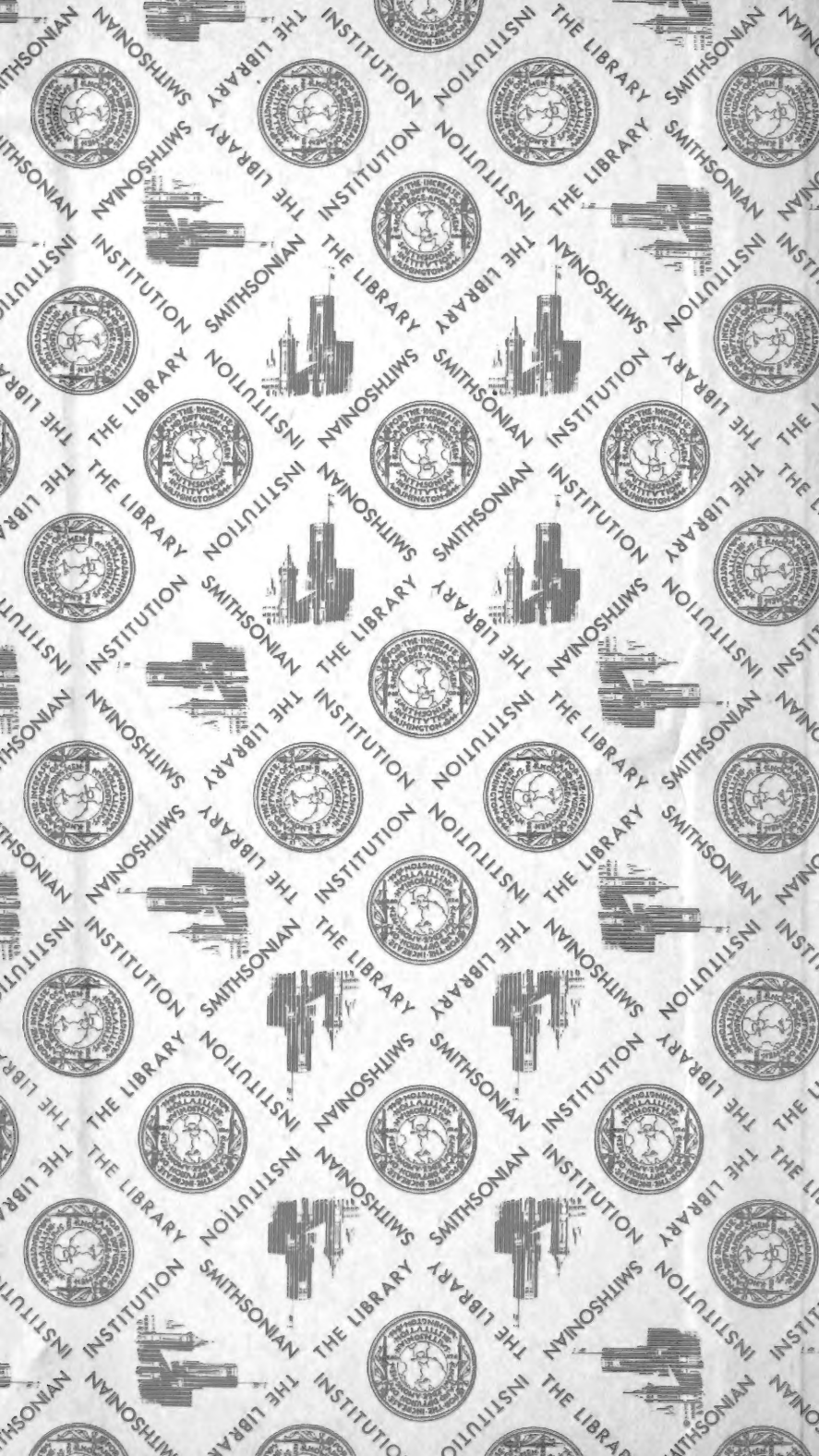
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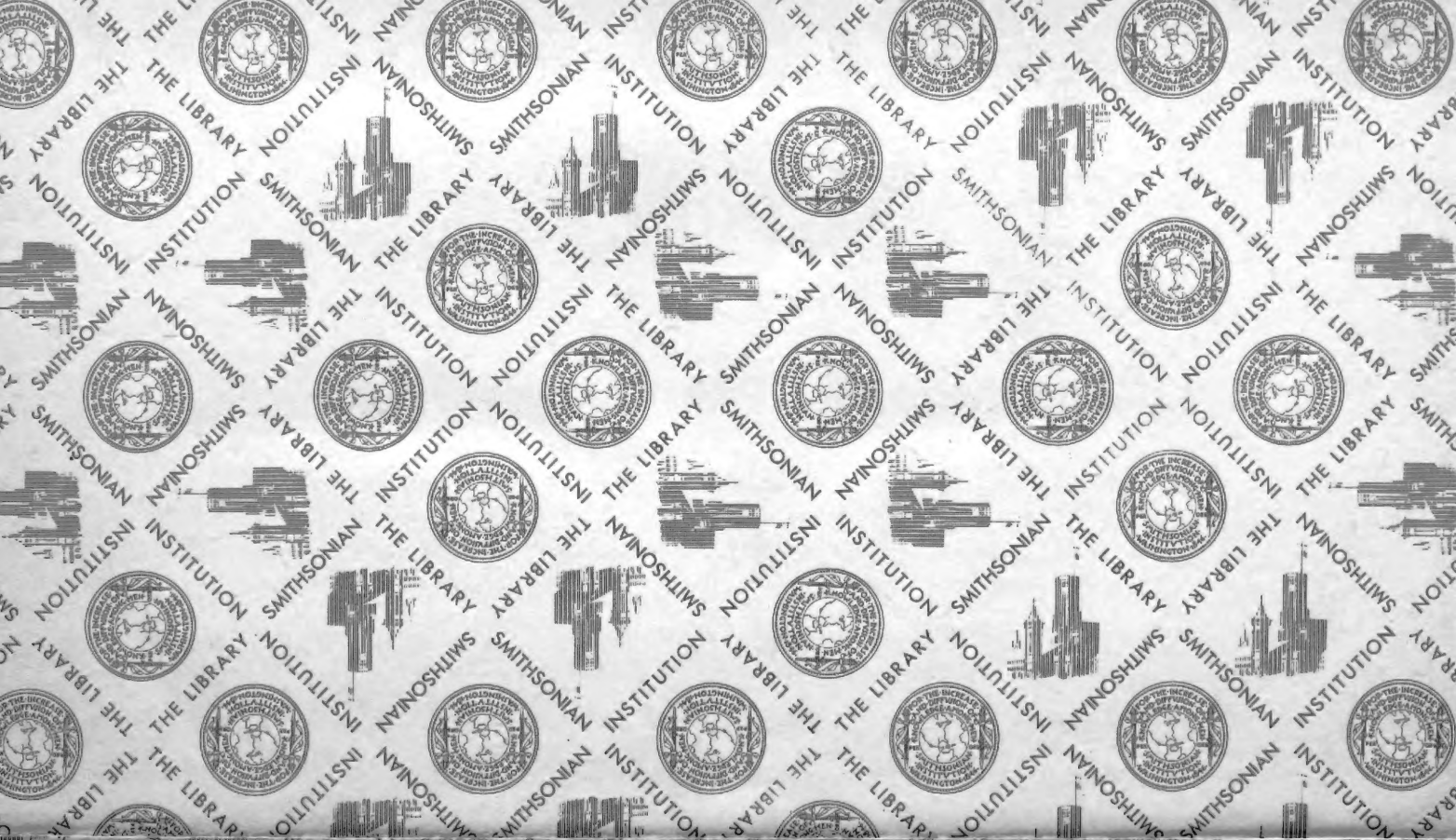
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NEWMAN'S ENTOMOLOGIST.

