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S. H. Fuso.
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Bees from the Himalaya mountains
J. H. A. Cockburn

THE

pp. 176-177

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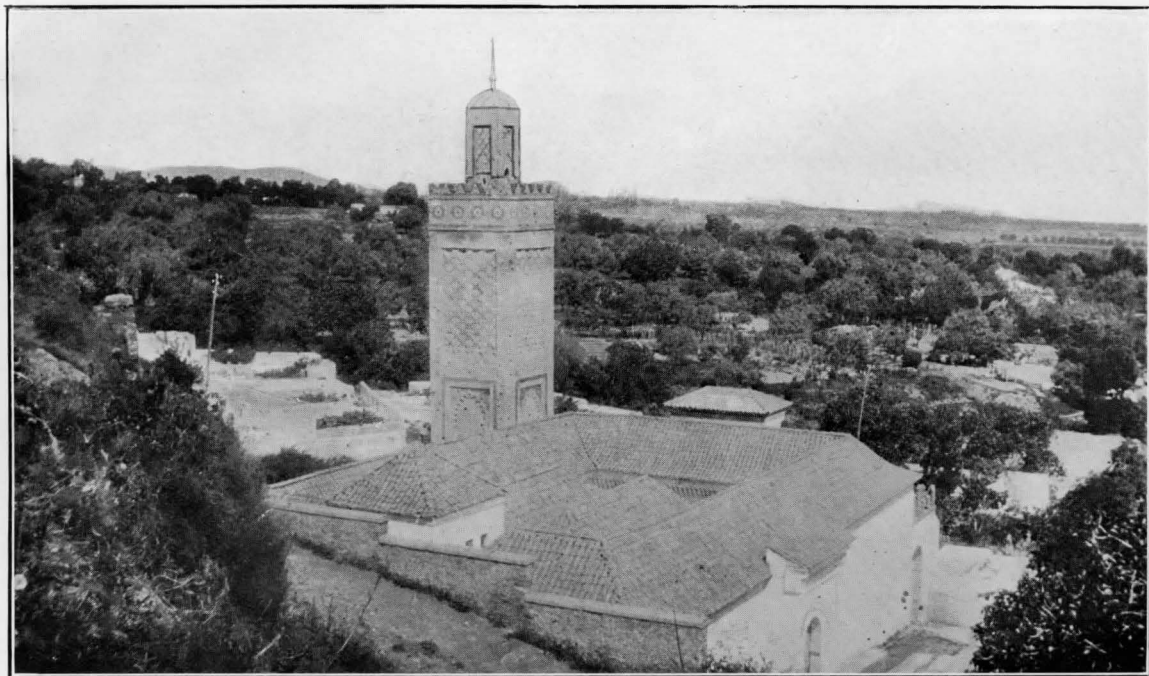
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FROM THE WALLS OF TLEMÇEN.

Mosque of Sidi-el-Haloui in foreground.

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[No. 576

A NEW SPECIES OF PIMPLINÆ.

BY CLAUDE MORLEY, F.Z.S., F.E.S.

IN May, 1908, Mr. G. T. Lyle noticed that many aborted flower-heads of gorse near Brockenhurst, in the New Forest, contained larvæ, and from these he bred the Cecidomyiid, *Aspondylia ulicis*, Trail, together with several Chalcid parasites. During the following September the seeds of the gorse were much galled, and he collected a good many affected pods, breeding from them the same Cecidomyiid and two species of Chalcididæ. On September 20th two Ichneumonids emerged from the galled seed-pods, and some three or four hours after emergence were seen to be *in cop*. During 1909 Mr. Lyle failed in attempts to breed more of this Ichneumonid, but in the autumn of 1910 he was rewarded by the presence of five males and one female of the same species from the pods. He has been so good as to allow me to examine these, and, since they have certainly not been previously brought forward, I propose to call them

Pimpla ulicicida, sp. nov.

Head black, with only the palpi pale; mandibles slender, with teeth of equal length. Antennæ slender, filiform, and hardly longer than half body. Thorax nitidulous, and finely punctate throughout, with notauli short but deeply impressed; mesonotum entirely or broadly at sides and base, mesopleuræ and sternum more or less broadly, and metapleuræ always, with metanotum often, bright red; tegulæ and a circular callosity beneath them stramineous; metanotum longitudinally bicarinate, with no discal areæ, and the petiolar very short; spiracles quite circular and not very small. Scutellum and postscutellum always entirely red. Abdomen linear, strongly punctate and white-pilose, with the tubercles obsolete as in *Scambus*; entirely black above, with the segments longer than broad, and becoming quadrate at fourth in female and sixth in male; basal segment parallel-sided, of male twice and of female but very slightly longer than broad, punctate throughout, male with discally parallel carinæ extending nearly to its apex; terebra exactly as long as abdomen. Anterior legs stramineous, with only the onychii infuscate; front

femora not emarginate beneath; hind coxæ and femora fulvous, with apices of former whitish, and the trochanters subinfusate; hind tibiæ dull white, infusate at both base and apex, and subincrassate before the former; apical hind tarsal joint at most thrice longer than penultimate; claws of female basally lobate. Areolet small, subsessile, and strongly transverse; stigma pale piceous or luteous; nervellus subgeniculate, though but obsoletely intercepted, a third below its centre. Length, 4-6 mm. ♂, ♀.

The elongate segments and rufescent thorax lend this species much the facies of *Ephialtes*, to which genus I was at first inclined to refer it; it is, however, a true *Pimpla* of the *Epiurus* group, and very distinct among our indigenous species, where it should stand between *P. pomorum*, Ratz., and *P. gallicola*, Morl. I have been at some pains to place it in the palæarctic fauna, and find its closest allies to be the black *P. vesicaria*, Ratz. (Ichn. d. Forst. i. 115), and the pale-faced *P. pictifrons*, Thoms. (Opusc. Ent. viii. 757); but it appears to most closely approach the Mallorcan *P. erythronota*, Kriech. (An. Soc. Espan. Nat. Hist. 1894, p. 248), a larger and stouter insect with the abdomen much less cylindrical.

Mr. Lyle has been so good as to present me with the type of both sexes.

Pimpla has very rarely been raised from Diptera, and I am aware of but two instances of the kind: Rondani once bred in Italy what he called *P. alternans* from *Asphondylia genistæ*, Lw., and I have quoted at some length (Ichn. Brit. iii. 88) Giraud's observations on *P. detrita*, bred from the galls of *Ochtiphila polystigma*, Mg., on *Triticum repens* in Austria.

[With reference to the two species of Chalcididæ mentioned in the foregoing note, M. l'Abbé Kieffer has most kindly identified one as *Eurytoma dentata*; the other is a species of *Pteromalus*. I have not yet been able to clear up the question as to whether they are direct parasites of the Cecidomyid, or hyperparasites through the Ichneumonid. The fact that several of the Eurytomini are known to be either partly or entirely vegetable-feeders must also be taken into consideration.

G. T. LYLE.]

A BIOLOGICAL INQUIRY INTO THE NATURE OF MELANISM IN *AMPHIDASYS BETULARIA*, LINN.

By S. H. LEIGH.

MELANISM in British moths is a subject that has given rise to much discussion and speculation in several entomological and other journals, but notwithstanding this we really know very little of the causes which operate in the production of melanic

forms. It is well known to entomologists that dark varieties of several species of moths have recently become increasingly common in many localities within the British Isles, and also that the dark forms are appearing in fresh localities.

It is very desirable and important to know whether the colour of these dark races of moths is protective, or whether it has some other significance. The "protective" theory certainly appears to be a very feasible one, for many of the moths have become darker in manufacturing districts where the trees and other natural objects upon which they rest have assumed a blackened aspect due to the increase of smoke. On the other hand, I do not think we can press the theory of "protection" too closely at present, for there are many well-known cases in which dark varieties of moths are found in localities far removed from the influence of smoke and where they most probably rest upon light-coloured objects. For example, in North Lancashire (at Silverdale and Grange) the black (*doubledayaria*) form of *Amphidasys betularia* is predominant where formerly it was very rare or absent, and where the atmosphere is as free from smoke and the natural objects (trees, stones, &c.) as clean now as at any previous time. There is probably some other factor than protective coloration at work in the production of this melanic form.

There are also instances in which dark varieties have been developed in moths that rest low down in herbage during the day. In these cases surely the colour could not be of protective value, because the moths are obscured in the grass, and the type of colouring would not matter so far as protection is concerned.

It is of course quite probable that the dark colour of many species of moths is protective, while in others it may be of physiological importance, and associated in some way with constitutional hardness.

Before, however, any definite explanation of these phenomena can be attempted, it is necessary to have as correct a knowledge as possible of all the conditions which are likely to have any influence on the species known to exhibit this melanic change. Before we can decide whether the colour is protective or otherwise, it is necessary to know the precise nature of the "struggle for existence" of the moths in question.

To gain, however, an adequate knowledge of the circumstances that are likely in any way to affect the moths entails much work of a very laborious nature. I have already commenced such an investigation, and hope to continue it during the next few years.

I only desire now to bring forward one point in connection with my inquiry; this concerns the resting habits of the moths which are subject to this melanic variation. For instance, it is important to know whether the light-coloured moths (*i.e.* the peppered form of *A. betularia*) generally rest during the day on

lichen-covered trunks of trees or any other light-coloured object, and also whether the dark insects (as the form *doubledayaria* of *A. betularia*) select black tree-trunks on which to rest. If it can be shown that in the majority of cases the dark-coloured varieties *do* rest upon dark-coloured objects, and lighter varieties upon lighter objects, and also that the insects have many natural enemies, we might justly conclude that the colour has a protective significance. Information of this nature can, however, only be obtained by the co-operation of very many entomologists, for the chance of obtaining sufficient evidence from the observations of one or two persons is very remote. I should, therefore, be extremely grateful if entomologists would assist me in collecting information regarding the resting habits of any of the under-mentioned species belonging to the *Geometræ* which may have come under their notice.

Although the investigation which I am making is really on the melanism of *A. betularia*, the chances of obtaining sufficient records about the resting-habits of this species alone would be so small that I have included several other well-known melanic species in the list, in the hope that each entomologist may be able to make at least one record about one of the species in the list from his own observations. Particulars, which may be returned according to the subjoined scheme, are requested concerning the following species:—*Amphidasys betularia* (Peppered Moth), *A. prodromaria* (Oak Beauty), *Odontopera bidentata* (Scalloped Hazel), *Phigalia pilosaria* (Pale Brindled Beauty), *Boarmia repandata* (Mottled Beauty), *B. abietaria* (Satin Carpet), *B. rhomboidaria* (Willow Beauty), *Gnophos obscuraria* (Annulet), *Hybernia progemma* (Dotted Border).

Scheme of particulars:—

(1) State, if possible, the number of specimens of each variety (light or dark, &c.) of the above species that have been observed at rest, together with particulars as to the object upon which they were found; and also say whether they were conspicuous or well protected by their colour.

(2) State, if possible, whether the species is abundant, fairly common or rare in the locality to which reference of the observation is made.

(3) If it is not possible to answer the above questions, any other information concerning observations of a general character will be very acceptable.

