marked with white of all in the series, though some from Sweden and the Rhone Valley run it hard. "As regards the size of the spots," he adds, "they vary in almost every case, but I have Swiss examples with spots quite as large as those from Mendel." I also requested Dr. H. C. Lang to examine his series, and he writes: "I have seventeen specimens of *Pararge achine* in the collection. The disposition of the white band is as follows:—I. 1. A broad white band continued from costa to anal angle, the eye spots being placed in it, *i. e.* surrounded on both sides throughout their entire length (*loc.*, Podolia). II. 2, 3 (Amur); 4, 5, 6 (Switzerland); 7. 8 (Dresden). Broad white band *inside* row of eye-spots (outside only as far as third spot from costa), the three lower spots placed on a colour same as ground colour. III. 9, 10 (Berchtesgaten). White band much narrower; 11, 12, 13, 14 (Dresden), and IV. 15, 16, 17 (Dresden). White band reduced to merely a narrow wavy line not worth calling a band; in one specimen more yellowish than white. This is the result of my observations. I do not think there is much to indicate local races except in the specimen from Podolia. The two specimens from the Amur are remarkable on the upper surface for the size of the eye-spots, and for the distinctness and lightness of colour in the rings surrounding them (= *achinoides*, Butl., *eximia*, Stgr.)." The evidence I have collected, therefore, seems to suggest that the peculiarities noted by Mr. Lowe in his Mendel series are not necessarily constant or distinctive of this particular locality, — H. ROWLAND-BROWN; HARROW WEALD, NOV. 17th, 1904.

CAPTURES AND FIELD REPORTS.

VANESSA ANTIOPA IN THE ISLE OF WIGHT.—On Sept. 27th a beautiful specimen of *V. antiopa* swiftly passed me. It was flying along the road at Quarr Abbey, near Ryde, but as I was without my net it escaped capture. I believe that the appearance of this species in the island is an extremely rare event.—H. P. TARRANT; Well Street, Ryde, Oct. 7th, 1904.

LARVÆ FROM HONEYSUCKLE.—Last spring, by beating honeysuckle (*Lonicera periclymenum*) by night, I obtained the following larvæ:—*Triphæna fimbria*, *T. comes*, *T. ianthina*, *Noctua festiva*, *N. triangulum*, *Aplecta nebulosa*, *Mania typica*, *Crocallis elingvaria*, *Pericallia syringaria*, *Boarmia repandata*, *B. rhomboidaria*, *Cidaria truncata*, *Cerostoma nemorella*, *C. xylostella*, and over thirty *Epunda lichenea*. Is not this a hitherto unrecorded food-plant for the last-mentioned species?—E. D. MORGAN; 8, Luscombe Terrace, Dawlish, Devon, Nov. 5th, 1904.

COLIAS EDUSA AND DASYCAMPA RUBIGINEA IN DEVON.—I saw six or eight examples of *C. edusa* in this district last August, but they were mostly in a chipped condition. On Nov. 1st I obtained a fine specimen of *D. rubiginea* at ivy bloom.—E. D. MORGAN; 8, Luscombe Terrace, Dawlish, Nov. 5th, 1904.

SPHINX CONVULVULI IN WALES.—On Aug. 23rd last a fine male specimen of *S. convolvuli*, in splendid condition, was brought to me by a friend.—RICHARD GARRATT; 2, Victoria Square, Penarth.

SMERINTHUS POPULI IN AUGUST.—On Aug. 13th a little lady friend of mine brought in a fine male specimen of *S. populi*, apparently just emerged.—RICHARD GARRATT; 2, Victoria Square, Penarth.

COLEOPTERA REARED FROM DECAYED WOOD.—In the autumn of 1903 I placed in a muslin bag, in a greenhouse, a piece of decayed elm, and from it I obtained *Omalium pygmaeum* which I had not seen before; also three examples of *Cistela ater*, with other common species. From dead branches of broom I have reared *Lamophleus ater* and *Dryophilus anoboides*, and from Scotch fir, *Cryphalus abietis*. I am indebted to Mr. Newbery for confirmation of above.—ALFRED BEAUMONT; The Cottage, Gosfield, Halstead, Essex, Oct. 24th.

COLIAS EDUSA IN NOVEMBER.—On Nov. 5th a fine male of this species was noticed at Littlehampton, Sussex. Is not this rather late for this species? Of the various works I have consulted, Newman alone gives November.—T. B. TREND; 1, Grosvenor Square, Southampton, Nov. 13th, 1904.