VOLUME VI.

1872 — 3

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THE

ENTOMOLOGIST

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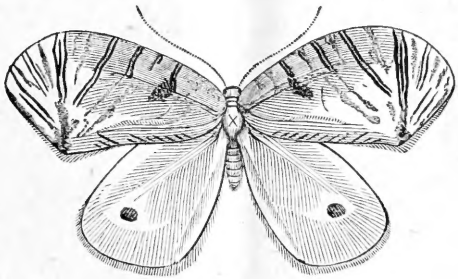
EDWARD NEWMAN.

VOLUME VI.



PSYCHOPSIS MIMICA.

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LONDON:
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1872—3.

While ravening death of slaughter ne'er grows weary,
Life multiplies the immortal meal as fast.
All are devourers, all in turn devoured;
Yet every unit in the uncounted sum
Of victims has its share of bliss—its pang,
And but a pang—of dissolution: each
Is happy till its moment comes; and then,
Its first, last suffering, unforeseen, unfeared,
Ends with one struggle pain and life for ever.

C. V. SILEY, Washington, D. C.

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THE ENTOMOLOGIST.

No. 99.] JANUARY, MDCCCLXXII. [Price 6d.

Answers to Correspondents.

Variety of Argynnis Paphia: Under and Upper Sides of the same Specimen.

Argynnis Paphia variety.—This extraordinary specimen varies in the same mode as the lower figure at p. 22 of the 'Butterflies,' in the predominance of black on the upper surface, but in a much greater degree; the sienna-brown

colour on the fore wings being confined to the costal margin, and a series of vague, ill-defined, and amorphous blotches, parallel with the hind margin; the hind wings are black, with a double series of vague, ill-defined, amorphous, sienna-brown blotches, parallel with the hind margin; all the wings have a considerable fulvous area at the base, which is due to the presence of long fulvous hairs. The figure very effectively represents the markings of the upper surface; the under surface is without a trace of the usual black spots, but there is a blackish cloud near the middle of the fore wings; the hind wings are of a greenish silvery gray, with a decided silvery wash near the base, and a broad but very vague band of silver tinged with purple, parallel with the hind margin. This insect was kindly lent me by Mr. James A. Tawell, purposely for figuring in this journal; it was taken during the past summer.

The Genus Platypteryx.—In answer to Mr. Raynor (Entom. v. 455), I may state that with us the larva of Falcula is more common in September and October than in June; in fact, I never took one myself in either May or June. We take the imago in May and June, and sometimes, not often, in July or the beginning of August. The larvæ are pretty common here on birch and alder.—*Wm. Prest; Holgate Road, York.*

Thera firmaria in October.—It is no new fact that Firmaria is taken in October (Entom. v. 456). I have been in the habit of taking that species for the last ten or twelve years. In October of last year I took a very fine series along with Mr. Carrington. We took them both at sugar, and on the boles of fir and larch trees, just out of pupa. In my opinion the species is double-brooded, for I took the larvæ in May of this year, along with Fasciaria, and bred them in June.—*Id.*

Entomological Pins.—In reply to your correspondent, Mr. Buckton (Entom. v. 452), I beg to suggest that we have pins made in the British style of the same material as those used by many continental entomologists, and are made in Vienna; and are to be had of Mr. Mann, Hunds thurmerstrasse, No. 7. The price of these pins is about 1*s.* 8*d.* per 500 pins.—*E. G. Meek;* 4, *Old Ford Road, E., December* 2, 1871.

Beetle parasitic in Wasp's Nests.—Can any of your readers inform me if they have met with beetles in the cells of

wasp's nests? I have taken hundreds of nests from time to time, and failed to discover anything besides wasps and their larvæ till yesterday, when I took several nests, and in the middle cake of one of them there were about half a dozen insects with remarkable long legs and flowing antennæ: their bodies resemble the soldier-fly in shape, but of a bright brown colour; they were each in a separate cell, and covered with the flour-like covering that cover the cells during the transformation of wasps, and had evidently been bred there. I enclose you a specimen for your opinion. I have specimens in several stages of maturity, from the larva to the perfect insect. The insect appears to feed upon the larvæ of the wasp, as may be seen by a section of cell enclosed containing larvæ of beetle and wasp.—*C. Bradbury; Alton, Staffordshire, September* 2, 1871.

The beetle is Rhipophorus paradoxus, long and familiarly known as an inmate of wasp's nests. The precise nature of the connection of the beetle and the wasp is not at present known, but it is supposed that the beetle is related to Stylops, which is certainly parasitic on bees.

Breeding Bombyx Rubi.—Are the larvæ of Rubi difficult to rear? Will you tell me how to keep them in the winter? —*C. Neve.*

If you keep them out of doors exposed to wind and rain they are sure to do well. A large flower-pot, with wire-gauze over the top, is the best vessel to keep them in; it should have a lump of turf or some heath at the bottom. I never observed them eating in the winter. Mr. Gustard will also kindly take this reply.

EDWARD NEWMAN.

Notes on the Insects of the Scilly Isles.—The insects recorded were observed in the eight isles here mentioned, during six days, beginning with September 16th. Typhlocyba Ulmi was abundant at Hugh Town, St. Mary, and was the first insect seen on landing, and was probably naturalized soon after the elm was introduced into the island. St. Mary is about 1600 acres in extent; Tresco, 700 acres; Bryher, 300 acres; St. Martin, 550 acres; St. Agnes, 350 acres; Samson, 80 acres; St. Helen, 40 acres; Annette, 40 acres: the three

last are uninhabited. The isles are said to have been nearly connected with the Land's End, durtng the Roman occupation of Britain; and it is supposed that they were prehistorically part of a large Atlantic continent, one of the earth-waves which alternately rise and sink. There are many proofs that the crags, now high above the sea, were once within reach of the tide. Aphis Lychnidis occurs on the Lychnis in St. Mary. The indiscriminate Aphis Rumicis, often committing its offspring to plants that will not sustain them, thrive here on the Mesembryanthemum. Tranaphis Salicivora lives in St. Mary and in Tresco on willow-leaves, where it is accompanied by a little mite (Tetranychus Salicis?), and by an orange fungus; and the latter is the food of a small red grub, perhaps of a Cecidomyia. Ixodes Ricinus is common in Samson, and a species of Notaspis occurs here and there in St. Mary. In addition to Epeira diadema spiders occur of the genera Salticus, Thomisus, Theridion, Linyphia, Neriene, and Tetragnatha; they are not generally numerous, but are extremely abundant on the marshy ground near Porth Hollick, and indicate that Diptera are occasionally plentiful there. With one exception no ground-spiders (Lycosa, Drassus, Clubiona, and Dysdera) were seen, and in that respect these islands differ widely from the Channel Isles, where the ground-spiders are very plentiful in Guernsey. Lithobius forcipatus and a species of Geophilus were of rare occurrence; Oniscus asellus, Armadillo vulgaris and Glomeris marginata were not very abundant. The oak only occurs in the abbey grounds at Tresco, where Dryobius roboris and Callipterus annulatus have also been introduced. I did not see the Devonshire galls there, but one individual of Cynips Kollari (lignicola) was found, far from its native oak, in St. Mary, opposite Tresco, and it was probably wafted from the latter isles by the wind over three miles of intervening sea. Libellula striolata is not uncommon in St. Mary, and Cloeon diptera was found in Tresco. Forficula auricularia and Stenobothrus biguttulus are numerous in all the isles. The following list includes, fifty-one species of frequent occurrence; those that are less common will be mentioned afterwards. *Diptera.*—Sciara morio, Dilophus spinatus, Scatopse notata, Culex detritus? Tipula oleracea, Ptychoptera contaminata,