Confirmatory evidence is of great value, and I should be very glad to receive records made independently by different persons for the same locality.

All help received will be fully acknowledged on publication, and I would like here to express (as it has not been possible to publish anything upon the subject) my great indebtedness to those entomologists who have previously sent valuable informa-

tion concerning the distribution, &c., of the various forms of *A. betularia* in their own particular districts in compliance with a former request.

It is hoped that the result of the investigation—which is partly statistical and partly experimental—may be to throw some light on the cause of the remarkable change in colour that has been observed in many British moths during the last sixty years.

The University, Manchester.

ON SOME RECENT ATTEMPTS TO CLASSIFY THE COLEOPTERA IN ACCORDANCE WITH THEIR PHYLOGENY.

By C. J. GAHAN, M.A.

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(Continued from p. 125.)

GANGLBAUER remarks that this type seems to be a most extreme modification from the original type, owing to the hook-like connections of the media and radius with their branches. But he points out that in many Nitidulidæ the recurrent branch of the media is very short, and in the Passalidæ and many Rhynchophora completely atrophied, so that, when the transverse veins in the cubito-anal system are at the same time wanting, the venation is very like that of the second type. We need not, therefore, he says, derive the second type from the third. On the contrary, he maintains that the second type is derived directly from the Adephagan type, a point in which Kolbe agrees with him.

It is a point, however, on which Lameere takes a different view, leading to a marked difference in his classification; for he believes that the Staphyloinean type of wing-venation must have been derived from the Cantharoidean, and not directly from the Adephagan type; that, in consequence, the Staphyloinean must have branched off from the common Polyphagan stem at a later stage than the Cantharoidea, and should therefore come after them in the classification. But the decision of this question does not rest solely on the wing-venation. Other characters have to be considered; and, in support of their view, Ganglbauer and Kolbe are able to point to the strong resemblance between the primitive Staphyloinean genus *Pteroloma* and certain Carabidæ, as well as to the great similarity between the larvæ of the two groups. In Lameere's opinion these resemblances are due to convergence. Ganglbauer's view that the third type represents the widest modification from the

original type seems to me to be also open to question; for I do not regard the wing-venation of the Cupedidæ as the original type, though doubtless nearer to it than is any other, yet met with in the Coleoptera. It appears to want one longitudinal vein that is frequently to be seen in the cubito-anal system of the Malacoderms and Elateridæ, and while this may not be evident from the figures given by Ganglbauer, I suspect the reason is that he has not quite correctly homologized the veins. The vein A_1 of his Cantharoidean type corresponds, I think, with the Cu_2 and not with the A_1 of his Cupedid wing. Compared as a whole, the cubito-anal system in the Cupedidæ resembles more the same system in the more primitive Polyphaga than it does that of the Adephaga; and the modification undergone by the Cantharoidean type seems to be limited to the loss of a few transverse veins, including one of the two between the media and its branch M_1 , the partial atrophy of M_1 , and a change from a straight to a curved form in the vein left to connect it with the media. Such a change would be no greater than that which can, I think, be traced in the transverse veins between A_1 and Cu_2 , in passing from the straight form they show in the Malacoderms to the more or less strongly curved form, enclosing an elliptical cell, which may be seen in some of the slightly higher groups.

It was never, in my opinion, justifiable to place the Cupedidæ in the Adephaga solely on the ground of their wing-venation. Kolbe, to whom we owe the discovery of the interesting wing-venation of this family, was the first to do so; but he has since, on other grounds, withdrawn them, and now places the Cupedidæ in the Polyphaga. Here, again, I think he is wrong; for, as I have recently pointed out,* the Cupedidæ possess, in common with most of the Adephaga, another character, which seems to be very distinctive of that group—namely, the presence of a distinct suture on each side of the prothorax, between the notum and the pleuræ. This character is to be found in all families of the Adephaga, including the Rhysodidæ and Paussidæ, although it shows in the latter a tendency to disappear in the more modified forms. It is said to occur also in some genera of Polyphaga; but I have, so far, been unable to find anything in the nature of a true suture in any of those genera. Something of the kind may occasionally be seen, as, for example, in the Pythid genus *Crymodes*, but in these cases it is evidently only an impressed line of a secondary character.

A knowledge of the life-history of the Cupedidæ, which is at present wanting, would greatly contribute towards a more settled conclusion in regard to the systematic position of the family. From what little is known of the habits of these beetles, Lameere

* Ann. Mag. N. H. (8) v. p. 57 (1910).

believes that the larvæ live in wood, and are of the cruciform type; but this remains to be proved. He considers the Cupedidæ to be Adephaga of the most primitive type.

The Sexual Organs—Ovaries and Testes.—The ovaries of insects consist each of a greater or lesser number of tubes, which taper off to a thread at one end, and at the other open into the oviduct. Each ovarian tube contains eggs or cells that develop into eggs, and it generally contains also other cells which do not develop into eggs, but whose function it is to supply nutriment to the growing egg-cells. According to the presence or not of these nutritive cells, and their position when present, the ovarian tubes offer three different types of structure, placed by Korschelt and Heider in the following order:—(1) Without nutritive chamber. (2) The nutritive cells in chambers which alternate with the egg-chambers (*meroistic ovary*). (3) The nutritive cells massed together in the single terminal chamber (*holoistic ovary*).

The first type is not met with in the Coleoptera. The second occurs in the Coleoptera, but only in those families now comprised in the Adephaga. In all other Coleoptera, so far as is known, the ovaries are of the third type. Emery, who first used this difference in the structure of the ovaries as a basis for dividing the Coleoptera into two suborders, the Adephaga and Polyphaga, considered that the Polyphagan type of ovary was the more primitive of the two. From the order in which the types are placed by Korschelt and Heider, these distinguished embryologists seem to suggest the opposite view—which is also the one accepted by Ganglbauer, Kolbe, and Lameere.

The structure of the testes was investigated by Leon Dufour in a great many different kinds of beetles more than seventy years ago; but his work seems to have received less attention from systematists than the results deserved, although these had been well summarized by Lacordaire in his 'Introduction à l'Entomologie.' These organs (the testes) can, says Lacordaire, be divided at once into (1) those which are simple, and (2) those which are compound. The simple testes consist each of an elongated slender vessel, usually coiled up to resemble a ball; they are found only in the two families "des Carabiques et des Hydrocanthaires," that is to say, in the Adephaga (Fig. 5).

The compound testes are formed of two or several glands—the "capsules spermatiques," or testicular follicles. They are divisible (in beetles) into three sections, according to the form of the follicles and the manner in which these join the *vas deferens*. The first and second sections differ little from one another, and present intermediate stages; the follicles are more or less elongate, tubular, or in the form of rounded, oval or pyriform sacs, but always sessile, *i. e.* without a special duct leading from each follicle. In the first section they are placed at the end

of the *vas deferens*, in the second around a more or less considerable portion of its length; they occur in Cleridæ, Heteromera, Coccinellidæ, Hydrophilidæ, Staphylinidæ, and Silphidæ (Fig. 6).

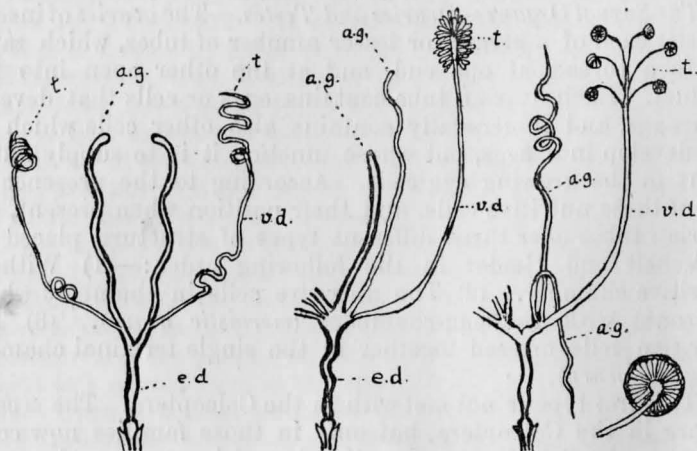


Fig. 5.

Fig. 6.

Fig. 7.

Three types of male sexual organs in Coleoptera (represented diagrammatically).
t., testis; v. d., *vas deferens*; e. d., ejaculatory duct; a. g., accessory gland.

In the third section, the testes are composed of rounded, more or less depressed capsules, having each its own separate duct or pedicel, and abutting, sometimes at the same point, sometimes at different points, upon the *vas deferens*. Testes of this kind, which Lacordaire considered to be those of the most perfect organization, are met with only in the Longicorns, Chrysomelidæ, Rhynchophora, and Lamellicorns.

Dr. Bordas, who has recently carried out similar investigations on a more extended scale, has arrived at practically the same results. He divides the testes into (1) simple and (2) compound; and of the latter he makes two subdivisions, according as the seminal glands are (1) "fasciculées," and (2) "disposées en grappes."

Simple tubular testes, which he considers to be the more primitive type, are characteristic of the Adephaga, and confined to that group. In all other beetles that he examined the testes were compound.

The compound testes of his first subdivision correspond with those of Lacordaire's third section. The glands, from two to twelve in number, of which each organ is composed, are not simple follicles like those of the other subdivision, but consist each of a number of ampullæ arranged radially within a common covering and opening into a central receptacle formed by the dilated end of the duct that leads to the *vas deferens*. Organs of this type, represented diagrammatically in Fig. 7, were met with

in all but two of the genera* examined belonging to the groups Longicornia, Phytophaga, Rhynchophora, and Lamellicornia, and only in genera belonging to those groups.

The fact that testes of the simple type characterize the Adepaga, while compound testes are found in all other beetles, confirms again the division of the Coleoptera into two suborders. But how are we to interpret the further fact that compound testes of the pedicellate type are characteristic of the Phytophaga, Rhynchophora, and Lamellicornia? Ganglbauer considers this a fact of so much importance as to preclude the idea that those groups have been derived from any other existing groups of Polyphaga. The Rhynchophora probably are, he thinks, derived from the Phytophaga; but the origin of the Phytophaga and Lamellicornia is doubtful, and must be looked for in some ancient Malacoderm-like ancestors, but not in any still existing forms.

Lameere and Kolbe attach less importance to the pedicellate structure of the testes, and seem to think it may be derived independently from the other types met with in the Polyphaga. Lameere would place the origin of the Lamellicornia and Phytophaga near that of the Heteromera and Clavicornia in some Cucuji-form ancestor. Kolbe also looks upon the Phytophaga, Heteromera, and Clavicornia as nearly related groups, and thinks the Phytophaga have been derived from primitive Clavicornia. But he takes a different view with regard to the Lamellicornia. He places this group and the Staphylinoidea together to form the first of the two main divisions into which he subdivides the Polyphaga, including in the same group with the Lamellicornia the family Synteliidæ, through which, he says, they show a relationship with the Staphylinoidea.

His reasons for this course will be discussed further on, when we come to consider the characters derived from the external anatomy.