COLIAS EDUSA IN NOVEMBER.—Yesterday I had brought to me by the six-year-old son of Mr. Moore, of Palmer's Green, N., a specimen of *C. edusa*, which he had captured in Broomfield Park, Palmer's Green. I believe it to be a male, and it seemed in perfect condition, although rather spoilt by the lad throwing his cap on it and bringing it home in his hands.—L. E. DUNSTER; 62, Lascotts Road, Bowes Park, N., Nov. 13th, 1904.

OROBENA STRAMINALIS IN SURREY.—Referring to note in the November number about this species, it may be of interest to mention that I took two specimens last year in Surrey. The first was on July 5th, at Fetcham, and was quite fresh; but I could not find any more in the same spot. The second example was taken on Aug. 2nd, in a field near Rannmore, but was very worn.—E. C. GOULTON; Stanmore House, Benhill Street, Sutton, Surrey.

BUTTERFLIES TAKEN IN THE NORTH OF FRANCE.—The following short notes were made during a ten days' stay in the North of France this summer. The little country town of Guines, between Boulogne and Calais, surrounded on one side by the Forests of Leek and Guines, on the other by open heathy country, where in former days Henry VIII. of England met the French King with so much magnificence that it is still known as the "Field of the Cloth of Gold," is as good a place for an entomologist to spend a week or two at, as perhaps may be found anywhere. It was my good fortune to be able to stay ten days this summer, during the middle of August, in this district, and I have seldom had a more enjoyable or interesting time, as, besides entomology, there is a great deal to interest the ornithologist or botanist; while the quaint French villages and picturesque country afford many subjects for an artist. The forests of Guines, Leek, and Boulogne, all more or less join one another, and cover a very large tract of land; they are divided by the straight French Government roads, and intersected with paths, clearings where the trees have been cut down, and open grassy glades, carpeted, when I was there, with flowers of great variety—in fact, an ideal place for the "butterfly man." During June, July, and August, one may, with no great difficulty, get fifty out of the sixty-five species of British butterflies. At the Forêt de Boulogne *Apatura iris* was very common, holding the undoubted sovereignty which he well deserves; on Aug. 20th they were just out, and in magnificent condition. The female is of not nearly so aspiring a disposition as the male; she was generally to be seen flying near the shallows; however, her flight is fairly powerful, and passing quickly over the tops of the undergrowth, she is soon lost sight of. This species was common in all the forests, but the Boulogne one appeared to be its headquarters; in point of numbers, though, it was hopelessly beaten by *Limnitis sibylla*, which literally swarmed in every suitable glade or ride of the forest; in fact, *sibylla* was much the most plentiful butterfly on the wing during the middle of August, excepting such common species as *Aphantopus (Epinephele) hyperanthus*, and *Epinephele tithonus* (of course I am talking now of the forest butterflies). *L. sibylla* varied a good deal in size, all those I took in the Forêt de Guines being considerably larger than those caught in the Forêt de Boulogne. Five species of "fritillaries" were common; *Argynnis paphia*, in beautiful fresh condition, including three specimens of var. *valesina*, was most plentiful. *A. adippe* (generally much worn, however), *A. aqlaia* (barring three specimens, I only found this species at the Leek Forest); and the two small species, *A. selene* and *A. euphrosyne* were also common enough. *A. latonia* may be taken sparingly on the common land round Guines, and, I am told, occasionally in some numbers near the coast, but I have never found it

anything but a scarce butterfly in North France. The "hair-streaks" were a very well-represented family in all the forests. *Thecla quercus* was the commonest. *T. w-album* and *T. pruni* were both fairly plentiful; *T. betula* was rare. I was fortunate in taking *Lycæna acis*, a single specimen only, in fair condition, between Guines and the forest, in a pit at the corner of a field, which was a sort of kaleidoscope of butterflies, such a variety and crowd were there; *Melanargia galatea*, *Colias edusa*, three species of *Lycæna*, Hesperids; also four species of *Vanessa*. *Papilio machaon* may be taken earlier in the year; *Aporia crataegi* was scarce this summer, and although I did not see a specimen of *Vanessa antiopa*, I heard of certainly two being taken by a French collector at Boulogne.