Geranomyia unicolor, Rhyphus fenestralis, Chironomus annularius, C. pallens, Tanypus varius, Ceratopogon armatus, Hybos vitripennis, Rhamphomyia variabilis, Lonchoptera lutea, Eristalis tenax, E. pertinax, E. horticola, Syritta pipiens, Syrphus Corollæ, Platycheirus clypeatus, Melithreptus Menthastri, Myopa atra, Bucentes geniculatus, Sarcophaga hœmorrhoa, Musca erythrocephala, M. vomitaria, M. Cæsar, Stomoxys calcitrans, Anthomyia canicularis, Scatophaga stercoraria, S. merdaria, Cœlopa frigida, Ensina Sonchi, Sphenilla marginata, Acinia parietina, Urellia stellata, Sepsis cynipsea, S. punctum, Psila Rosæ, Opomyza germinationis, Phytomyza lateralis, Hecamede albicans. All the Cœlopæ observed were of small size. *Hemiptera.*—Pentatoma Baccarum, Verlusia rhombea. *Hymenoptera.*—Formica flava, Pompilus gibbus, Sphecodes ephippia, Halictus albipes, H. morio, Bombus Hortorum.—*Francis Walker.*

The Genus Platypteryx.—I have received some interesting observations from an entomologist with reference to the genus Platypteryx, on which I made some remarks last month (Entom. v. 455). "In your notice in the 'Entomologist' of last month you express a wish to hear of the experiences of breeders of Unguicula and Falcula. The latter I have reared, and send you what I know of the insect. I found the larvæ of different sizes upon alder (Alnus glutinosa), upon which tree they are conspicuous, in consequence of drawing the sides of the leaves together, and spinning a slight web across when about to change their skins. This bending of the leaves easily attracts attention, and a little further search results in the discovery of the larva on the upper side of some neighbouring leaf, which it much resembles in colour, and where it might have been overlooked but for the tell-tale mentioned above. They are not nearly so easily recognized upon birch (Betula alba), as many leaves are bent by Tortrices and spiders, to say nothing of the smaller size of the leaves. All the larvæ spun up between leaves; and the first imago appeared on April 26th; and they continued to emerge until the 3rd of June. Eggs laid on the 5th of May hatched on the 20th; and another batch, laid on the latter and three following days, began to make their appearance on the 1st of June. I noted down their personal appearance at different times, but need not trouble you with

it. Suffice it to say, that three starvations, owing to my absence from home, left me but four miserable caterpillars, which did not assume the pupa state till the end of July and the second week of August. These are still alive, and have not emerged as an autumn brood, though I cannot tell what they might have done under more favourable circumstances. The perfect insect I have captured in May, June, and on the 4th and 26th of August in different years. I again noticed in October last variously-sized larvæ upon the same bush. Perhaps this continuation of appearance may be accounted for in a similar manner to that of Salicis, whose eggs, laid in the spring, produce moths the same summer, laying eggs which hatch, but the caterpillars are some fast and some slow feeders: the former quickly spin up, and emerge in September, after a week only in the pupa state; the latter go into cocoon before the winter, to produce the spring imagos; whilst the hybernating larvæ are, in fact, their own nephews and nieces." In answer to some objections of mine to the above remarks, the same correspondent writes:—"I hasten to answer the queries in your letter of this morning. In the first place, I never wished you to understand that the alder leaves were completely drawn together, but the sides are simply bent upward, and secured in that position by silken threads. These leaves are always more or less eaten round the edges where the larva feeds, and, of course, are very easily seen. I believe these webs are spun previously to changing each skin, and that the caterpillar eats the exterior of the leaf, retiring into the centre at the approach of day. The lines of silk cover, perhaps, an inch square, but are slight, and can scarcely be dignified by the term 'web,' which I have used. The pupæ were kept in my bedroom, which has two windows facing the south-east and two to the south-west, which tend to keep it very cool in winter. I do not think the emergence was premature, as Tersata, Vitalbata, Senecionis, and Tineæ, kept under similar circumstances, appeared at the same time at which I had previously taken the wild insect."—*G. H. Raynor; The Ferns, Danbury, December* 18, 1871.

Entomological Notes, Captures, &c.

Note on Acidalia Inornata.—In July of last year I took a few Inornata, from which I was fortunate to get a few eggs.

About half a dozen of the larvæ seemed to make more progress than the rest, and outstripping their fellows soon became full fed, and changed to pupæ in about ten or twelve days. I bred three very fine specimens. The other larvæ are yet quite small, and have done feeding for this year. Is not this unusual?—*Wm. Prest; Holgate Road, York.*

Lygæus punctato-guttatus.—The large assemblies of Pyrrhocoris apterus have been frequently observed, and Lygæus punctato-guttatus is also gregarious, though to a much less extent. This little insect has a wide range, and has, probably, spread both to the north and to the south from its previous dwelling-place. It is found in Natal, in Teneriffe, and in several parts of Europe. I observed groups of it in some of the Channel Isles, and, perhaps, more limited companies may be found on the English coast.—*Francis Walker.*

Lepidoptera in 1871.—The following is a list of some of the Lepidopterous insects I have taken or observed in this neighbourhood during the present season :—

Sesia bembeciformis. Not so common as usual; Clare Hill.

Chelonia Plantaginis. In the larval state; Greetland Heaths.

Ouropteryx sambucata. Throughout the district, commoner than I have ever previously noticed it.

Numeria pulveraria. Reared a nice series from larvæ sent me, from Guestling, by the Rev. E. N. Bloomfield.

Scodiona belgiaria. Common; larvæ, end of April; imagos in June.

Larentia multistrigaria and cæsiata.

Eupithecia venosata. Clare Hill.

E. fraxinata. Larvæ, by beating ash at Grimescar; not so plentiful as usual.

E. campanulata. Reared a nice series from larvæ sent me from Tring, by the Rev. H. Harpur Crewe.

E. expallidata. Reared a series from larvæ sent me by the Rev. John Hellins.

Ypsipetes impluviata. In the larval state, at Storthes Hall Woods; not common.

Melanippe galiata. Very plentiful; Grimescar.

Scotosia dubitata. Clare Hill.

Cidaria immanata. Storthes Hall Woods. I still believe

alder to be the natural food-plant of this species, my specimens being nearly always beaten from it.

Pelurga comitata. Clare Hill.

Lithostege nivearia. Reared from larvæ sent me from Thetford, by the Rev. W. H. Cole.

Dicranura furcula. Reared from larvæ sent me from Richmond, Yorkshire, by the Rev. G. P. Harris.

Notodonta dromedarius. Larvæ not uncommon in Black Fir and Storthes Hall Woods. One from alder was a very peculiar purple variety, and from it Mr. Buckler has taken a figure.