Not only are there the differences pointed out in the structure of the testes themselves, but differences also in the number, position, and origin of various accessory glands that open either into the *vasa deferentia*, or arise from the common duct to which they lead. Some of these are assumed to be, like the testes and *vasa deferentia*, of mesodermal origin, while others are believed to arise as ectodermal invaginations; and Escherisch has classed them accordingly into *mesadenia* and *ectadenia*. When more general conclusions can be drawn from them, they may play a more important part in the classification. At present, though used by Ganglbauer in characterizing the groups, they seem to be of only doubtful value.

* *Timarcha* and *Melasoma*. Ganglbauer suggests that these exceptions may not be real ones, since a mistake may have arisen from a confusion of names; but I have reason to believe that no mistake has occurred.

(To be continued.)

AN ALGERIAN HOLIDAY.

BY A. E. GIBBS, F.E.S.

(PLATE VI.)

(Concluded from p. 140.)

TLEMÇEN is a wonderful and seductive town, with beautiful mosques and surrounded by ancient walls, a place which, once visited, cannot be forgotten, but which inspires a longing to return and linger once more in its ancient streets, or wander among the ruins which are scattered with prodigal profusion over the surrounding country. It is built at the foot of another of the ranges which go to make up the Atlas, the western horizon being bounded by the high mountains of Morocco. From the point of view of the antiquary and historian it ranks among the most interesting cities in the world, but a wholesome fear of the editor's blue pencil deters me from getting too far off the track, and I must get back to the insects. The morning after my arrival, Tuesday, May 31st, found me on the hillside above the town. The tantalising and elusive *pandora* greeted me among the gardens outside the walls. *Pieris brassicae* and *Rumicia phleas*, the latter with hind wings rather strongly tailed, fell victims, and then on a bare hillside I caught sight of an insect which I took to be *Melitæa phæbe*, but a closer acquaintance showed that it was something new. A second specimen was taken near by, but these were the only two seen. They proved to be *M. atherie* var. *algerica*, Stgr., and I take it they belonged to a second generation which was just making its appearance, as they were in the pink of condition and had evidently only just emerged. Allard* records its occurrence at Lambessa in April. The most abundant "blue" was *Polyommatus astrarche*, of the form known as *calida*, a fine variety with a reddish-brown ground colour and strongly developed orange submarginal spots. Miss Fountaine mentions† the capture of this insect at Tlemçen in July, 1904.

Working my way down the hillside again by a steep and narrow path between the gardens, where I took a few each of *P. egeria* and *P. megæra*, I found myself in the Arab cemetery. Striking upwards once more a female of the summer brood of *Papilio podalirius* was discovered sunning itself on the foliage of a young tree, and was the only example to fall to my lot of a species I expected to find rather abundant, but I subsequently saw a second specimen in the forest while travelling by train from Tlemçen to Lallah Maghnia. Continuing the ascent I arrived at the beautiful mosque of Sidi-Bou-Medine, with its graceful minaret and elaborately carved doorway, rich with tile-work and mosaics. Very lovely indeed is this structure, nestling in the

* 'Annales de la Société Entomologique de France,' 1867, p. 314.

† 'Entomologist,' xxxix. 108.

greenery of the steep hillside. Attached to it is a *médersa*, or Arab university, and when I was again at the spot a few days later an Arab gentleman, apparently some one of importance, came out to inspect my net and find out why I was catching butterflies. One thing he wanted to know was whether I ate them! After leaving the mosque I got into someone's garden, and there I took my third specimen of *E. eupheno*. But it was not until the city gates were almost reached that the great event of the day happened. Just outside Tlemçen, in a market garden, was a bank clothed with tall milk-thistles five or six feet high, which were in full flower, and on the blossoms several magnificent *Dryas pandora* were settled, and I thus learned that the way to catch this beautiful creature was to take it while resting on these flowers. Six specimens, one after the other, were caught in this way, and I made a point of visiting this particular bed of thistles whenever possible about noon, and so secured a nice series. After lunch another part of the hillside was explored, but without much satisfaction, *Anthocharis* var. *ausonia* being the most noteworthy butterfly netted. Three more of them were taken the next morning, when I visited the remarkable remains of the old city of Mansoura. Close to the ruined mosque I discovered another big clump of milk-thistles, where *pandora* was disporting itself, and after an uncomfortable hunt among these prickly plants I managed to add three to my series. *Polyommatus* var. *calida* was again in evidence, the only other *Lycænid* taken being *P. icarus*. On leaving the ruins of the city I climbed the hill and traced the course of the ancient conduit, constructed to bring the waters down to fertilise its gardens and fill its fountains, but now used for the more prosaic purpose of driving an oil mill. Descending again nearer Tlemçen I found *fortunata* abundant, but the steep declivity forbade a very prolific chase. The remains of yet another large city are to be seen near Tlemçen. Agadir, whose ruins are scattered over a considerable tract of ground, was built on the site of the Roman Pomaria. Many beautiful *koubbas* are to be seen in the woods, and the tower of the old mosque is still in a fair state of preservation. But I am wandering into archæology again, and must only say with regard to Agadir that *pandora* haunts its ruins as it does those of Mansoura.

I was invited by a fellow-countryman whom I met in the hotel at Tlemçen to accompany him to Lallah Maghnia, a fortified post on the Moroccan border, and I gladly joined forces with him for the expedition. Although I believe the place can boast a respectable past, it consists now for the most part of a modern-looking small town, which has sprung up round the military station. During the three days of my visit there was a very cold wind blowing, and the only spots in which insects were to be found were the deep gulleys cut through the fields by the rains

of winter. In the shelter of these I discovered two interesting varieties of *Cænonympha pamphilus*, namely, one specimen of var. *thyrsides* Stgr., which has a row of submarginal black points on the upper side of the hind wing, and two specimens of var. *lyllus*. My other captures were *E. passiphæ* var. *philippina*, *L. icarus*, some Hesperids, and, of course, *P. cardui*, which was everywhere.

On June 4th we drove to the very curious and primitive Berber town of Nedroma, an exceedingly cold ride across the hills. At this place *Satyrus abdelkader* is known to occur, but we were too early for it, and if the date had been right, the weather was wrong. There were occasional gleams of sunshine as we crossed the hills, and during one of these we pulled up and I took the local variety of *passiphæ* and *A. var. glauce*. At Nedroma itself the only insects seen were solitary individuals of *P. rapæ* and *P. brassicae*, which were flying in the garden behind the village shop, which also served the functions of an inn, where we were able to get something to eat. As we left the town I got a glimpse of *pandora*, but not much else was seen on the way home until we reached some hot springs a few kilometres from Lallah Maghnia where *C. var. helice* was found. On Sundays a great cattle market is held at Lallah Maghnia, which is well worth visiting, especially by those who are on photography intent, for it is frequented largely by Moroccan dealers, who come with their camels and flocks and herds, and pitch their tents in the market place. They are, however, a very rough and lawless lot, and caution is necessary when using the camera. Another visit was paid on the morning of June 5th to the gulleys in the cornfields when nothing fresh was obtained, though it was not to be wondered at considering the strength of the wind, which hardly permitted the use of the net. This brought my entomological experiences in Algeria to an end, except for the fact that as our boat was moving away from the quay at Oran, our old friend *pandora* flew from the gardens above and circled round us, which we accepted as an omen of a satisfactory journey; nor were we disappointed.

Miss Fountaine's visit to Algeria in 1904, which I have already referred to, extended from January till August, and she explored districts between Biskra in the east and Sebdou in the west. Several of the localities I have written about were included in her itinerary, but she had the advantage of somewhat prolonged collecting in the cedar forest at Teniet-el-Haâd, which I did not visit, and at La Glacière, where I only spent a few sunless hours. Nor was I able to travel in the interesting districts to the east of the capital. She has recorded the occurrence of sixty species of Rhopalocera, as against the twenty-eight which I captured during the fortnight I was in the country. No doubt the weather is largely responsible for my small number of records. To Miss Fountaine's list I can add *Colias edusa* var.

helice, *Pyrameis atalanta*, *Cænonympha arcanioides*, *C. var. thyr-*
sides, and *Adopæa actæon*.

The following is a list of my captures :—

Carcharodus alcææ, Esp.—Tlemçen, May 31st; Lallah Maghnia, June 3rd.

Hesperia alveus, Hb.—Saida, May 28th.

Adopæa actæon, Rott.—Lallah Maghnia, June 3rd.

A. thauwas, Hufn.—Lallah Maghnia, June 3rd.

Rumicis phlæas, L.—Blidah, May 25th and 26th; Oran, May 30th; Tlemçen, May 31st and June 1st and 2nd.

Cupido lorquini, H.-S.—Blidah, May 26th; Tlemçen, May 31st.

Polyommatus icarus, Rott.—Tlemçen, May 31st and June 1st; Lallah Maghnia, June 3rd.

P. astrarche var. *calida*, Bellier. — Tlemçen, May 31st, June 1st and 2nd.

Papilio podalirius, L.—Tlemçen, May 31st; between Tlemçen and Lallah Maghnia, June 3rd.

Pieris brassica, L.—Tlemçen, May 31st, June 1st and 2nd; Nedroma, June 4th.

P. rapæ, L.—Blidah, May 25th and 26th; Saida, May 28th; Oran, May 30th; Tlemçen, May 31st, June 1st and 2nd; Nedroma, June 4th.

P. napi, L.—Blidah, May 25th.

Anthocharis belia var. *ausonia*, Hb.—Blidah, May 26th; Tlemçen, May 31st and June 1st.

A. belemia var. *glauce*, Hb.—Saida, May 28th; Oran, May 30th; Lallah Maghnia, June 4th.

Euchloë eupheno, L.—Blidah, May 26th; Tlemçen, May 31st.

Colias edusa, F.—Blidah, May 25th and 26th; Hammam R'Irha, May 27th; Oran, May 30th; Tlemçen, May 31st, June 1st and 2nd. Var. *helice*, Hb.—Oran, May 30th; Lallah Maghnia, June 4th.

Gonepteryx cleopatra, L.—Blidah, May 25th.

Dryas pandora, Schiff.—Oran, May 30th and June 6th; Tlemçen, May 31st and June 1st and 2nd; Nedroma, June 4th.

Melitæa ætherie var. *algorica*, Stgr.—Tlemçen, May 31st.

Pyrameis cardui, L.—Blidah, May 25th; Oran, May 30th; Tlemçen, June 1st and 2nd; Lallah Maghnia, June 3rd and 4th.

P. atalanta, L.—Tlemçen, June 1st.

Pararge megæra, L.—Hammam R'Irha, May 27th; Tlemçen, May 30th, June 1st and 2nd; Lallah Maghnia, June 3rd and 4th.

P. egeria, L.—Blidah, May 25th and 26th; Hammam R'Irha, May 27th; Tlemçen, May 31st, June 1st and 2nd; Lallah Maghnia, June 3rd, 4th, and 5th.

Epinephele jurtina var. *fortunata*, Alph.—Hammam R'Irha, May 27th; Saida, May 28th; Oran, May 30th; Tlemçen, May 31st, June 1st and 2nd; Lallah Maghnia, June 3rd, 4th, and 5th.

E. passiphæ var. *philippina*, Aust.—Oran, May 30th; Lallah Maghnia, June 4th and 5th.

Cænonympha arcanioides, Pier.—Blidah, June 25th and 26th.