One morning, on the cliff, I observed a vast flight or cloud of *Pieris brassicæ*, steadily flying in a northerly direction, along the side of the cliff; there must have been many hundreds of them, all going in the same direction, as if following the coast. I cannot account for this at all; it was a bright hot day, with hardly any wind. I was particularly interested in the protective colouration exhibited on the under sides of *Satyrus semele*, which was extremely common everywhere, and varied in response to its environment. In chalky places the marbling of dark and pale brown on the under side of the hind wings is very much mottled with white, giving the appearance of whitish weather-stained chalk; on the sandhills the specimens were of a rich buff colour; while on the heath-land this portion of the wings was always dark, and so nearly agreeing with the rock or earth on which it settles, that so long as it remains with wings closed it is almost impossible to detect it.

A great number of larvæ of *Dicranura vinula* were to be found on every poplar-tree in the neighbourhood of Wimereux; each tree had five or six of these caterpillars on it, some nearly full-fed, others quite small; though I had often found larvæ of this particular moth before, I certainly had never seen them in such profusion as these were; I took sixty larvæ off a small poplar-hedge alone, and could have obtained three times the quantity if I had been so disposed. — GERARD H. GURNEY; Keswick Hall, Norfolk, Oct. 9th, 1904.

A WEEK ON THE NORFOLK BROADS.—On the evening of July 30th we arrived at Wroxham and boarded our wherry, 'The Caistor Maid.' A small rowing-boat carried the entomological apparatus—a sheet with the necessary poles, and twelve five-foot posts, on which were nailed pieces of cork, in imitation of Baily's well-known row in Wicken Fen. The day had been fine and sunny, but in the evening it clouded over, and we had heavy rain from the south-west. The journey and the rain prevented an energetic evening, and we contented ourselves with putting up a few posts close to our anchorage, some few hundred yards below Wroxham and at the edge of the fens. To our dismay we found that sugar was as unattractive here as in other places this year. Not a single insect came on this favourable night. My friend Mr. J. H. Wybrants, however, netted two *Toxocampa pastinum*, and a few common wainscots, *Epione apiciaria* and *Cidaria testata*, were captured flying round the boat.

Next day we sailed to Irestead Staithe, close by the entrance to

Barton Broad. The day was fine and sunny, and the wind south-east, a combination which favoured us for the rest of the week. We noted a very large number of *Pieris brassicae* and *P. rapa*, flying over the fens on either side of the river, and at Irestead Staithe were greeted with the first *Vanessa io* of the season.

Near the Staithe, and overlooking the large fens bordering Barton Broad, we put up the sheet, a motor-bicycle lamp during duty for the more classical paraffin lighthouse. The night was warm, clear, and with little dew. At dusk we both netted one *Nonagria brevilinea*. But, alas, even an imposing row of posts, and the best of treacle and rum would not tempt our usual friends. The total seen or taken were only *Leucania impura* (2), *Calomia phragmitidis* (2), *Xylophasia monoglypha* (1), *Apamea didyma* (1), *Mania typica* (2), *M. maura* (2), and one *Gonoptera libatrix*. On the sedge-flowers we found three *Apamea leucostigma* (*jibrosa*) and one *N. brevilinea*, together with a few *L. impura*, *L. pallens*, and *C. phragmitidis*. Light was just as bad, for only one *Odonestis potatoria*, one *N. brevilinea*, and a few common wainscots, came to the sheet. Next night we were in a poor locality and did not go out. On Aug. 2nd, however, we reached Potter-Heigham, and in the evening erected the sheet and posts overlooking the south edge of Whitesea Broad. After a fine hot day we had a clear cool night and a fair dew. The first insect boxed off the posts was *Nonagria neurica*, but this proved to be the only gem of the evening. The total at the posts were *C. phragmitidis* (2), *X. monoglypha* (2), *A. leucostigma* (1), *Chareas graminis* (1), and one *Amphipyra tragopogonis*. Nothing came to light except *Phibalapteryx vittata* and *Chilo phragmitellus*. On Aug. 3rd we had two expeditions to the Norfolk coast. The first was via Summerton, including a sail in the dingy for about four miles, and a two and a half mile walk to Winterton-on-Sea. On the coast we saw the lyme-grass, and resolved to return in the evening, for was it not the time for *Tapinostola elymi*?