Cymatophora flavicornis. Black Fir Wood.

Nonagria fulva. Storthes Hall Woods.

Hydrœcia nictitans. Abundant at sugar and ragwort bloom; Clare Hill and Grimescar.

Heliophobus popularis.

Charæas Graminis. Clare Hill.

Miana literosa. Birkby.

M. arcuosa. Plentiful; the females do not fly much, but are readily found after dark by searching the stems of Aira cæspitosa.

Noctua glareosa. Linthwaite.

Orthosia macilenta. Woodsome.

Hoporina Croceago. Reared some beautiful specimens from eggs sent me from Leominster, by Mrs. Hutchinson.

Xanthia citrago and cerago. Bred.

X. silago. Larva; on sallow, at Woodsome.

X. ferruginea. Woodsome.

Tethea subtusa. Birkby.

Polia flavocincta. Larvæ, in the garden, on "everlasting-pea."

Dasypolia Templi. Scarce. I had only one specimen brought to me.

Epunda viminalis. Larvæ, on sallow, at Woodsome.

Abrostola triplasia. Larvæ on hop, in September; Clare Hill.

Scopula lutealis. A very abundant species.

Eudorea muralis. Clare Hill.

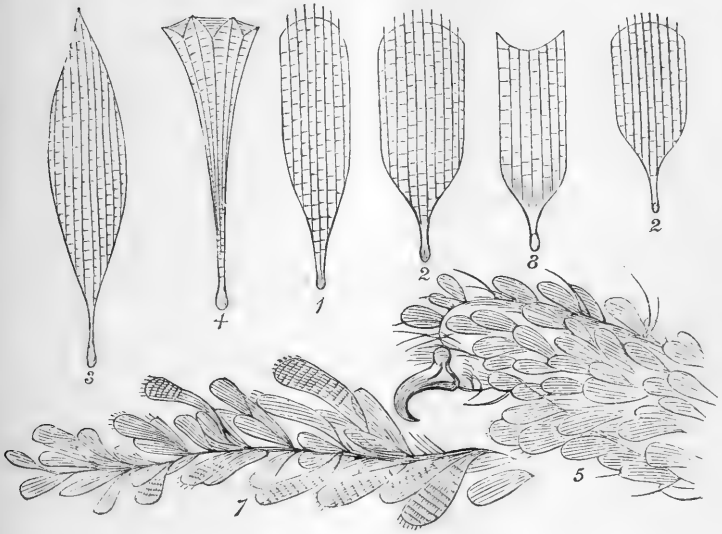
Homœosoma saxicola. Reared a series from larvæ sent me from Dalbeattie, by Dr. White.

Phycis carbonariella. Very common on the heaths.—*Geo. T. Porritt; Huddersfield, December* 11, 1871.

THE ENTOMOLOGIST.

No. 100.] FEBRUARY, MDCCCLXXII. [Price 6d.

Answers to Correspondents.



SCALES OF A GNAT, CULEX PIPIENS.

Fig. 1. Battledore scale of proboscis, palpi, and legs. Fig. 2, 2. Scales of the wing-rays, and portions of the body. Fig. 3. Scale of the margin of the wing. Fig. 4. Scale of the thorax. Fig. 5. Tip of the tarsus with scales *in situ*. Fig. 7. A wing-ray with the scales adherent; but slightly disarranged by pressure in preparation for the microscope. Fig. 8. Scale from body of a gnat; name unknown.—*Copied from the 'Microscopical Journal' for October*, 1871.

Scales in Diptera.—Observing in our numerous scientific journals that it has been stated that scales have been discovered on the wings of gnats, similar to those on the wings of butterflies, I wish to ask whether this is likely to be true, and, if true, whether it does not vitiate the character

generally laid down as distinctive of Lepidoptera? I thought that the character in question was absolute, and I wish to know whether these statements of microscopists are reliable, more particularly as I have caught several gnats for the purpose of investigating the subject, and have always failed to discover the scales in question.—*Edward Wright.*

The statement is perfectly true, and is familiar to structural or anatomical entomologists, although it seems to have been forgotten or lost sight of from time to time, until some microscopist reproduces it every few years, when it crops up as a new discovery. It is nothing more than a conventional idea, or sometimes a convenient assumption, that the scales in question are confined to Lepidoptera, and the assumption is utilized now and then to set up some hobby, such, for instance, as the Lepidopterous nature of Acentria, which assumption remains standing only until some one of more extended or more careful powers of observation, or more skilled in logical deductions, knocks it down again. Meigen is the first author I recollect who distinctly mentions the presence of scales on the wings of Diptera, and this as early as 1804; but the subject has been thoroughly investigated by Mr. Hogg, the able Secretary of the Microscopical Society, in his work on the microscope, first published in 1854, and repeated in subsequent editions. The paper which has recently revived the subject appears in a German scientific journal, under the joint authorship of Dr. E. Müller and Professor F. Delpino, and was translated for the 'American Naturalist,' by Mr. R. L. Packard, a gentleman well acquainted with the natural-history world, and one who should have known that there was nothing novel in these observations. A drawing of the proboscis clothed with scales is given at p. 287 of Mr. Hogg's first edition, and in the following four editions; at p. 599 in the sixth edition; a single scale, detached, is seen near it; and, again, at p. 611, another scale more highly magnified, and exhibiting a wavy appearance, which is noticed by the German authors, but which, curiously enough, does not quite accurately represent the structural character of the scale. The waviness is owing to the under surface being slightly out of focus. It is not, perhaps, so very surprising that this fact should have escaped the observation of German authors, since it has received so

little recognition from English writers on either Entomology or Microscopy. My friend Mr. Walker rather briefly mentions the fact that "the hind margin of the wings in the Culicidæ is fringed with scales;" and of Aedes he says, "fringed with scales, similar in structure to those of Culicidæ;" and of Culicidæ he observes that the wing-rays are "fringed with scales." He mentioned the same character as applicable to Corethra, and other genera of the same section of sessile-bodied Diptera; but I do not observe that Mr. Walker notices the dense clothing of scales which almost totally conceals the proboscis and tarsi. In a paper by Mr. Hogg, published at p. 192 of the October number of the 'Monthly Microscopical Journal,' it is stated, that "the scales of gnats are of four distinct kinds: the proboscis, palpi and legs are entirely covered over with the battledore scales, represented in fig. 1 [common in Lepidoptera]. The nervures or venations of the wings [wing-rays], and portions of the body of the insect, have regularly arranged rows of the scales shown at fig. 2; while from the marginal edges of the wings project slender scales, which terminate in a point, as in fig. 3. The intermediate portions of the wings and body are covered with fine hairs, and the thorax with tufts of feathery scales, somewhat peculiar in form, as in fig. 4, the pedicles of which are considerably longer than the rest, while the upper part gradually widens out, and terminates abruptly in a crenated edge. These may be briefly described as '*trumpet-shaped* scales.' In each case the scale is inserted by a narrow pedicle into the chitinous membrane, gradually assumes a scutiform appearance, and terminates in a crenate or pointed edge. The basement membrane is homogeneous, and the upper layer is corrugated, or traversed by longitudinal ribs, and these, again, are regularly and finely striated throughout in the horizontal plane. It is this striation on the ribs which, when seen slightly out of focus, gives to the scale a wavy appearance." Mr. Hogg says, it is probable that the scales of the various species of Culex will, after a careful examination, be found to differ; as, upon going over the collection of gnats in the British Museum, he discovered one with the scale represented at fig. 8. I sincerely hope these valuable and interesting investigations will be continued.