C. pamphilus var. *lyllus*, Esp.—Lallah Maghnia, June 3rd. Var. *thyrsides*, Stgr.—Lallah Maghnia, June 3rd.

Melanargia lucasi, Rbr.—Saida, May 28th.

[Note.—The undetermined Zygænid mentioned in line 23, p. 138, is *Zygæna hilaris* var. *algira*, Obthr. I have five rather variable specimens, two taken at Blidah and three at Hamman R'Irha. For some interesting notes on the geographical variations of this species, see Monsieur Charles Oberthür's 'Etudes de Lépidpotérologie Comparée,' iv. 599.]

NEW LEPIDOPTERA-HETEROCERA FROM FORMOSA.

By A. E. WILEMAN, F.E.S.

(Continued from p. 152.)

Artona (?) *taiwana*, sp. n.

Head and thorax metallic-blue; abdomen black, segments edged with metallic-blue. Fore wings blue-black, with hyaline streaks between the veins, those on dorsal half longest. Hind wings hyaline; veins blackish, greyer towards the base, margins black.

Expanse, 20 millim.

Collection number, 682.

One example of each sex from Kanshirei (1000 ft.); the male taken in August, and the female in May, 1907. The male specimen is brownish, but as it is much rubbed, the colour of the female, which is in fine condition, is given in the above description; the hyaline markings appear to be alike in both sexes.

Parasiccia punctilinea, sp. n.

♂. Fore wings pale greyish with a slight brown tinge; a black dot at the base, one just beyond, and two on the costa; antemedial line represented by four black dots; a black dot in the cell, and a lunular one at end of the cell; medial line blackish, bent outwards and twice angled below the costa; area beyond medial line and up to the postmedial series of black dots powdered with blackish scales; submarginal line blackish, interrupted, tapered towards the inner margin; marginal dots black. Hind wings rather paler, fuscous tinged. Under side of the fore wings fuscous grey; hind wings paler, with blackish mark at end of cell.

Expanse, ♂ 23 millim., ♀ 28 millim.

Collection number, 677.

One example of each sex from Kanshirei (1000 ft.); the male taken in April, 1908, and the female in April, 1906.

Allied to *P. nocturna*, Hampson.

Norraca curvilinea, sp. n.

♂. Antennæ fasciculate. Head and thorax pale greyish brown, the hinder scales on metathorax tipped with dark brown; abdomen tawny above. Fore wings pale greyish brown, minutely freckled with darker; a blackish dot in the cell and three small ochreous patches below it; an ochreous patch on the inner margin before the tuft of short brown-tipped scales; ante- and postmedial lines dark

brown, the former only indicated towards the costa and the inner margin, the latter gently curved from middle of inner margin to apex; fringes dark brown. Hind wings ochreous brown, suffused with darker, a patch of tawny hairs on the abdominal area. Under side pale ochreous brown, the costal area of fore wings clouded with darker.

Expanse, 46 millim.

Collection number, 1679.

One male specimen from Arizan (7300 ft.), June, 1908.

Perciana taiwana, sp. n.

♂. Head and collar brown; thorax and abdomen grey, the latter with brown tufts. Fore wings pale reddish brown, area beyond the postmedial line freckled and clouded with darker brown and blackish grey; all margins slightly freckled with greenish grey; antemedial line blackish, only distinct on the inner margin; postmedial blackish, wavy, inwardly shaded with brown, elbowed opposite end of cell, where, with the black discoidal, it outlines the black reniform stigma; orbicular, minute, black outlined; submarginal line blackish, outwardly edged with whitish, black outward projections towards costa and at middle; inner margin brown between ante- and postmedial lines; a brownish oblique dash towards the base of the wing. Hind wings fuscous, with traces of dusky cell spot and irregular transverse line beyond, the latter black at anal angle.

♀. Fore wings greenish grey, suffused with pale brown on basal three-fifths; mottled with brown and streaked with darker on outer two-fifths.

Expanse, ♂ 30 millim., ♀ 36 millim.

Collection number, 1746.

One example of each sex from Rantaizan (7500 ft.), May, 1909.

Closely allied to *P. marmorea*, Walk.

Polia ornatissima, sp. n.

Head and collar white; thorax blackish, mixed with brown and marked with white; abdomen grey brown, whitish mixed, especially on basal and last segments. Fore wings blackish, costa and inner margin marked with creamy white; white spot at base of the costa, and one near it above the inner margin; orbicular and reniform stigmata, and a spot below, white; three white spots on outer margin, the largest spreading to apex; antemedial line represented by an oblique series of five spots, the first and fifth white, the others ochreous ringed; postmedial line white, macular, curved beyond the reniform; fringes ochreous brown chequered with white; all white markings more or less edged or flecked with ochreous. Hind wings whitish with a black discoidal spot; postmedial line blackish, wavy, not extending to costa or inner margin; marginal line dusky, black between the veins.

Expanse, 48 millim.

Collection number, 1767.

One female specimen from Rantaizan (7500 ft.), May 12th, 1909.

Trilocha brunnea, sp. n.

Head, thorax, and abdomen dark chocolate-brown, crown of head paler. Fore wings dark chocolate-brown, costal and inner marginal areas paler brown; ante- and postmedial lines reddish brown, double, only distinct on the inner marginal area; a bar of the ground colour at end of cell. Hind wings pale reddish brown, inner margin pale brown marked with darker. Under side: fore wings chocolate-brown, veins ochreous tinged; hind wings ochreous brown, clouded with chocolate-brown on the margins; a black dot at end of cell, and two wavy brown transverse lines beyond, the first indistinct except on inner margin.

Expanse, 37 millim.

Collection number, 1792.

One male specimen from Rantaizan (7500 ft.), May, 1909.

The fore wings are considerably rubbed, so that the markings are more or less obliterated.

There is an example of this species, from India, in the British Museum Collection.

BEES FROM THE HIMALAYA MOUNTAINS.

By T. D. A. COCKERELL.

IN this Journal, Sept. 1910, I gave an account of some bees collected high up in the Himalayas by the British Tibet Expedition. I am indebted to Mr. G. Meade-Waldo for an opportunity to examine other bees from this Expedition, which are now recorded.

Bombus bizonatus, Smith.

♀. Khamba Jong, Sikkim, 15-16,000 ft., July 15th to 30th, 1903.

Bombus waltoni, Cockerell.

Mr. A. Skorikow writes me expressing the opinion that *B. waltoni* is identical with his *B. mendax* subsp. *chinensis*, the latter having about ten months' priority. If so, *waltoni* nevertheless stands, as there is a different *chinensis*, Dalla Torre, 1890. The description of *chinensis*, Skor. is wholly in Russian, but my friend Mr. E. Kaydin has been good enough to translate it for me. It certainly applies well to *waltoni*, except that in *waltoni* the red hair on the abdomen begins on the apical part of the second segment, whereas in *chinensis* the third segment has a sprinkling of reddish hair, and the full red only begins on the fourth. This difference may be only varietal.

Nomada gyangensis, n. sp.

♂. Length $11\frac{1}{2}$ mm., expanse 23; black, yellow, and red; head and thorax black, with abundant dull pale yellowish hair, that on under side white; mesothorax and upper part of head dull, coarsely rugoso-

punctate; head broad, mandibles simple, malar space distinct; labrum, mandibles (except apex broadly), malar space, clypeus (except upper part) and lateral face marks ending in a point on orbital margin at about level of antennæ, all lemon yellow; antennæ ferruginous beneath, black above; scape rather thick; third antennal joint slightly longer than fourth above, but shorter than it below; upper margin of prothorax, tubercles, stripe bordering each side of mesothorax, large spot on anterior part of pleura, two large spots on scutellum, a small short line on postscutellum, and a spot on each side of metathorax, all yellow, variously suffused or margined with red; scutellum moderately prominent; tegulæ yellow; wings slightly dusky, strongly so at apex; stigma rather small, bright ferruginous; venation ferruginous basally, fuscous apically; b. n. meeting t. m.; first s. m. about as large as the other two united; first r. n. joining second s. m. much beyond middle; legs red, anterior femora with a black stripe beneath, middle with a broader stripe, hind ones nearly all black behind and beneath, but red at apex and base behind; apices of tibiæ and outer sides of basitarsi yellow; abdomen finely and closely punctured, all the segments with broad yellow bands, inclined to be edged with red; basal part of segments black, apical margins brown, yellow band on second segment deeply emarginate in middle; apical plate yellow, densely and coarsely punctured, entire; venter with four broad yellow bands, the fourth emarginate on each side.

Hab. Gyangtse, 13,000 ft., June, 1904 (H. J. Walton). British Museum. This belongs to the subgenus *Holonomada* of Robertson. In the tables of Indian species by Nurse and Bingham it runs to *N. decorata*, but that species has the pubescence whitish and sparse. In Schmiedeknecht's table in 'Apidæ Europææ,' it runs out at twenty-six on p. 46. Superficially, it is not unlike the European *N. sexfasciata*, but it differs in many details.

Anthophora vulpina waltoni, Cockerell.

Both sexes from Gyangtse, 13,000 ft., June, 1904 (H. J. Walton). The male, to my surprise, has the light hair of head and thorax above, and first abdominal segment a warm red. I think it certainly belongs to *waltoni*; a similar dichroism occurs in the American *A. occidentalis*, but is not sexual; further material may prove that it is also independent of sex in *waltoni*. The male *waltoni* has the clypeus lemon yellow, with only marginal black dots, instead of the large black patches of *vulpina*.

Anthophora khambana, Ckll., var. *atramentata*, n. var.

♀. Hair all black, except segments 2 to 4 of abdomen above (excluding sides), where the hair is bright red as in the type; and the white subapical tufts beneath, which are retained. A variety analogous to the variety *schenkii* of *A. parietina*.

Hab. Khamba Jong, Sikkim, 15-16,000 ft., July 15th to 30th, 1903. British Museum.

A NEW APHID-INFESTING *APHELINUS* WHICH IS NOT BLACK.

By A. A. GIRAULT (The University of Illinois).

In October, 1908 ('Entomological News,' Philadelphia, xix. pp. 365-367), Dr. L. O. Howard summed up the existing knowledge of the species of the Eulophid subfamily Aphelininae known to be parasitic upon aphids, and at the same time described two new forms with the same habit. All of the aphid-infesting Aphelininae, according to Dr. Howard, are species of the genus *Aphelinus*, Dalman, and all are characterized by having a preponderance of black in their coloration, and by having hairy eyes. That is to say, all are of the general appearance of the first known aphid-infesting species, the common *Aphelinus mali* (Haldeman). It is, therefore, somewhat novel to find a species of this group which is an undoubted aphid parasite, but which is totally yellow in colour, with practically hairless eyes, and which resembles very closely the coccid-infesting *Aphelinus mytilaspidis*, Le Baron. This novel aphid-infesting species differs from *mytilaspidis* in being more intensely yellow, nearly a pale green in colour, the last-named species being about the shade of yellow known as gamboge; structurally, it differs markedly in the quality of the discal ciliation of the fore wing proximad of the oblique hairless line, namely, in having those cilia very much coarser and arranged only in about four lines (a fifth line farther proximad and separated from the others by a naked area), the lines separated, and the cilia at least four times coarser than the dense, moderately fine discal ciliation distad of the hairless line. The oblique hairless line of the fore wing is decidedly broader than is the case with *mytilaspidis*, and another difference is present in the penultimate antennal joint which is shorter, only a fourth of the length of the ultimate joint, or even less, and wider than long. In *mytilaspidis*, the penultimate joint is distinctly longer than wide, and nearly a half of the length of the ultimate or club joint. Taking the foregoing into consideration, this new species need not be confused with any other species of the genus.