So, after an "all-night tea," my friend and I cast off in our rowing-boat. This time we went by Whitesea Broad and Horsey Mere, for the staithe at the latter is only about a mile and a half from the coast. We started off with the sheet, five poles, innumerable boxes, and a bag full of impedimenta. The sun had nearly set as we reached the marshy land behind the sandhills, when, to our horror, we found them securely barricaded with a barbed-wire fence, our path blocked by a locked gate, and two keepers waiting our approach. Eventually we were allowed to go on, but only on the condition that we walked straight to the sandhills, and thence northwards out of this preserved property. So we had two more miles against time, and in loose sand. No time now to look for the precious lyme-grass, and we were content to erect the sheet at the edge of the forbidden land. Luckily there were a few plants of ragwort, and these, together with some twisted marram grass, were duly sugared. The night was very warm, with a stiff south breeze, and quite clear. Insects were, however, scarce. Nothing came to light except one *Odonestis potatoria*. On the sugared ragwort the only insects of any note were four *Leucania littoralis* and an immense female *Cossus ligniperda*. After the first two rounds we could find nothing fresh, and as the unsugared ragworts were absolutely unproductive, we made off for home, this time along a road to

the staithe. The five-mile row by moonlight across the meres was splendid, and enlivened by the furious approach of two gamekeepers, who took us for poachers.

Thursday, Aug. 4th, was the record hot day of the year. In the evening we anchored at the edge of Ranworth Fen. Here, indeed, we were on famous ground. Sugar was, however an absolute failure, no doubt on account of the aphide-laden sallow and alder bushes. No insects were seen at honey-dew. At dusk we netted some *Canobia rufa*, one *Tapinostola julva*, and also three *N. brevilinea*. Light was better. Five *N. brevilinea* settled on the sheet, but had to be carefully netted, as they would fly off at the least alarm. With several *Lithosia lurideola*, *L. griseola*, *Arctia caia*, *O. potatoaria*, *C. phragmitidis*, *F. apiciaria*, *P. vitatta*, *C. testata*, and *C. phragmitellus* things became quite lively. After eleven, however, it turned cold, and with a heavy dew falling no more insects appeared, and so our last night on the Broads came to an end.—G. LISSANT COX; Ellacot, Birkenhead, Oct. 26th.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, October 19th, 1904.* Professor E. B. Poulton, M.A., D.Sc., F.R.S., President, in the chair. Mr. Henry H. Brown of the Procurator-Fiscal's Office, and of Castle-tower, Cupar, Fife, N.B.; Mr. George Eckford, of 3, Crescent Avenue, Plymouth; and Mr. W. Vaughan, of Denton Dene, Ealing, were elected Fellows of the Society.—Dr. T. A. Chapman exhibited a series of *Lozopera deaurana*, Peyr., bred last spring at Hyères, a species regarded as lost, or mythical, until he rediscovered it three years ago at Ile Ste. Marguerite, Cannes; and, on behalf of Mr. Hugh Main, a specimen of *Pieris brassicae*, the wings of which had been symmetrically injured, probably by the girdle when in the pupal stage.—Mr. G. C. Champion, specimens of *Nothorrhina muricata*, Dalm., from Las Navas, Spain, found trapped in the earthenware cups used to collect the exuding resin on the trunks of pines.—Mr. H. St. J. Donisthorpe, specimens of the rare beetle, *Cis bilamellatus*, Wood, taken at Shirley on October 10th last.—Mr. W. J. Lucas, a female specimen of the rare dragonfly, *Agrion armatum*.—Mr. W. J. Kaye, five specimens of *Dianthæcia luteago* var. *jicklini*, from Bude, North Cornwall, taken during the first week of July, 1901, and remarked that, while the typical *D. luteago* of the Continent was tolerably constant, wherever it occurred in Britain it assumed a special local form.—Professor E. B. Poulton, F.R.S., a number of specimens of the genus *Sphecodes*, five species in all, and of their mimetic fly, a Tachinid, illustrating his remarks on Mr. Edward Saunders's paper on the Aculeate Hymenoptera from the Balearic Islands and Spain, recently published in the 'Transactions.'—Mr. G. A. J. Rothney sent for exhibition a series of the Indian ant, *Myrmecaria fodiens*, Jerdon, from a colony established in the big banyan-tree in Barrackpore Park thirty-two years; and *Monomorium salomonis*, Linn., and *Solenopsis geminata*, Fab., 1895, successfully encouraged in Madras godowns as a protection against white ants (termites).—Mr. E. E. Green exhibited a spider from Ceylon mimetic of some Coccinellid

beetle, at present unidentified.—Col. J. W. Yerbury, specimens, and read notes upon the deer-gadflies taken by him this year in Scotland.