Variety of Pyrarga Megæra.—I send you a sketch (enlarged) of the upper wing of P. Megæra. I do not recollect having seen this variety before. The principal feature is the well-developed small eye, just below the large apical spot. Is this an uncommon variety? The hind wings have five perfect spots, each with a white dot in the centre; the colour of the wings is the same as any other good specimen. Perhaps you will kindly remark on this. —*Chas. George Websdale;* 78, *High Street, Barnstaple, December* 26, 1871.

During the summer of 1870 I received an insect, exactly similar to Mr. Websdale's figure, from Mr. Alfred Owen, and believed it to be the Pyrarga Mæra of the continent. Being, however, unable to determine this, and feeling an invincible repugnance to the announcement of novelties unless fully convinced of their intrinsic value, I sent it to my friend Mr. Doubleday, who did not think it distinct from P. Megæra. The matter, therefore, remained in abeyance until further evidence was obtained. The receipt of Mr. Websdale's drawing again brings the subject before me, and I have a second time submitted the subject to my friend, who has examined Mr. Websdale's drawing, and thus replies in a letter for my own information :—"I return Mr. Websdale's note, with the sketch of the butterfly's wing. It appears to be the same as the one which Mr. Owen has; and I believe Mr. Dale possesses similar specimens. It appears to me to be identical with Lyssa of Boisduval, which is found in Dalmatia and other parts of Eastern Europe, and which Boisduval thought might be a hybrid between Megæra and Mæra; but Dr. Staudinger gives it as a simple variety of Megæra. I think the subject is worth investigating, as this form appears to occur along the southern coast of England. I have never seen a male.—*Henry Doubleday.*"

The Genus Platypteryx.—In reply to your queries in the 'Entomologist' about P. unguicula, I have bred a second brood from eggs of the first, and have taken specimens of (probably) a second brood at sugar. This would be the end of July or beginning of August; in one case on July 22nd, 1870,—a forward year. We also beat the larvæ of Unguicula regularly in September and October, which always remain in pupa till spring, or early summer;

say the first half of May. I should like to know a little more of Falcula than I do; but had a few larvæ of a supposed second brood, which fed up about mid-October this autumn, and are still in pupa. I have never had reason to suspect Hamula of being more than double-brooded, though a few individuals may emerge prematurely in confinement; as happened to me in the case of P. syringaria this autumn. Six larvæ, instead of hybernating, fed up, and produced imagos in the middle of September. The eggs of Unguicula were procured by putting a captured female in a muslin sleeve on a branch of the growing beech. The eggs were laid chiefly on the upper side of the leaves.—[*Rev.*] *Bernard Smith; Marlow, Bucks, December* 19, 1871. *In a letter to Mr. G. H. Raynor.*

Caterpillars in Belgium.—The Provincial Council of Brabant have published a decree to the effect that as the regular annual destruction of caterpillars and other insects, which takes place in February, has not been found to clear the land of these pests, all owners and occupiers of land are enjoined to clear their trees, shrubs, hedges, and bushes, of caterpillars during the month of November, it being considered that good results will be attained by this second operation. Can you throw any light on this subject? What species of Lepidoptera can be found on the trees, shrubs, hedges, and bushes, of Belgium, in November and February? —*Edwin Birchall.*

I suppose Aporia Cratægi, the black-veined white, to be the insect to which this paragraph refers; but, of course, this is little better than a guess.

Harvester, or Harvest Bug.—P. T. enquires, What is the harvester?

A minute insect of the family Acaridæ, called either Acarus or Leptus autumnalis. It is of a reddish colour, and in the autumn frequents harvest-fields and all manner of herbage. In walking through stubble and meadows it is readily detached from the herbage and clings to the clothes, more particularly the stockings; it thus gains access to the body, and, piercing the skin, conceals itself beneath, and causes intolerable itching: its progress over the surface of the skin is usually arrested by any ligature, as a garter; hence that part of the leg pressed by the garter is a favourite locality.

Butterflies in the Club Collection.—In rearranging this collection in accordance with the larval system adopted in my 'British Butterflies' and 'Label List,' many very old specimens, which have done duty since my youth, are unavoidably rejected, and gaps consequently made. Mr. Birchall, with his customary generosity, has supplied some of these gaps, but others still remain, many of them in the commonest species, as the following list will bear witness:—Polychloros, Atalanta, Hyale, Edusa, Napi, Rapæ, Quercus, Icarus, Medon, Malvæ, Tages, and Linea. The following rarer species are also desired:—Iris, Sibylla, Epiphron, Pruni, W-Album, and Actæon. All my readers are invited to inspect the collection, at 6 P.M. on Fridays.—*Edward Newman; 7, York Grove, Peckham, January* 1, 1872.

Eggs and Young Larvæ of Ellopia fasciaria.—I now send you nine small larvæ of E. fasciaria, some of which I beat from Scotch firs on Saturday last; the remainder I obtained from a friend, together with the following account of them:—"On the 11th of August last I captured a female, which, on the evening and night of the same day, deposited thirty-two eggs. When first laid they were yellowish, but in a few days all turned to dull purple, exeept those that proved unfertile. One larva emerged on the 24th of August; the majority on the 25th; and a few at intervals up to the beginning of September. Till the first moult the larvæ were bright red, almost scarlet; after the first moult there were patches of yellowish colour on the red ground-colour; after the second moult the silvery white of the adult larvæ began to appear. Up to the present date, October 24th, they have changed three skins." I trust this account and the larvæ will be of service to you.—*Thomas Groves; 5, West Terrace, Richmond, Yorkshire, October* 25, 1871.

I am much obliged for, and delighted with, these beautiful little larvæ, which have remained perfectly stationary, on the needles of the firs, for three months.

Name of a Larva.—I should be much obliged if you could give me the name of the enclosed larva, which I found on the 5th ult., on the snow, while walking over a grass-field. I have no idea from what plant it could have come.—*F. Cooper; Markree Castle, Collooney, Ireland.*

I believe the larva to be that of Hadena Chenopodii; but

its small size and shrivelled condition prevents me from pronouncing with any certainty.

Hybernation of Bombyx Rubi and Quercus, Doubl. (Entom. vi. 3).—I have known some entomologists put themselves to a great deal of trouble to obtain fresh chickweed, dock, or other low-growing plants, for the benefit of hybernating larvæ of the above species. They will occasionally nibble the leaves a little in mild weather, but I have no doubt that such food is not necessary for them, as already stated by Mr. Newman. Quercus, however, as I have noticed, will continue to feed, even on to December, on such leaves as are to be found on the oak, hawthorn, and hazel, not rejecting those which are getting dry and withered. The larvæ of this species do not usually attain the same proportions in the autumn as do those of Rubi, but begin feeding again rather earlier; and though, during the colder months of the year, it is not necessary to supply green food, it is well to do so in March, as the larvæ seem desirous then to anticipate the appearance of leaves on the trees and shrubs they afterwards frequent, and will indulge in a slight repast upon the young vegetation which the spring is drawing up from the ground. An observer has recently stated that in his experience some imprisoned larvæ of Rubi entered the earth during the winter. I fancy this must be an exceptional case. The larvæ of Quercus I have, certainly show no inclination to do so, though several of them are extending themselves upon the earth at the bottom of the box in which they are kept. For the most part, they prefer to place themselves upon twigs, if such are obtainable; if not, they will resort to any angles or prominences they can find, not manifesting any particular tendency to draw together into parties. Some which have been enclosed in a box, partially composed of metal and glass, avoid these, and rest on the woodwork. From time to time these larvæ change their positions slightly; and these alterations might, perhaps, prove good meteorological indications, were they watched and compared with the weather. Few hybernating larvæ thrive well if they are too tenderly treated; and entomologists probably lose more in the winter from cosseting them than from exposure. Damp, however, does seem, in various cases, to be highly injurious.—*J. R. S. Clifford.*