Aphelinus automatus, sp. n. (Normal position).

Female.—Length, 0.90 mm. General colour uniformly pallid green, the eyes and ocelli red, the tips of the mandibles fuscous, the venation concolorous with the body and the wings wholly hyaline. Immaculate.

Structurally as in *Aphelinus mytilaspidis*, Le Baron, excepting as mentioned above. Proximad of the oblique hairless line of the fore wing are about from three to four lines of discal cilia which are coarse and at least four times larger than the normal, rather fine discal ciliation of the wing distad of the hairless line. Still farther

proximad, separated by a naked area somewhat as in *mytilaspidis*, but much longer (cephalo-caudad), there is another line of about five or six cilia, somewhat smaller. The fore wing, proximad, in this species is broader than in *mytilaspidis*; also the proximal tarsal joint of the caudal legs is shorter and stouter, and the short, sessile stigmal vein is bent more at right angles to the marginal. The mandibles of the two species also differ, in *mytilaspidis* having at least two outer (lateral) teeth which are distinct and acute, and a third inner one which is smaller, weak, and obtusely rounded; in *automatus* there is only a single outer, distinct, acute tooth, and a second inner one which is broadly truncate and separated from the first by a small, acute notch. (From a single specimen, $\frac{2}{3}$ -inch objective, 1-inch optic, Bausch and Lomb.)

Male.—Unknown.

Described from a single female specimen reared from *Chaitophorus*, new species on poplar, Chicago, Illinois, September 15, 1910 (J. J. Davis). The specimen issued from a single round hole in the dorso-lateral aspect of the abdomen of its host, whose body was black in colour and attached firmly to the leaf surface.

Habitat.—United States—Chicago, Illinois.

Type.—Accession No. 44,229, Illinois State Laboratory of Natural History, Urbana, Illinois, U.S.A.; one female in xylol-balsam.

SOME NEW CULICIDÆ FROM WESTERN AUSTRALIA, SOUTH QUEENSLAND, AND TASMANIA.

By E. H. STRICKLAND (Dip. S.E.A.C.).

(Continued from p. 134.)

A NEW SPECIES FROM SOUTH QUEENSLAND.

Two female specimens from South Queensland, sent by Dr. Bancroft, both proved to be representatives of a new species of the genus *Culicelsa* (Felt).

The type specimen has been forwarded to the British Museum.

Culicelsa queenslandis, n. sp.

Thorax clothed with light yellow and golden yellow scales, arranged in longitudinal bands. Scutellum with pale yellow scales. Abdomen black scaled with incomplete ochreous basal bands, and snowy white lateral spots. Tarsi with snowy white basal bands.

♀. Head very densely scaled. The narrow curved scales are golden yellow and larger and broader on the vertex than on the nape and sides of the head. There is a distinct border of small scales round the eyes. The upright forked scales are golden at the front of the head but black at the back. The lateral flat scales are ochreous. Antennæ with basal and second segments testaceous. Palpi longish with a white median band, and white scales at the apex. Eyes black.

Thorax with light yellow and golden yellow narrow curved scales, arranged in bands. Those forming the median band are light yellow, with a central narrow bare black line, the rest of the thorax being a light warm brown colour. On either side of this band is a golden yellow band. At the side of the thorax is a large central light yellow spot, with golden yellow scales before it and a golden yellow and black scaled area behind. Scutellum rather densely scaled with pale yellow narrow curved scales. Prothoracic lobes with creamy yellow narrow curved scales and golden brown bristles. Pleuræ with creamy flat scales. Abdomen with incomplete basal bands on all segments consisting of a few median ochreous scales and distinct snowy white lateral spots. Ventral surface with ochreous and a few dark scales. Femora dark scaled with a few scattered ochreous scales except for the basal half of the ventral surface which is all pale coloured. Tibiæ dark with a few pale scales arranged more or less in a line, unbanded. Tarsi with distinct white basal bands. Fore and mid legs with two apical joints unbanded. Hind with apical joint only unbanded.

Wings with mid and supernumerary cross-veins in a straight line. Posterior cross-vein about one and a half times its own length distant from the mid cross-vein. First fork cell narrower and longer than the second fork cell. Its stem rather over half the length of the cell.

Length 5.5 mm.

Habitat.—South Queensland.

Time of capture.—June.

Observations.—Described from two rather damaged females.

NEW SPECIES FOUND IN A SMALL COLLECTION OF MOSQUITOES FROM TASMANIA.

This collection was received by Mr. F. V. Theobald from Dr. Bancroft.

It was found that of the seven or possibly eight species represented only one had been already described. This species, *Culex frenchii* (Theobald), which had not been before recorded from Tasmania, was represented by three specimens which were quite true to type. Two other specimens, however, appeared to be either a variation of the type, or a distinct species. They differed mainly in possessing deeper coloured thorax and scutellum, both of which bear golden coloured bristles, whereas the type *Culex frenchii* bears black bristles.

As, however, these specimens were badly rubbed, it was impossible to state whether these represented a new species or not.

The mosquitoes of Tasmania appear to have been very much neglected in the past; three species only, all belonging to the genus *Culex*, are recorded in Mr. Theobald's 'Monograph of the Culicidæ of the World,' vol. v. 1910.

These species are *Culex rubithorax* (Macquart); *Culex australis* (Erichson), and *Culex nigrithorax* (Macquart).

The following genera are represented by the new species in this collection :—(1) *Culicada* (Felt), four species. (2) *Stegomyia* (Theo.), one species. (3) *Andersonia* (nov. gen.), one species.

Type specimens of these have been sent to the British Museum.

Culicada tasmaniensis, n. sp.

Thorax black, ornamented with mixed golden and brownish-black narrow curved scales, with a more or less distinct median spot of more creamy scales a little before the scutellum. Abdomen with broad white basal bands on all segments. Legs unbanded, femora mostly pale beneath. Wing membrane with a slight brownish tinge.

♀. Head dark brown in the middle, but lighter laterally with rather large creamy narrow curved scales, which are finer and smaller at the back of the head, where there are a few black upright forked scales. These are replaced in the front of the head by many long black bristles. The median flat scales are creamy and are interspersed with black bristles. Antennæ brown, second segment testaceous at the base. Palpi dark with several black strong bristles. Proboscis brown, darker at the apex than at the base. Prothoracic lobes with a few creamy white broad scales and black bristles.

The thorax is unornamented, except for the pale spot in front of the scutellum, the golden and dark scales being evenly distributed over the remaining area. Bristles are most numerous over the wing roots and round the base of the mesothorax, elsewhere they are practically absent. Scutellum with golden narrow curved scales, and strong posterior border bristles on all lobes. Abdomen dark with broad rather dull white basal bands on all segments, ventral surface mainly white scaled. Wings not very densely scaled, scales rather narrow and brown. First fork cell longer and narrower than second posterior. Supernumerary cross-vein nearer the base of the wing than the mid cross-vein, by about two-thirds of its own length; posterior cross-vein about one and a half times its own length distant from the mid cross-vein. Apices of all femora and tibiae more or less clothed with ochreous scales. Apex of hind tibia and base of hind metatarsus rather densely clothed ventrally with light coloured scales. Tarsi all dark. (Ungues $\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$.) Halteres with light stems and dark knobs.

Length 6.5–8.5 mm.

♂. Scales on the head similar to those on the head of the female, but fewer bristles are present. The dark scaled palpi are about four-fifths the length of the proboscis. The fourth joint is somewhat shorter than the three preceding joints which are subequal. First joint slender, especially at the base; second joint with apex swollen, and bearing on this part long ventral hairs; third joint cylindrical and entirely clothed ventrally with long hairs, apical joint swollen towards the apex. Antennæ not very densely plumose.

Thorax and abdomen similar to that of the female, except that the ventral surface of the latter is mainly dark with broad basal pale bands, and the dorsal basal bands are more snowy white.

Legs similarly scaled to those of the females. Ungues apparently

all uniserrate, though not very clearly defined in the single specimen examined.

Length 6 mm.

Habitat.—Tasmania.

Observations.—Described from two females and one male.

It appears to be related to *Culicada nemorosa* (Meigen), though it is a decidedly larger species.

(To be continued.)

NOTES AND OBSERVATIONS.

THE EMERGENCE OF A BORNEAN CICADA (*Huechys sanguinea*, de Geer).—Having just watched a Cicada emerge from its pupa—or nymph—case for the first time, I took some notes of this curious performance which, perhaps, may be of interest to your readers.

The skin and half-emerged imago were brought to me about 11.45 a.m., having been found hanging on the stump of an old tree. Almost immediately the imago crawled out, free of the skin, and I spent an interesting three-quarters of an hour watching its development. The skin of the pupa case is split on the upper side only—longitudinally from anterior margin of the head to the cruciform elevation. The head and body were bright yellow, with two curious little delicate light blue wool-like excrescences on either side; these slowly began to swell—the tegmina first; during this process the basal margin (or “collar,” one might call it) of the pronotum was raised; I suppose this was to allow a fluid to run from thorax through the veins to extend the tegmina and wings, as I could see some swollen nervules below this upraised “collar.” Similarly the region of the cruciform elevation, and on either side of it, seemed to be connected with the extension of the wings, as that part was also swollen, the general colour being a very light-blue, like that of the basal region of pronotum. By 12 o'clock the tegmina had almost reached the end of abdomen, and in another seven or eight minutes the fully emerged imago was hanging by its fore legs only from the under side of a leaning twig which I had put in the glass cylinder for its use. It thus remained hanging by the fore legs only, both the tarsi and the coxæ of which I noticed were touching the twig. The tegmina were a beautiful blue-white colour; but at 4 p.m. I noticed the veins showed up dark grey, and by next morning this suffusion was further developed: although not yet complete, as the basal region was still streaked in appearance, owing to the grey suffusion not having overspread the internervular spaces. The head, thoracic and abdominal colouring had already deepened, thus losing its original bright yellow hue.

The nymph case has rather coarse and thick antennæ sheaths, prominent excrescences for the eyes and ocelli; the pronotal folds are distinct, the base of pronotum is coloured deep black, as are the posterior margins of mesonotum and of each abdominal segment on the upper side; the general colour being of light sand relieved by these transverse black stripes. The fore legs are typically fossorial, with stout femora each armed with a spine.

Borneo is particularly rich in species of Cicadidæ, no fewer than seventy odd species having been recorded. Among these is the gigantic *Pomponia imperatoria*, Westwood, which sometimes measures as much as eight and a half inches! The males are much attracted by light, and many good species have been captured at lighthouses in Sarawak, including two species new to science.—J. C. MOULTON; Sarawak Museum, February, 1911.