Wednesday, November 2nd, 1904.—Professor E. B. Poulton, M.A., D.S.C., F.R.S., President, in the chair.—Mr. E. A. Agar, of Domenica, British West Indies; Mr. R. S. Bagnall, of Winlaton-on-Tyne, Durham; Mr. K. G. Blair, of 23, West Hill, Highgate, N.; Mr. E. A. Cockayne, B.A., of 30, Bedford Court Mansions, W.C.; Dr. G. B. Longstaff, D.M., of Twitchen, Mortehoe, R.S.O., Devon; Mr. R. A. R. Priske, of 66, Chaucer Road, Acton; and Mr. H. W. Simmonds, of 17, Aurora Terrace, Wellington, New Zealand, were elected Fellows of the Society.—Mr. J. E. Collin exhibited a specimen of *Platyphora lubbocki*, Verr., a species of Phoridae parasitic upon ants, from Stokes Wood, Hereford. No specimen has been recorded since the one originally bred by the present Lord Avebury in 1875, and described for him by Mr. G. H. Verrall in the 'Journal of the Linnean Society' for 1877. Mr. P. J. Barraud exhibited an aberrant *Epinephela jurtina* (*janira*) male, taken by him this year in the New Forest, agreeing with the form described by Mr. Roger Verity in the 'Entomologist,' vol. xxxvii. p. 56, as ab. *anommata*.—Mr. J. Edwards sent for exhibition three specimens of *Bagous lutosus*, Gyll., one found by himself on Wretham Heath, Norfolk, on August 4th, 1900—the first authentic British example—and two taken in the same locality by Mr. Thouless, on May 22nd, 1903; also *Bagous glabrirostris*, Herbst., from Camber, Sussex, for comparison.—Dr. T. A. Chapman exhibited bred specimens of *Hastula* (*Epapogoe*, Hb.?) *hyerana*, Mill., from larvæ taken at Hyères last March, and said the facts that the pale forms only have hitherto been known, whereas of those bred nearly half are dark, suggest either that really very few specimens are in collections—which is the most probable case—or that melanism is now affecting the species. The larvæ are not uncommon at Hyères. Before he bred the species this year a single dark specimen only was known, *viz.* one taken by Lord Walsingham at Gibraltar, which he named *marginata*, and he was in doubt whether it was a var. of *hyerana*, or a new species.—Mr. W. J. Kaye, specimens of the moths *Castaia fonscolombi* and *Protambulyx ganascus*, showing the warning and protective coloration of these species.—Mr. H. W. Andrews, specimens of *Eristalis cryptarum*, F., and *Didea alneti*, Fln., two species of uncommon Syrphidæ from the New Forest. Mr. Edward Harris, a brood of *Hemerophila abruptaria* bred by him this season, together with the parent male and female; the female, a dark specimen, was taken in his garden at Upper Clapton, on May 25th, and the male, a normal type, at Ilford, on May 26th. Of the offspring, eighteen in all, eight were females, of which four were dark specimens and of normal size. Of the ten males five were dark specimens, darker than the females, but small even for males. They were smaller than the light specimens of the same brood. One of the light male specimens emerged with only three wings, the left fore wing being absent.—Mr. Gervase F. Mathew, R.N., a case containing some beautiful and interesting examples of *Leucania javicolor*, Barrett, including the varieties described by Barrett in the current volume of the 'Entomologist's Monthly Magazine,' p. 61, and, more recently, by Tutt, in the 'Entomologist's Record' for this year; also a fine series of twenty-four *Camptogramma fluriata*, the descendants of a wild pair