Economy of Vesperus Xatarti.—Messrs. Lichtenstein and Valery Mayet, who have devoted so much time to studying the life-history of insects and rearing them from the larval state, have just succeeded in breeding Vesperus Xatarti. The larva is of a truncated pyramidal form; it is hexapod, and does not live in timber in the manner of other longicorn larvæ with which we are acquainted, but quite under ground, where it conducts itself exactly like the larvæ of lamellicorns, more especially like those of the genus Rhizotrogus. The perfect insect makes its appearance in October and November; it lives through the winter, and lays its eggs in the spring, sometimes in a patch under the loose bark of olive trees, sometimes in the dried stalks of brambles which had been hollowed out by bees, and always at a certain height above the ground; but the eggs are only deposited in the stalks of the brambles for the purpose of hatching, for as soon as the little larvæ come out they allow themselves to fall to the ground just like those of the cicadas, and bury themselves in the earth.—'*Petites Nouvelles Entomologiques*,' *December* 15, 1871.

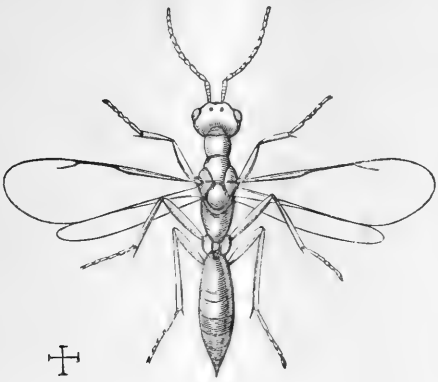
Mistake in Newman's 'Illustrated Natural History of British Butterflies.'—The statement at p. 57 of 'British Butterflies' as to Polychloros feeding on aspen, should have been assigned to me, instead of to Mr. Levett. They were in the greatest abundance on an aspen growing outside the wall of Parham Old Park, on the road between Rackham and Wigginholt.—*Edward Jenner; Lewes, January* 13, 1872.

Two New Species of Eupithecia.—M. Paul Mabille has described two new species of Eupithecia found in the sub-Pyrenean basin:—(1) Santolinata, the larva of which feeds on Santolina pectinata in September and October, and the imago is on the wing in May; (2) Pyreneata, intermediate between pulchellata and linariata, the larva feeds on Digitalis lutea, and there is but one brood in the year.—'*P. N. E.*,' *December* 15, 1871.

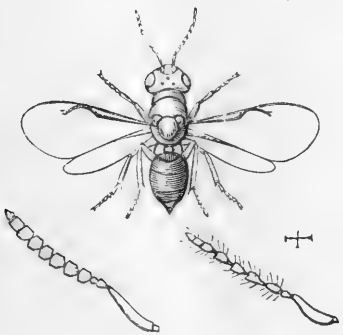
As these South-European insects are not very likely to occur in England, I have not copied the description. Neither of the plants mentioned as the food-plants of the larvæ are found in Britain, a fact which much decreases the probability of the species occurring here.

EDWARD NEWMAN.

Economy of Eurytomidæ.—The Eurytomidæ, by late observations on their history, have become the most interesting of all the Chalcidiæ. The latter, like the Ichneumonidæ and the allied tribes, are termed parasitic, but the Eurytomidæ



ISOSOMA FLAVICOLLIS.



EURYTOMA PLATYPTERA.

have been discovered, in several instances, to be herbivorous, and the attraction which they have on that account is increased by the uncertainty which remains, as to whether they are wholly herbivorous, or partly or occasionally

carnivorous, and whether the want of opportunity in one mode of living induces the maintenance of life in another way. Being inhabitants of galls, or of holes in wood, their proceedings are thereby hidden. The operations of most other Chalcidiæ are conspicuous, and the latter may be often seen to come out of the body of the insect which has been their prey. One instance will suffice to indicate what is not yet ascertained with regard to this family. A gall may be seen on the stalks of thistles: this gall is made by the grub of Urophora Cardui, and two other grubs, one a Eurytoma, the other a Pteromalus, in early life dwell with it. Does the Eurytoma feed on the gall or on the Urophora, or on both; and does the Pteromalus feed on the Urophora or on the Eurytoma, or on both? In this family Systole is the only European genus of whose economy nothing has been published. The two figures on the preceding page represent Isosoma flavicollis and Eurytoma platyptera. — *Francis Walker.*

Life-histories of Sawflies. Translated from the Dutch of M. S. C. Snellen van Vollenhoven, President of the Entomological Society of the Netherlands. By J. W. May, Esq.

(Continued from 'Zoologist,' S. S. 2517.)

Almost all the writers of entomological papers having, for some time past, transferred their contributions to the 'Entomologist,' or some similar exclusively entomological periodical, and the 'Zoologist' having, in consequence, ceased to come so much as formerly under the notice of entomologists, it has been thought advisable to continue the publication of the translations of M. Snellen van Vollenhoven's papers in the 'Entomologist' instead of in the former publication, in which they have from time to time appeared. The translation of the life-history of Dineura rufa, *Panz.*, which appears in the present number of the 'Entomologist,' is, therefore, simply a continuation of former papers on Tenthredinidæ, by the

President of the Entomological Society of the Netherlands. The translator takes this opportunity of repeating that, although it has been found impracticable to republish the figures accompanying the original papers, the references to those figures have been retained in the translation; the figures themselves are easily accessible, as the papers appear in the published Transactions of the Netherlands Entomological Society. J. W. M.

Dineura rufa, *Panz.*

Panzer, Deutschlands Insecten, L. xxii. f. 2. *Klug, Die Blattwespen, &c., in Magazin, 8er Jahrg.* p. 82, No. 71. *Hartig, Blatt-und Holzwespen*, p. 228, No. 7.

We have here a species very nearly allied to the preceding (Dineura Alni), but of an entirely different habit, Dineura Alni being solitary in the larva stage, and the larvæ of the present species being always found living together in great numbers. In the month of August, 1864, I found it at Schothorst, near Amersfoort, in a copse of young birch, in such numbers that I counted more than thirty young larvæ on one leaf, and I could easily have collected a thousand caterpillars. I will begin by a description of the female (fig. 1). It is 9 or 10 mm. long, expanding to 18 mm., short, of a compressed form, and, with the following exceptions, entirely of a shining orange colour. The eyes are grayish black; ocelli topaz colour; antennæ and labrum brownish black; mandibles brown, the under surface of the thorax having shining brownish black spots, the dorsum of the metathorax being also of this tint, and having the cenchri ivory-white; the ovipositor is black; the under side of the femora, the tips of the posterior tibiæ, and the whole of the posterior tarsi, are brown; and, lastly, the posterior tibiæ, with the exception of the above-mentioned brown tips, are of a pale faded red; the wings are smoky, which tint becomes paler towards the exterior margin; the stigma, the costa and the post-costal nervure are orange; the other nervures are brown, the externo-medial nervure and its branches being dark brown; the nervure between the first

and second submarginal is incomplete, and in the last-named cell, which is of a rather dark smoke-colour, is a brown horny spot.