HYBERNATION OF PYRAMEIS ATALANTA.—I have read with interest the article by Mr. L. W. Newman in your issue of March, 1911 (*antea*, p. 99). While admiring his experiments, I would like to point out that they do not bear out his conclusion: that *P. atalanta* is not a true hibernator, as it requires food all the year. Mr. Newman is in effect arguing that, because *atalanta* kept through the winter in a warm room required food, they would therefore require food if hibernated out of doors in the cold, where they would not be artificially stimulated into activity. This, of course, does not follow. That England should have to depend on alien immigration for its yearly supply of *atalanta*, a fairly common butterfly here, is hardly conceivable. This theory also breaks down on Mr. Newman's own reasoning. Where are the supposed parents of the English *atalanta* to come from? France? If so, it must be the South of France, for the North of France conditions are similar to the English, and, were not *atalanta* a true hibernator, it would be unable to get its winter food in North France any better than in England. South France is a long way to come from. On the Riviera *atalanta*, in shabby condition, are to be met with practically throughout the winter. There, of course, they can find sufficient flowers all the year round to supply their modest needs. *V. antiopa*, on the other hand, I do not remember ever to have seen during the winter, although the finer weather of spring lures out hibernating specimens with the white borders, commonly supposed over here to prove British origin.—J. C. WARBURG; 21, Pembroke Gardens, W.

TROCHILUM APIFORME.—With reference to Mr. J. S. Carter's note on this species in the April issue of the 'Entomologist,' I would enquire whether the larvæ found in April, but as I understand without cocoons, in the pupating tunnels duly spun up? If so, this would prove that they were full fed, and would show that the time over which they form their cocoons extends from September or October till, at any rate, the spring. I have found that all the uninjured larvæ that I obtained in the autumn duly spun up, and several times where the top has been accidentally cut off a puparium in removing it the larva completed the cocoon. But two or three larvæ that I found in June, and which looked to be full fed, failed to spin up, and eventually died. I concluded that these were not really full fed, but would in the ordinary course have spun up in September or October. As regards treatment, I cannot help Mr. Carter, my luck having been no better than his. I believe I kept mine too moist, but it is difficult to hit off the *via media* between over-moistening, and thus producing mould, and keeping too dry, in which case the cocoon contracts and crushes the larva or pupa inside. I can breed to the imago ninety per cent. of full fed larvæ and pupæ of *Sesia vespiformis*, but *T. apiforme* defeats me, as I get only a small per-

centage to the imago stage.—C. G. NURSE; Timworth Hall, Bury St. Edmunds, April 9th, 1911.

PLUSIA MONETA.—Very few reports of this species seem to have been published recently, but, although the novelty of its appearance in this country has, no doubt, worn off, it seems a pity that reports of actual captures in more and more distant localities from its original place of landing (Kent) are not published. So far as I can trace, the extent of its spread from that county is indicated by reports from Monmouth (Ent. xxxvii. 214), Cheshire (Ent. xxxix. 291), and North Lincolnshire (Ent. xlii. 236). Has it not been found further north or west yet? And has it been taken in Wales, Scotland, Ireland, or the Isle of Man? I, for one, should be glad of the earliest records for these countries and for subsequent ones showing how the insect spreads, and I think it would be as well if these reports appeared in the 'Entomologist,' so that they would be permanently on record for future use.—C. NICHOLSON; 35, The Avenue, Hale End, Chingford, April 3rd, 1911.

PYRAMEIS ATALANTA AND VANESSA IO IN MIDDLESEX IN 1910.—In a recent note Mr. L. W. Newman (*antea*, p. 99) remarks on the general scarcity of *P. atalanta* last autumn. In the London parks, however, this butterfly was by no means uncommon; and on a sunny Sunday at the beginning of October I noticed several fine examples on the flower beds on the north side of Hyde Park. In Middlesex hereabouts *atalanta* was late, but not markedly scarce; *Vanessa io* also turning up in some force—a rather remarkable fact, in view of the wretched, sunless summer and the almost total absence of the species from the district for so many previous years. Early in March of this year single hybernators of the latter butterfly were flying during the brief spell of warmth which preceded the severe storms and cold of early April; and latterly I have seen quite a number of [females about, in excellent condition, giving promise of a plentiful summer emergence, both here and on the southern approaches of the Chiltern Hills from Great Missenden.—H. ROWLAND-BROWN; Oxhey Grove, Harrow-Weald, April 24th, 1911.

SENTA MARITIMA.—I would like to record having taken var. *combinata* (Capper) of this species in the Isle of Wight last August; it is the second taken by me in the same locality, the other one being captured in August, 1909. The specimen just recorded is in the possession of Mr. Percy Bright, of Bournemouth.—CHARLES CAPPER; "Glyndale," Glebe Road, Barnes, S.W.

VANESSA ANTIOPA IN ENGLAND.—If a very hazy note may be permitted on Mr. Frohawk's remarks on p. 155, I remember reading in some book or periodical many years ago a statement by H. T. Stainton that, being in Scotland, he observed a larva of *V. antiopa* feeding wild on willow, and that he left it *in situ*,* fearing that he would not be able to rear it. Perhaps this vague recollection may enable someone to turn up the reference and so supply the needed "authentic instance."—REV. W. CLAXTON; Navestock Vicarage, Romford.

* E. M. M. vii. 109.—Ed.

THE TAPPING OF ANOBIUM TESSELLATUM.—Judging from the notes on this subject by Mr. Gahan and Mr. Claude Morley in vol. xliii., some record by an eye- and ear-witness may be acceptable. Some years ago it was found necessary to replace a beam in the library of Cambridge University. When the old timber was taken out, it was found to be dreadfully riddled by *Anobium tessellatum* (now called *Xestobium rufovillosum*), and a lump of it was brought to me with several of the beetles, as well as its attendant *Corynetes*. The wood was placed with the beetles in a large glass receptacle on my writing-table, and for some days I had frequent opportunities of seeing and hearing the performance of the beetle. I regret very much that I took no notes, and can therefore only speak from memory. The beetle rests very quietly on the wood; the head is down below, on account of the peculiar formation of the thorax. The creature at intervals becomes restless, and, raising the front part of the body from the wood, rapidly lowers it, thus striking the wood with the front surface of the head. After several taps it becomes quiet again. My impression as to the number of strokes is that they were usually from three to six in number. I did not find that any impression was produced on its fellows by the performance, and if asked I should say that it is merely a restless habit. It will probably be easy to procure specimens of the beetle in the early summer in places where there are old large buildings; so that we may hope that someone will soon give us a better account than my recollection permits me to do. I would strongly advise that some of the wood it may be found in be placed with the beetle. Indeed, it should be kept in as natural a condition as possible, and the specimens should not be crowded.—D. SHARP; Lawnside, Brockenhurst, April 12th, 1911.

ODYNERUS CALLOSUS.—A few days ago a friend living in Stroud, Gloucestershire, sent me an insect which he met with basking in the sun on a stone wall not far from his residence on February 15th last. The insect was *Odynerus* (subgen. *Ancistrocerus*) *callosus*, Thom., a very common species here in the summer and autumn. It must have been a hibernated specimen. Can your readers inform me if they have ever met with this insect so early in the season? The date I consider worth recording.—V. R. PERKINS; Wootton-under-Edge, April 17th, 1911.

THE TUTT COLLECTION.—We all knew Tutt. Not only in this country but on the Continent of Europe also, and possibly far beyond, his name was to the entomologist a household word. His 'British Noctuae and their Varieties' has for many years been a well-studied book; why, then, was so little interest manifested by those assembled at Stevens's Sale Rooms on April 11th, when the material that he had collected during the best years of his life, and on which this book was largely based, was offered at auction? A satisfactory answer is difficult to find, but the fact remains that many lots which contained the actual specimens on which his varietal names were founded brought no more than, if as much, as would an equal number of specimens from any ordinary collection. Thus, for example, a lot of 105 specimens, including *Bryophila perla* vars. *distincta* and *flave-*

scens, sold for 9/-, and one of 95, in which was included var. *suffusa* and others, 6/-; another lot of 115 specimens, containing among them *Leucania lithargyria* var. *pallida*, and many vars. of *L. impura*, brought only 3/-; while some 132 specimens, among which were included *Xylophasia rurea* vars. *nigrorubida*, *ochrea*, *flavo-rufa*, *intermedia*, and many others, sold for 4/-. Even the carefully worked-out series of *Agrotis tritici*, &c., failed to raise any enthusiasm, and after the first two lots offered fetching 7/- and 9/- respectively, prices dwindled again to the 4/- and 5/- level, and the climax was reached when the last five lots of the Noctuæ offered had to be lumped together to find a buyer at 3/- for 513 specimens of *Anchocelis*, &c., although simply bristling with named forms. Such a state of things gives pause for reflection; possibly the specimens were not all in the finest possible condition, but even, then, have they not some historic value?

Some other portions of the collection fared better. Four lots of four each of *Drepana sicula* (*harpagula*) brought from 30/- to 37/6 per lot, one of three 25/-, while others in perhaps not quite such good order, and sold in lots with other species, realized somewhat lower prices. A pair of *Gluphisia crenata*, to which the only datum was "Bucks," sold, with some 60 other specimens, for 10/-; *Notodonta trilophus* (Berwickshire, 1878), with others, 18/-; *Bryophila algæ* (Hastings, 1873), in a lot of 57 specimens, 8/-; and a very pale form of *Acronycta auricoma*, which, by the way, did not appear to have any special varietal name attached to it, sold, with eight others and five *A. myricæ*, for 24/-. Two lots of *Acronycta strigosa* of eleven each, of which six were bred from ova, realized 26/- per lot; a specimen of *Tapinostola extrema* (Isle of Wight, Sept. 1889), with some eighty other specimens, 21/-, and three lots of *Apamea connexa* (Rotherham and Barnsley, 1881-7), sold in lots of twelve for 32/6, twelve for 28/-, and nine for 24/-; while a lot of twenty *Agrotis obscura* (*ravida*), nine *A. simulans* (*pyrophila*), and sixteen others, brought 16/-, and three passable specimens of *Noctua subrosea* realized just 30/-.

Among the Continental Erebias offered at the same time, a dozen specimens of *Erebia palarica*, Chapman, put up in lots of three each, realized from 16/- to 20/- per lot, but none of the other species appeared to attract any great amount of attention—indeed, it was found impossible to place some of the lots offered. We understand that a further portion of the collection will be offered in the autumn, when it is to be hoped a greater amount of interest may be exhibited.—R. A.

THE well-known collection of British Lepidoptera formed by Mr. S. J. Capper, of Liverpool, has been privately purchased and been placed with Mr. Newman, of Bexley, for disposal. The collection is rich in varieties, and contains most of the "extinct species"; some few of the aberrations have already found their way into other collections, but there are still many interesting forms awaiting a new home.—R. A.