captured on September 22nd, 1903, showing a considerable range of variation. — The President, a photograph taken by Mr. A. H. Hamm, to illustrate protective selection of flowers by *Pieris rapæ*. He also exhibited four specimens of *Conorrhinus megistus*, Burm., the large South American Reduviid, which is well known to attack man, brought back by W. J. Burchell in the year 1828. — H. ROWLAND BROWN, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. — September 8th, 1904. — Mr. E. Step, F.L.S., Vice-President, in the chair. Mr. Edwards exhibited a series of the Danaine butterfly, *Tirumala hamata*, from Samoa, and pointed out the secondary sexual characters of the male. — Mr. H. Moore, a specimen of *Stenopteryx hirundinis*, the curious dipterous parasite of the swallow. — Mr. Lucas, a photograph of "Brusher" Mills, of New Forest fame; coloured drawing of varieties of Lepidoptera, including a male of *Gonepteryx rhamni*, extremely like *G. cleopatra* in having the large bright yellow cloud on the fore wings. — Mr. Fremlin, bred specimens of *Hemaris fuciformis*, some still retaining the deciduous scales, of which he placed a few under the microscope, and pointed out the very weak pedicles of the individual scales. — Mr. Manger, on behalf of Mr. Pearson, several species of butterflies from the Swiss Alps, including *Polyommatus hylas*, *P. eros*, *Cænonympha areania*, *Satyrus cordula*, *Brenthis amathusia*, &c. — Mr. West, of Greenwich, developed and undeveloped forms of the Hemiptera, *Orthostira parvula* and *Ceratocombus coleoptratus* from Oxshott. — Mr. Turner, on behalf of Mr. Tutt, a few species of butterflies from Cairo, sent by Mr. Groves, including a fine example of *Danaüs chrysippus*, *Anthocharis belemnica* var. *glauce*, and *A. belia*. — Several members reported taking or seeing *Agrius convolvuli*.

September 22nd, 1904. — Mr. H. Main, B.Sc., Vice-President, in the chair. — Mr. Ernest Joy, of Stoke Newington, was elected a member. — Mr. Moore exhibited a living specimen of the mole cricket (*Gryllus campestris*), found outside his house in Lower Road, Deptford, no doubt attracted by the neighbouring electric light; a number of species taken at Theydon during the Society's field-meeting on Sept. 10th, including series of the Diptera, *Helophilus pendulus* and *Sericomyia borealis*; and from Tasmania a series of the beautiful metallic-coloured Coleopteron *Lamprina aurata*, showing its polymorphism as well as its sexual dimorphism. — Mr. Harrison and Mr. Main, series of *Carsia paludata*, taken at Simonswood Moss, July, 1904, and a bred series of *Cirrhædia xerampelina*, from Llangollen larvæ. — Mr. Edwards, series of males and females of *Gonepteryx rhamni* and *G. cleopatra*, to illustrate their distinctions. — Mr. Tutt said that he felt quite sure, from observation of their habits, that the two were distinct species. — Mr. G. T. Porritt, a male specimen of the dragonfly *Æschna isosceles*, one of a series taken this year in the Norfolk Broads; also a specimen of *Orthetrum cancellatum*, from the same place. — Mr. Lucas, male and female specimens of the local grasshopper, *Gomphocerus rufus*, from Bookham Common, and said it was easily recognized by its white-tipped clubbed antennæ. — Mr. Turner, specimens of the larvæ of *Phorodesma smaragdaria* from the Essex marshes. — Mr. Dodds, an example of *Locusta viridissima*, from Felixstowe. — Mr. West, three out

of the five British species of *Chaetocnema*; these were *C. subcærulea*, *C. hortensis*, and *C. confusa*, from Wisley.

Oct. 13th.—Mr. Hugh Main, B.Sc., Vice-President, in the chair.—Mr. Lucas exhibited two species of *Ascalaphus*, taken by Dr. Chapinan this year; *A. coccajus* in South France in May, and *A. longicornis* in Spain in July; also living males and females of *Apterygida media (albipennis)* from its old locality. He pointed out the specific characters of this rare earwig. — Mr. Moore, several large species of *Cicada* from Tasmania. — Mr. Turner, imagines and cases of the local coleophorid *C. vibicella*, from Trench Wood, where it was now very rare; a life-history of *C. laricella*, showing the peculiar structure and position of the cases at various ages of the larva. — Mr. Joy, a bred series of *Polyommatus bellargus* from Folkestone, and gave notes on their history. They were small, and the larvæ were shy feeders, but were not cannibals.—Mr. Carr, the cocoon of *Lasiocampa quercus*, previously shown. Since no imago had emerged, he had opened it and found a crippled imago, a batch of ova, and a distorted pupa, all dead. Dr. Chapinan said the imago probably could not bring its power to force open the cocoon.—Mr. West (Greenwich), four species of grasshopper from Box Hill, *Stenobothrus parallelus*, *S. elegans*, *Gomphocerus rufus*, and *G. maculatus*.—Mr. Goulton, lantern-slides of the larva of *Gonepteryx rhamnii*, in various positions during the act of pupating. — Mr. West (Streatham), lantern-slides of various corals. — Mr. Lucas, lantern-slides showing among other objects (1) larva and details of the ladybird *Halyzia ocellata*; (2) Lepidoptera at rest.