On the 12th or 13th of September, 1862, I observed a female sawfly, answering the above description, depositing her eggs in a leaf-stalk of a birch tree in my garden, at Leyden; the eggs were inserted into either side of the petiole; one side is represented at fig. 2. The leaf-stalk appeared to be enlarged or swollen at the spot where the egg was concealed beneath the epidermis. As before remarked, this was in the middle of September; I must thus conclude that this was the second generation, as in the following year I found full-grown larvæ in the middle of the month of August. I also observed that the eggs of this first generation were laid in the petiole of a May leaf, which leaf was eaten out by the young larvæ, so as to have the appearance of having been riddled by small shot, while the little creatures had afterwards gone to feed in company on the leaves of the branch growing immediately above the leaf which had been consumed. I sometimes counted fourteen eggs in the two rows. What surprised me was that the young larvæ consumed the oldest leaf first, then a somewhat younger leaf, and so on, always proceeding to younger leaves. As before mentioned, the eggs deposited in September on the birch tree in my garden were enclosed in the petiole. I had captured the sawfly which laid these eggs, and was thus sure of the species. I frequently inspected the eggs. On the 21st of September I found two little larvæ had made their appearance; judging from their size (fig. 3 a) they were at least one day old, perhaps two: each had eaten a pretty large hole in the leaf between the nervures. I took one of them home, and from it drew the fig. 1, magnified. They had twenty legs; the head was shining pale brown, with round black spots, in which the eyes were placed. The 1st segment of the abdomen was yellow; the others pale green, with black longitudinal marks, on which were minute wart-like tubercles, each serving as base to an extremely fine hair.

Two days afterwards the one I had left on the tree had disappeared, either having fallen or been picked off by a bird. The one I had taken home increased but little in size, and at the end of three or four days died. The following day

I accidentally found a company of more than twenty similar little larvæ on two other leaves of the same tree, at about the same height from the ground. These resembled in all respects our fig. 3; and the petioles of the leaves, on which they were, had preeisely similar scars of eggs, so that I had no doubt the species was the same. I left the larvæ alone until they had changed their skin once, when I took ten of them in-doors; and on the 1st of October made a drawing in outline of six on a leaf, to show their manner of feeding, and the position they assume (fig. 4). I also made a coloured drawing of one, magnified (fig. 5).

On the 10th of October they appeared to be nearly full grown, when I made a coloured drawing of one of the natural size (fig. 6). The head was shining black, more or less brown towards the mandibles; antennæ, palpi and labium pale brown; on the vertex were some short hairs. The 1st segment of the abdomen, together with the lower part of the anterior legs, was sordid orange; the spiracle on that segment was elliptical; the anterior legs were, for the remainder, of a dull greenish white, the claws being pale brown; just in advance of the leg was a black spot of the shape of an extended letter V. From the 2nd to the last segment the back was yellowish gray-green; at the side, above the spiracles, was a bluish black longitudinal stripe, very faintly toothed above and below. In the gray-green or yellow of the dorsum, each segment had two rows of minute tubercles, the first row consisting of two, the second of four; from each of these little eminences proceeded an almost invisible hair. Below the black lateral stripe, and on the ventral surface, the colour of the skin is a very pale gray-green, the same tint being also observed on the middle legs; above the legs are two narrow black bands, which are interrupted at short intervals, thus consisting of a series of little lines; these extend to the 11th segment. I do not remember to have counted more than twenty legs on the full grown larvæ, nor do I find any note to that effect. There must thus be a great difference in this respect between the present and the preceding species (Dineura Alni), which, added to the wholly different habit, is the more striking, seeing that the insects in the perfect state differ so very little from each other.

In order to complete the description of the full-grown larvæ, I must here add the following. The large white tracheæ could be seen through the skin, while the little stigmata had pale brown borders. The last four thoracic legs were glassy green, brownish at the tips, with a black longitudinal mark on the upper side of the coxæ. Although on approaching or breathing on the larvæ they turned the abdomen smartly about, I could not perceive any glands on the ventral surface, such as are found in the genus Nematus. Lastly, the anal valve was of a more decided yellow than the middle of the back, the margin having eight minute brown teeth, of which those on the sides were very indistinct.

On the whole, the larvæ much resembled those of Nematus septentrionalis, *L.*, described by me in the second volume of these Transactions ('Zoologist,' 1st series, p. 8175), and of which a figure is given on pl. V., figs. 1 and 2; but these latter have, very distinctly, ventral glands.

This seems a fit opportunity to add, with reference to the above-named species of Nematus, that later observations have taught me that it lives not only on the alder, but also on birch; that is to say, unless the insect found on birch is merely a very nearly-allied species, which only differs from Septentrionalis in the colour of the intermediate legs of the imago. For example:—In June, 1862, I found larvæ on birch, which appeared to me not to differ on any point from those found on alder. They spun up on the 17th of June; and during the interval between the 19th of July and the 21st of August a number of females were produced agreeing with the above description of Septentrionalis, with this single exception, namely, the tibiæ of the intermediate pair were not pale red annulated with white at the base, but were white for half their length from the base, the remainder being black, and the tarsi of the same pair were black instead of pale red.

The larvæ of Dineura rufa spun cocoons made of grains of earth, resembling those of so many other species. The pupæ I have not yet seen. As in the case of many other sawflies, the imago is much less common than the larva.

Zygæna Vanadis or Zygæna exulans var. *Vanadis, a British Insect.*—My readers will recollect that the following

paragraph appeared on the wrapper of the double number of the 'Entomologist,' 94 and 95, during the past year.

"Dr. Buchanan White, accompanied by Mr. Traill, has captured Zygæna exulans at an elevation of 2500 feet, in Braemar. He has sent specimens to Mr. Doubleday, who finds them to be the variety Vanadis, thus quoted at p. 46 of the recent edition of Dr. Staudinger's Catalogue: 'a. v. *Vanadis*, Dalm. Zyg. Suec. 223, 6 (parcissime squamata albo non mixta), *Lap.; Scand. mont.*'" In the 87th number of the 'Entomologist's Magazine' the following particulars appeared from the pen of the accomplished naturalist whose good fortune it was to make this interesting discovery:—

"To-day I had the pleasure, shared by Mr. W. H. Traill, of taking several examples of Zygæna exulans, *Hchw.*, a species hitherto unrecorded as British. They were found at an altitude of from 2400 to 2600 feet, on a hill in Braemar. Z. exulans does not greatly resemble any of the other British species of the genus. The antennæ are clavate, and obtuse at the apex; the wings, which are sparingly scaled, are of a dull dark green, with five dull carmine spots, of which the first is long and narrow, and overlaps the basal half of the third; the second and third spots are small, and the fourth and fifth large; the hind wings are dull red, with a dull green border, which is broader and darker in the male; the fringes are ochreous; and the abdomen black and shaggy. In the typical Exulans, which occurs on the higher Alps and Pyrenees, the nervures are sprinkled with ochreous; but in *var.* Vanadis, *Dalm.*, which is the Scandinavian form, the wings are more sparingly scaled, and the ochreous is absent. Our specimens appear to be intermediate between these two forms, as, though the male has no ochreous, the female has the nervures and collar distinctly marked with this colour. Z. exulans is about the size of Minos." (E. M. M. p. 68.)