SURREY ORTHOPTERA.—Mr. J. G. Dalglish, of Midhurst, sends me the following addition to my list (*antea*, p. 51). Unless otherwise

stated, all were taken by himself :—*Labia minor*.—Witley, fairly common. *Forficula lesneri*.—Witley, two specimens, 1909. *Ectobius panzeri*.—One specimen taken whilst sweeping at Thursley in 1907. *Gryllus campestris*.—A colony between Eashing and Godalming, whence he received specimens. *G. domesticus*.—Several specimens received from a bakehouse in Haslemere in 1908. *Gryllotalpa gryllotalpa*.—Another specimen from Churt in 1908. *Leptophyes punctatissima*.—Witley, 1909. *Meconema thalassina*. Witley, 1909. *Phasgonura viridissima*.—Two specimens in 1908, near Thursley, on a sunny hedge-bank among nettles (J. G. D.). Specimens near Godalming (O. H. Latter). *Metrioptera brachyptera*.—Witley, 1909. *Conocephalus dorsalis*.—One near Witley, 1910. — W. J. LUCAS; Kingston-on-Thames.

LEPIDOPTERA AT SALLOWES AT WINDERMERE.—On the mild nights following the March east wind, sallows were very productive at Windermere. I visited a large willow-bush on the evening of April 1st, on which the *Tæniocampæ* literally swarmed. Of *munda*, scarcely two were alike, and some varieties were very extreme. Good varieties of *opima* and *incerta* were present, and *cruda*, *gothica*, *populeti*, and *rubricosa* fell in showers. The best captures, however, were *Calocampa exoleta* and *T. leucographa*. *Exoleta* is a rare insect at Windermere, and this pilgrim, a perfect specimen, was made very welcome. *Leucographa*, although resident in the district, has not been seen of late. The captured specimen was a male. Street-lamps, on March 29th, were very prolific. *Amphidasys prodromaria* seemed more than usually common, and I saw some exceptionally light and dark specimens. *Anticlea badiata* and *Polyploca flavicornis* were quite fresh, but *Hybernia marginaria* and *Anisopteryx æscularia* were very worn. — HELENA BROCKBANK; 22, Holly Terrace, Windermere, April 3rd, 1911.

THE ENTOMOLOGICAL CLUB.—Two meetings of this Club were held during March last: one on the 21st, at "Wellfield," Lingards Road, Lewisham, the residence of Mr. Robert Adkin; the other, on the 24th, at 58, Kensington Mansions, South Kensington, the residence of Mr. Horace Donisthorpe.

ERRATA.—Page 147, line 9, for "*egeria*" read "*megæra*"; line 13, for "*megæra*" read "*egeria*."

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, March 1st, 1911.*—Mr. G. T. Bethune-Baker in the chair.—Messrs. Lionel Armstrong, Government Entomologist to the Gold Coast, Gold Coast, West Africa; J. Platt Barrett, 30, Endwell Road, New Cross, S.E.; the Rev. Henry William Brutzer, B.A., Great Bowden Vicarage, Market Harborough; Messrs. P. P. Graves, Club de Constantinople, Constantinople; Thien Cheng Kung, Guardian Superintendent of Chinese Students in British India, care of the Curator, Mysore Government Museum, Bangalore, India; the Rev. A. Miles Moss,

Helm, Windermere; and Dr. Cuthbert F. Selous, M.D., M.R.C.S., L.R.C.P., Agra, Barton-on-Sea, New Milton, Hants, were elected Fellows of the Society.—Dr. Nicholson showed six specimens of *Choleva fuliginosa*, Er., an addition to the list of British beetles, from Alphington, Devon. This species closely resembles *C. nigrita*, Er., with which it is mixed in several collections, and is probably widely distributed in this country. Mr. Dollman has taken it at Harrow, Mr. Donisthorpe at Hartlepool, Mr. Taylor in the Isle of Wight, and it is also in the Bates collection.—Mr. L. W. Newman exhibited some sticks (the off-shoots of birch-stumps) containing larvæ of *Egeria culiciformis*; also sticks of *Salix caprea* containing larvæ of *Trochilium bembeciformis*, one of these showing the cap formed over the hole prepared for emergence. This species is not usually supposed to form a cap. The larvæ were not, as is generally thought, confined to living wood, some of those exhibited being in dead twigs. Also a living specimen of *A. culiciformis*, a species which the exhibitor remarked was easily forced.—Mr. G. T. Bethune-Baker showed a specimen of *Erebia ceto* which had been swept from the herbage without its head, which was probably held fast by a spider; nine hours after capture this insect had still been capable of fluttering strongly. He also exhibited a specimen of *Erebia* var. *adyte*, with a half-developed right hind wing; a specimen of *E. eriphyle* with no left hind wing, and a *Melitæa varia* with no right hind wing; in the two latter there was no trace of the wing having ever been developed.—Mr. A. Bacot communicated a note confirming the Hon. N. C. Rothschild's distinction between *Ctenocephalus canis* and *C. felis*, both of which he had bred from ova. He gave measurements showing the difference in size and shape between the eggs of the two species, comparing them also with those of *C. fasciatus* and *Pulex irritans*. He also read a paper entitled "On the Persistence of Bacilli in the Gut of an Insect during Metamorphosis," commenting on which Dr. Chapman observed that, in moulting (referring chiefly to Lepidoptera), a provision for increase of size is not the only object in view, but also the removal of various possible microbic enemies. In "laying up" for a moult a larva almost invariably first empties the alimentary canal; at the actual moult, not only the skin but the lining membranes of the tracheæ and of much of the alimentary canal are cast also. The threads drawn from the mouth and anus, consisting of the linings of the *primæ viæ*, often seem long enough to represent the whole tube; if this be so, then bacillary inhabitants would be got rid of, and in any case must be so to a great extent. It would be interesting to know what is the precise hiatus between the oral and anal portions, and what provision there is for establishing an aseptic condition of this portion of the tube.—Messrs. Ernest A. Elliott and Claude Morley communicated "A first Supplementary Paper on the Hymenopterous Parasites of Coleoptera."—The Secretary read to the Society a letter of condolence received by Dr. Chapman from M. Charles Oberthür, one of the Honorary Fellows, containing an appreciation of the late Mr. J. W. Tutt.

Wednesday, March 15th, Special Meeting.—Rev. George Wheeler, Secretary, in the chair.—The letter summoning the Special Meeting was read by the chairman, and, no other candidate having been pro-

posed, the Rev. F. D. Morice, M.A., was declared to have been elected President for the current year. The ordinary meeting followed immediately, the Rev. F. D. Morice, President, in the chair. The President addressed a few words to the Society, thanking them for their choice of him for the post, and expressing regret for the circumstances which had made an election necessary.—Messrs. George Moffatt Carson, Entomologist to the Government of New Guinea, Port Moresby, New Guinea; Alfred George Scorer, Hill Crest, Chilworth, Guildford; Percy William Affleck Scott, Chinese Imperial Customs Service, Hangchow, China; Noel Stanton Sennett, 32, Bolton Gardens, South Kensington, S.W.; James A. Simes, 2, The Byre, Whitehall Road, Woodford, Essex; P. H. Tautz, Cranleigh, Nower Hill, Pinner, Middlesex; R. G. Todd, The Limes, Hadley Green, N.; R. Vitalis, Commis de 1^{re} classe, Trésor, Pnom-Penk, Cambodia, French Indo-China; and Rev. W. G. Wittingham, Knighton Rectory, Leicester, were elected Fellows of the Society.—The President announced that he had appointed Dr. F. A. Dixey, M.A., M.D., F.R.S., and Messrs. G. T. Bethune-Baker, F.L.S., F.Z.S., and H. St. J. Donisthorpe, F.Z.S., to act as Vice-Presidents for the current year.—Mr. H. St. J. Donisthorpe exhibited a nest of *Lasius umbratus*, Nyl., which had accepted a ♀ *L. fuliginosus*. On December 13th a deallated ♀ *L. fuliginosus* was put into a small plaster nest with a dozen of the *umbratus* ♂♂; she was slightly attacked, but not in any way injured, and tried to conciliate the ♂♂ by stroking them with her antennæ; she protected her waist by crossing the back legs over it, and her neck by pressing the head back against the thorax. By December 21st she was accepted by the whole nest, and has been treated as their queen ever since. Only one or two ♂♂ occasionally threatened her with their jaws, though the first *fuliginosus* ♀ placed in the nest was killed. The ♂♂ killed most of their own virgin ♀♀.—Mr. W. C. Crawley also exhibited a case containing a colony of *Lasius umbratus* with a *L. fuliginosus* ♀ as queen, and a colony of *L. niger* with a *L. umbratus* queen. He mentioned that deallated ♀♀ do not always behave as if fertilized, the ♀ in this nest being restless as the winged ♀♀ are before the marriage flight.—Dr. Chapman began a discussion as to whether this form of "parasitism" was in the long run profitable to the parasitised species, by weeding out the weaker nests; the President, Mr. Verrall, and Mr. G. A. K. Marshall also joined in the discussion.—Mr. F. Merrifield exhibited 134 specimens of *Selenia bilunaria*, and read a short paper on the question whether temperature in the pupal stage may affect the size of the imago in some Heterocera. His experiments showed that in every case the imagines from the cooled pupæ are, on the average, larger than those from the forced, the difference ranging in the males from 1.3 to 20.8 per cent. (averaging 13.6 or 13.9), in the females from 0.7 to 9.5 per cent. (averaging 3.3 or 3.6). It seemed to him that the difference was too great and too diffused, embracing as it does each sex in five separate families, to be explained in any other way than this: that it is caused by something that, in consequence of the difference in temperature, happened to either those forced or those cooled, or both of them, in the pupal stage.—Mr. H. Main exhibited a stereoscopic photograph of the cocoon of *Chrysopa flava*,

opened to show the hibernating larva, and of the larva taken out of the cocoon to show how it lies coiled up with its tail over its head.—Mr. O. E. Janson exhibited larvæ and cases of a Psychid from Amboyna, the cases being beautifully constructed and closely covered on the exterior with small spines, intermixed with larger spines or thorns. The largest of the cases measured nine inches in length.—Dr. Chapman read a paper on "The British and a few Continental Species of the Genus *Scoparia*," and showed photographs of the genitalia and a drawing to illustrate the neurulation.—The Secretary announced that the *Conversazione* was fixed for Wednesday, May 17th, and that the Linnean Society had kindly placed their Rooms at the disposal of the Society for that occasion, and were generously lending their lantern, making no charge for light or for the current for the lantern. He also announced that Professor Poulton and Mr. Enock had consented to give lectures on that occasion. As the arrangements with the Linnean Society preclude the sale of tickets, it will be necessary to ask for a subscription towards the expenses (for refreshments, printing, postage, &c.) from those who apply for them, and also strictly to limit the number for which each Fellow may apply. On the motion of Mr. Rowland-Brown, seconded by the Rev. G. Wheeler, a vote of thanks was unanimously passed to the President and Council of the Linnean Society for their kindness and generosity.—GEORGE WHEELER, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 23rd, 1911.*—Mr. W. J. Kaye, F.E.S., President, in the chair.—Mr. J. H. Leslie, F.E.S., of Tooting, was elected a member.—Mr. Turner exhibited three Noctuids sent to him by Mr. Murray, of St. Anne's-on-Sea; two of the specimens were very dark melanic forms of Agrotids, superficially very similar, but which on close examination he considered to belong to two species, *Agrotis tritici* of the var. *nigra* form, and *A. nigricans* of the var. *jumosa* Fab. (nec God.). The third specimen was a worn *Luperina*, possibly referable to *L. cæspitis*, the small, grey, rough surfaced form sometimes met with on the coasts of Lancashire and Sussex.—Mr. Moore, the very beautiful leaf-moth of India, *Gloriana (Phyllode) ornata*.—Mr. Newman, (1) sticks, both living and dead, of sallow containing larvæ of *Trochilium bembeciformis*, and also some containing the similarly feeding larvæ of the musk-beetle, *Aromia moschata*; (2) a living specimen of *Ægeria culiciformis*, bred after sixteen days' forcing; and (3) full fed larvæ of *Arctia caia* and *Callimorpha dominula*, which had been forced on; he stated that some larvæ of the former species had made no response to the treatment.—Mr. Kaye, a varied series of *Spilosoma lubricipeda* and its var. *zatima*, and asked if it had been obtained by anyone recently.—Mr. Adkin, melanic examples of *A. nigricans* to compare with Mr. Murray's specimens.—M. Tonge showed a series of lantern slides, each illustrating the complete life-history of a British butterfly.—Mr. Edwards, a set of slides illustrating the anatomy of a lepidopteron.—Mr. Main, slides sent by Mr. Hancock, of Birmingham, illustrating the structure, habits, and snares of spiders.