Oct. 27th. — Mr. E. Step, F.L.S., Vice-President, in the chair. — Mr. Goulton exhibited a series of photographs of lepidopterous larvæ on their respective food-plants. — Mr. Harrison and Mr. Main, series or examples of Lepidoptera captured at, or bred from, Bude, including *Cleora lichenaria*, *Dianthæcia luteago* var. *ficklini*, *D. conspersa*, *Leucophasis sinapis*, *Polia xanthomista*, and *Boarmia gemmaria*. Of the last species examples from Delamere and London were also shown. — Mr. West (Greenwich), the case of a large species of psychid from South Africa. — Mr. Turner reported finding larvæ and cases of *Coleophora virgaureæ* on golden-rod at Sevenoaks, Kent, as well as larvæ of *Eupithecia expallidata*.

Nov. 10th. — Mr. E. Step in the chair. — Mr. Fremlin exhibited ordinary and loosely attached scales of *Hemaris fuciformis* under the microscope. — Mr. Harrison and Mr. Main, series of *Dianthæcia albimacula* from Folkestone; *Cymatophora duplaris*, including two melanistic specimens from Simonswood Moss, Lancashire; and a form of *Melanargia galathea* with a black streak running through the large white basal areas of the fore wings. — Mr. Main, some large reduviids from West Africa. — A special meeting was then held to consider the proposed alteration of the Bye-Laws.—HY. J. TURNER, *Hon. Report Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The opening meeting of the winter session was held in the Royal Institution, Liverpool, on Monday, October 17th, 1904, and took the form of a joint exhibitional meeting with the Manchester Entomological Society. In the unavoidable absence of the President, S. J. Capper, Esq., F.E.S., Mr. R. Tait, Jun., Vice-President, presided over a large attendance of

members. On the chair being taken, Mr. Rd. Wilding, Vice-President, extended a very cordial welcome to the visiting society, and expressed the hope that the gathering of the two societies would become an annual occurrence. Dr. W. E. Hoyle, M.A., D.Sc., President of the Manchester Society, in replying, heartily endorsed Mr. Wilding's suggestion.—A communication was read from Mr. Rd. Hancock, Handsworth, suggesting that a cabinet of entomological micro-slides should be formed. It was unanimously resolved to adopt the suggestion, and to accept with thanks the valuable series of fifty slides accompanying his letter, to serve as a nucleus of the collection.—It was announced that the next meeting would be held in the Grosvenor Museum, Chester, on November 21st.—This concluding the business, refreshments were served, after which the following amongst other exhibits were examined:—*Agrotis ashworthii*, *A. agathina*, including some beautiful red forms, and *Epunda lichenea*—all bred from Welsh larvæ; *Aplecta albena*, *Manestra anceps*, *Xylophasia hepatica*, *Thecla pruni*, *Phorodesma bajularia*, &c., from Monkswood, Hunts, by Mr. R. Tait, Jun. Bred series of *Agrotis ashworthii*, *A. lucernea*, *Epunda lichenea*, and *Boarmia repandata* from larvæ taken during the spring in North Wales; bred series of *Odontopera bidentata* ab. *nigra* from Manchester larvæ; variable bred series of *Hypsipetes elutata* (sallow form) from Windermere, &c., by Mr. B. H. Crabtree. *Melanargia galatea* from Northants and Dartmoor, and *Cidaria testata* from Epping and Dartmoor, &c., arranged to show the unusual size of the Dartmoor insects; the blue form of *Polyommatus agon* from Painton, by Mr. H. R. Sweeting, M.A. *Noctua castanea* and the var. *neglecta* bred from Warrington larvæ, *Agrotis agathina* from Delamere larvæ, *Manestra abjecta*, and *Cryptoblabes bistriga*, a pyralid moth which has only been recorded five times from Lancashire and Cheshire, by Mr. J. Collins. Series of *Acidalia contiguaria* and *Laurentia casiata* from North Wales, *Taniocampa opima* from Wallasey, *Leucania putrescens* from South Devon, by Mr. C. F. Johnson. *Agrotis ashworthii*, *A. contiguaria*, and *Zygana minos*—one black form and also intermediate ones—by Mr. Wm. Buckley. A long series of the rare coleopteron *Anisotoma dubia* from Crosby (1904), by Mr. R. Wilding. A series of the Central and South European earwig *Apterygida media* (*albipennis*, Meg.), of which our only former British record is by Westwood, captured near Faversham, and exhibited by Mr. A. J. Chitty; *Leucophaea surinamensis*, an exotic cockroach which has been found breeding amongst turfs at Fallowfield, Manchester, exhibited by the Secretary on behalf of Dr. Hoyle and Mr. J. Ray Hardy. *Panchlora virescens* and *Periplaneta americana*, captured at Leyland by, and exhibited on behalf of, Mr. J. R. Charley, F.Z.S. *P. australasiæ* from Buxton, by Mr. J. Kidson Taylor. *Labi-dura riparia* from Branksome (Major Robertson), and Boscombe (Mr. J. R. le B. Tomlin), *Apterygida arachidis* from Bow, London (Mr. C. E. Bedwell), *Locusta viridissima* from Swanage (Mr. Tomlin), and Ilfracombe (Mr. W. A. Tyerman), and *Xiphidium dorsale* from the Isle of Sheppey (Mr. Tomlin), &c., were exhibited by Mr. Sopp, who also placed on view the series of very beautiful entomological micro-slides executed by Mr. Richard Hancock.—E. J. B. Sopp and J. R. LE B. TOMLIN, *Hon. Secs.*