March 9th.—Mr. W. J. Kaye, F.E.S., President, in the chair.—Mr. A. E. Gibbs exhibited a collection of Lepidoptera from the Cuna-

Cuna Pass, Blue Mountains, Jamaica, including the rare *Papilio homerus*, and fine local forms of *Aganisthos odius*, *Gynæcia dirce*, *Hymenitis diaphanus*, *Calisto zaugis*, *Adelpha abyla*, &c.—Mr. Adkin, a form of *Nola albulalis*, in which the dark brown band was reduced to a dark narrow stripe only, giving a much more delicate appearance to the insect.—Mr. W. J. Kaye, several Syntomid species of the genus *Pseudospheer* and the wasp models which they so closely mimicked in build, shape of antennæ, legs, colour, &c.—Mr. Sheldon, the two specimens of a Noctuid, about which much discussion as to their identity arose many years ago, &c., which were named *Agrotis helvetina*. They are now regarded as pale, putty coloured examples of *Graphiphora augur*.—Mr. Blenkarn, a pale xanthic form of *Epinephele tithonus*, from the Isle of Wight, and a fine dark clouded example of *Camptogramma bilineata* from the same place.

March 23rd.—Mr. W. J. Kaye, F.E.S., President, in the chair.—Mr. Stanley A. Blenkarn, of Beckenham, was elected a member.—Mr. W. J. Kaye exhibited a series of *Xylina conformis*, all but one from Glamorganshire, and remarked on its occurrence and distribution.—Mr. Newman called attention to the devastation caused by some hitherto unknown disease among bees in the South of England. It was most contagious, and scarcely a hive remained over a large area.—Mr. Buckstone, a bred series of *Apocheima* (*Nyssia*) *hispidaria*, and gave particulars as to breeding. He also contributed notes on the occurrence of numerous dwarf examples of *Hybernica defoliaria* at Richmond; the pairing of *H. marginaria* male and *H. defoliaria* female; delayed wing development of *Chesias rufata*; pupation of *Triphæna pronuba* after hibernation without feeding; the finding of the ova of *Spilosoma menthastri* on the shell of a living snail; and the occurrence of batches of ova of *Hadena pisi* on a small plum-tree. Mr. Newman said that *A. hispidaria* readily pupated in two inches of soil if the bottom of the cage was the concrete floor.—Mr. R. Adkin, two varieties of *Arctia caja*, from Yorkshire larvæ. One with whole of fore wings dull smoky brown with very much diminished white markings, the hind wings black with only a few dull yellow, some ill-defined, patches; the other with a concentration of the lighter colour of the fore wing towards the base, and of the darker colour towards the apex, while the hind wings were bright orange-red with much reduced black markings. He also showed living *A. zonaria* with eggs *in situ* under bark of clematis.—H. J. TURNER, *Hon. Rep. Secretary*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meeting held February 20th, 1911, at the Royal Institution, Colquhoun Street, Liverpool, Mr. Geo. Arnold, M.Sc., F.E.S., Vice-President, in the chair. The Vice-President delivered a lecture on "Ants," in which he dealt chiefly with the recent discoveries connected with the habits of the subterranean fungus-eating species and the curious procedure of the females when founding a new colony. The ants which infest trees, constructing their nests in hollow parts of the branches, were also specially dealt with, and the economic effect of their presence described. The lecture was illustrated by a large number of specimens, and also by means of drawings on the blackboard.—H. R. SWEETING & WM. MANSBRIDGE, *Hon. Secs.*

CITY OF LONDON ENTOMOLOGICAL SOCIETY.—February 7th, 1911.
 —Mr. Chas. H. Williams was elected to membership.—Mr. S. J. Bell exhibited a series of *Anticlea rubidata*, all of bright red form, bred from Isle of Wight ova.—Mr. G. Brooks, a very dark brown *Smerinthus populi*, Barrett, 1910.—Mr. H. M. Edelsten, a series of *Malacosoma castrensis*, from Essex coast, including several unicolorous specimens.—Mr. V. E. Shaw, *Noctua augur*, var. *omega*, Finchley, June 28th, 1910, mentioned in Tutt's 'British Noctuae,' &c., as a very rare form.—Mr. L. W. Newman stated that osier stumps collected for *Trochilium bembeciformis* were found to contain both full fed and young larvæ: the stumps being kept on the concrete floor of a hothouse during the winter, the young larvæ migrated from the small to the larger stems, fed up, and pupated. Mr. Newman also drew attention to the fact that, while larvæ of *Ægeria culiciformis* pupate head upwards in the stumps of birch, when feeding in year-old stems they pupate head downwards above the emergence cap.

February 21st, 1911.—Mr. L. W. Newman exhibited sticks showing borings of *T. bembeciformis* in both living and dead wood, also sticks containing larvæ of musk-beetle which feed side by side with *T. bembeciformis*, and display similar habits.—S. J. BELL, *Hon. Sec.*

RECENT LITERATURE.

Annals of Tropical Medicine and Parasitology. Vol. iv. No. 3, Dec. 20th, 1910; No. 4, March 10th, 1911. University Press, Liverpool.

THESE fine periodicals deal but little with entomology pure and simple, being mainly taken up with important papers on "Sleeping-Sickness" and other tropical diseases, mainly due to the operation of insects. The last paper of each number (in both cases by R. Newstead and H. F. Carter) is devoted to the description of new genera and species of mosquitoes. These are well illustrated, and should appeal to readers of the 'Entomologist' who study the Diptera. There is also a paper on *Glossina* by R. Newstead in No. 3.

W. J. LUCAS.

On some New Species of Leaf-hopper (Perkinsiella) on Sugar Cane.
 By F. Muir (Bulletin No. 9, Entomological Series. Hawaiian Sugar Planters' Association). Pp. 1-14, five figures in text. Honolulu, 1910.

OF the thirteen species of *Perkinsiella* referred to, eight are described as new. The author remarks that the species may be separated by superficial characters as tabulated, but that the males are best distinguished by the genitalia.

OBITUARY.—We have heard, with very great regret, that our valued correspondent, Mr. W. A. ROLLASON, died on April 17th last.

EXCHANGE.

Duplicates.—Larvæ of *Aurinia* (Welsh form). *Desiderata*.—Numerous.—C. W. Williams; Penarth.

Duplicates.—Ova: Versicolor from wild Scotch parents (Forres). *Desiderata*.—Early stages of most butterflies.—A. W. Lynn; 37, Rodsley Avenue, Gateshead.

Duplicates.—A few dozen ova, Nubeculosa females taken wild at Rannoch, April 10th, 1911. *Desiderata*.—Young larva *Iris*, or early stages of local and rare species, or offers.—Charles Mellows; Bootham School, York.

Duplicates.—Larvæ: *Hispidaria*, *Abietaria* (giving good percentage of black form). *Desiderata*.—Many *Geometer* larvæ, especially *Repandata* from Cornwall, North Devon, Delamere, Scotland, and Ireland.—Brian A. Backlake; 67, Ringford Road, Wandsworth, S.W.

Duplicates.—*Blandina* (Scotch), *Davus* (Scotch), *Geryon*, *Z. Trifolii*, *Griseola*, *Fascelina*,* *Pudibunda*, *Perla*, *Pudorina*, *Micæa*,* *L. Guenei* (2, fair), *Hispidus*, *Ophiogramma*, *Cursoria*,* *Tritici*,* *Præcox*,* *Littoralis*,* *Ditrapezium*,* *Brunnea*,* *Thalassina*,* *Nigra*,* *L. Sparganii** (2), *Moneta*,* *Grossulariata* var. *Rubiginata* var. *Plumbata*, and many others. *Desiderata*.—Many *Geometræ* to renew; also early stages.—W. Yates; Summerfield, St. Anne's-on-Sea, Lancashire.

Duplicates.—Numerous set insects; also early stages. *Desiderata*.—Larvæ of *Grossulariata*, especially from Yorkshire and Lancashire: also ova and larvæ of many other species.—Bernard S. Harwood; 94, Station Road, Colchester.

Duplicates.—Black *Pilosaria*,* *Hamula*,* *Croceago*,* *Australis*, *Hastata*,* *Papilionaria*, *Palpina*,* *Ziczac*, *Autumnaria*,* *Unea*, *A. Ligustri*,* *Fascelina*,* *Zonaria*,* *Strataria*, *Meliloti*, *Conspersa*, *Togata*,* *Ditrapezium*,* *Muralis*, *Dictæa*, *Opina*, *Miniosa*, *Hispidus*, *Nigra*, *Arion*, *Hera*, *Piniperda*, *Irrorella*, *Rubidata*, *Berberata*, *Straminea*, &c. *Desiderata*.—Larvæ of *Grossulariata* (wild, Lancashire) and *Caja* (wild, Blackpool district).—W. J. Ogden; 87, The Common, Upper Clapton, London, N.

Duplicates.—Pupæ: *M. Rubi* and *A. Villica*, and imagines of same freshly killed and unset after emergence. *Desiderata*.—Numerous.—C. E. Newnham; "Netheravon," Ringwood.

Duplicates.—*Plumigera*, *Cam-lina*, *Myricæ*, *Albovenosa*, *Neurica* (fair), *Geminipuncta*, *Typhæ* and var. *Fraterna*, *Pinastri*, *Cytherea*, *Sordida*, *Ravida* (fair), *Interjecta*, *Dahlia*, *Opima*, *Populeti*, *Suspecta*, and many others. *Desiderata*.—*Leporina*, *Turca*, *Reticulata*, *Captiuncula*, *Ditrapezium*, *Retusa*, *Conspersa*, *Oculta*, *Tincta*, *Festucæ*, *Interrogationis*, and many common *Noctuæ* and *Geometers* to extend.—(Rev.) C. E. Raven; 4, Park Terrace, Cambridge.

TO CORRESPONDENTS.—All notes, papers, books for review, &c., and notices of change should be sent to the Editor—

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