RECENT LITERATURE.

Handbook to the Natural History of Cambridgeshire. Edited by J. E. MARR, Sc.D., F.R.S., and A. E. SHIPLEY, M.A., F.R.S. Pp. i-viii and 1-260. Cambridge: University Press. 1904.

THIS exceedingly useful volume was published in August last, when the British Association held a meeting at Cambridge.

All lovers of nature will find much to interest them in whatever particular direction their studies may lie. For the entomologist there are chapters dealing with all Orders of the Insecta. This section of the work is edited by Mr. W. Farren, who is also responsible for the account of the Lepidoptera, in which we note that no less than sixty species of butterflies occur, or have been found, in Cambridgeshire. Complete lists of species occurring in the county are given in Orthoptera (Malcolm Burr), Neuroptera (Kenneth J. Morton), and Hemiptera (W. Farren). Only local and rare species, or those peculiar to fen-land, are mentioned in Coleoptera (Horace St. J. K. Donisthorpe), Lepidoptera (W. Farren), Diptera (J. P. Collins), and Hymenoptera (C. Morley).

There are two coloured maps—one botanical, the other geological.

Report of the Superintendent of the Government Laboratories in the Philippine Islands for the Year ended September 1st, 1903. Pp. 343-622 (from Fourth Annual Report of Philippine Commission), Bureau of Insular Affairs, War Department.

AMONG the contents, which mainly deal with the treatment of rinderpest and the history of gutta-percha, is a report by the entomologist, Mr. Charles S. Banks, on Insects of the Cacao. This occupies twenty-three pages, accompanied by upwards of fifty capital plates, and though primarily intended for the use of farmers, should be of much interest to the entomological student.

Annual Report and Transactions of the Manchester Microscopical Society for 1903. Pp. 110. With 6 Plates. Manchester: The Society, 1904.

ISSUED in July last, but pressure on our space has prevented earlier notice of this excellent little publication. The contents in the way of papers, &c., appeal perhaps to the microscopist chiefly; but those of our readers who are interested in Araneidea, will find the paper on "Spiders," by A. E. Thomson, worth perusal. In his Presidential Address, Prof. Sydney J. Hickson discourses on "Variations." He states: "Many instances are known of the change in the colour of butterflies and moths effected by a change in food." Only one case, however, is quoted; this is a statement by Koch, "that when caterpillars of the common tiger-moth are fed from their hatching to their metamorphosis with leaves of lettuce or deadly nightshade, not one of the imagines produced resembles the original form; when the insects have been fed on lettuce, the white ground-colour of the wings predominates; when fed on deadly nightshade, the brown markings of the upper wings often coalesce, and the white vanishes; in like manner the blue markings on the lower wings fuse together and displace the orange-yellow ground-colour."

ERRATUM.—P. 284, lines 21, 32, 33, for *Lampides tibicanus* read *Lampides telicanus*.