The following additional information from the pen of the same entomologist is extracted from the 'Entomologist's Annual' for the present year, at p. 113:—

"The locality for Exulans, in Braemar, is an ancient shore of the glacial sea; and the same agencies that deposited there, various boulders and arctic plants, probably, at the same time, brought the Zygæna. The insect is extremely local in its habits, for not a specimen was to be found,

except in one grassy and rushy place, about two hundred yards long and fifty yards broad: in this spot the moths were not uncommon, flying about in the sunshine, sitting on the flowers of Gnaphalium dioicum, or hanging *in cop.* on to the stems of grass. Females were much scarcer than males, and frequently had defective wings. The other Lepidoptera frequenting the same place were Crambus furcatellus, Sericoris irriguana, and Cœnonympha Tiphon *var.* Laidion. No other species of Zygæna is to be found in Braemar, so far as I am aware.

"The larva of Z. exulans is polyphagous, preferring, however, I believe, Erica and Vaccinium. Some larvæ which I had fed up readily, however, on Triticum repens and Polygonum aviculare, plants that do not occur within some miles of the station for Exulans. I found cocoons attached to various plants, Erica, grasses, Carex rigida, &c. The habitat of Exulans, in Braemar, is probably covered with snow from November to April each season."

The larva, a specimen of which, through the unremitting kindness of Mr. Doubleday, is now before me, is of the usual Zygæna type: the head small and retractile within the 2nd segment, it is black and shining; the body is dingy ochreous, each segment having a transverse series of fascicles of radiating black bristles, which impart a very dingy appearance to the larva; on each side is a subdorsal series of pale spots, each spot being transversely elongate; the legs are black, horny, and glabrous; the claspers are inconspicuous, being placed a good way under the body; their colour, as well as that of the belly, is obscure. It may be observed the colour of preserved larvæ is not always a safe criterion of what it was in the living specimen.

In the course of a somewhat careful examination and comparison of specimens, the following observations occurred to me. Dr. Staudinger has placed Exulans after Pilosellæ of Esper, which includes the Minos and Nubigena of the 'Label List,' sixteen species intervening; and before Trifolii, three species intervening. It does not very closely resemble either, but I fully accept this as the proper location for the species, and have so placed it. Compared with Trifolii the antennæ appear to be shorter, and the club more abruptly incrassated; compared with Nubigena there is no perceptible

difference in the length of the antennæ, and the incrassation towards the tip is rather less abrupt. The wings are rather less diaphanous than in Nubigena, decidedly more so than in Trifolii; their colour has a tinge of opaque green, which is all but invisible in Nubigena, and there is none of that metallic green which adorns Trifolii: this observation applies only to the variety, and not to the type specimens of Exulans, some of which are richly adorned with gold-green, especially the females; the red spots are five in number, and disposed much as in Trifolii; I find no trace of the sixth spot, which is always indicated in Nubigena, however fused and united with other spots; all the red markings are duller than either in Trifolii or Nubigena, and the tint of the red is more of a dull carmine; the basal subcostal spot is long and pointed, far surpassing the second basal spot, which is clearly defined, and never appears united with any other red spot; in this respect it agrees with Trifolii; the three remaining red spots are distinct and well-defined; the black hind border of the hind wings is accompanied by a smoky cloud, narrower in the female, broader in the male; the wing-rays are partially of the same dull smoke-colour; the body is black and hairy.

The *character essentialis*, or nomen-specificum, given as diagnostic of the species *Alarum anteriorum costis subsulphureis*, is not apparent in Scotch specimens. Typical specimens of Exulans from the Swiss Alps possess this and other characteristics, which I have purposely omitted to notice.—*Edward Newman.*

Notes on Aphides.—The study of geographical distribution of insects is inductive to enquiry as to the mode by which this arrangement has been effected. Passing over earlier cosmical changes, investigation may begin with the glacial period, which was preparatory to the present aspects of nature. During the prevalence of this epoch insect life was mostly limited to the regions about the middle zone of the earth, and from thence the assemblage of insects spread and converged to the north and to the south, and these middle districts might have been more extensive than they are now, as there are indications and traces of large continents that formerly occupied parts of the Atlantic, and of the Pacific and of the Indian Ocean. During the continual diminution

of this epoch the arctic climate receded towards the poles, and was followed by vegetation and by the insect race in successively smaller or less varied zones. By this means the vast variety in the range of insect-life has been effected, and the time here mentioned was preparatory to the present aspects of nature, just as winter is succeeded by the scenery of summer. A large part of the insect species still continue in their former habitation; another large part have wholly departed from the tropical regions, and have settled in temperate countries, while a few are cosmopolitan or universal, and bind, as it were, the whole Fauna together. Some kinds pass occasionally from one district to another, and thus, like the annual migration of others, indicate slightly the great change that formerly occurred. As the cold climate diminished, the arctic and alpine species removed to higher levels or to higher latitudes, and ceased to exist in the intervening temperate regions, just as many of the present inhabitants of the latter have wholly left the warm lands which are now unsuited to them, and to the vegetation with which they are associated. A notice of the settlements and range of an insect family may begin with the low latitudes, its earlier dwelling-place; and it may be traced thence in its lines of convergence to the high latitudes, these lines being occasionally shortened or turned aside by intervening seas, or mountains, or deserts. The Aphis family is, as yet, very little known in low latitudes, and there are only two instances of its occurrence to the south of the equator. The first is a Madagascar genus, published by Coquerel: this genus has the fore wings more highly organized than those of any other known form of the tribe. The second dwells near New Caledonia, and is described by Montrouzier, and has much resemblance to some of the European Aphides. In Dr. Leith's collection of Bombay insects, I have observed an Aphis which, if its specific characters are not obliterated by its shrivelled condition, is identical with a common English species. The next record of the family is in North Italy, where Passerini has published a monograph of the species therein. Africa, Asia and Australia are thus almost undiscovered countries as regards Aphides, and afford a large space and require much time for research. The Aphides of America are unknown from the Southern end to

the Northern States, where several new species have been described; a few there are also species of Europe, and may have been introduced thence into America. Kaltenbach has published a work on the Aphides of Germany; and Koch another, on those of the same country; and, nothwithstanding the three monographs here mentioned, and various descriptions of species in France and in Sweden, there is much yet to be discovered in Europe, especially with regard to the migratory species, and to the more or less conspicuous and numerous alternate generations, and to the influence of temperature and vegetation in changing the structure. The history of Aphides is connected with that of Coccinellæ, Hemerobii, and Syrphi, which destroy them from without; and with that of Aphidiidæ, Allotridæ, and a few Chalcidiæ, which destroy them from within; and with that of ants, which keep them as a flock, and feed on their honey. The little yellow ant lives with Aphides under ground; the black ant is a guide to the discovery of the long-beaked Aphis in the crevices of the bark of oak trees; and the large black and red ant resorts to the Aphides in woods. Some Aphides are especially subject to the attacks of Aphidii, from which other species, though equally numerous and noxious, are nearly free, weather and want of food being the agents in causing the latter to pass away. The comfrey Aphis is the frequent prey of a little red Dipterous larva, which seldom attacks other species. The fact that Aphides are stored by fossorial Hymenoptera as provision for their young is well known; and I observed an instance of it in Finmark. The Aphides of that region must have a long continuance of the egg state; in England this state varies from one month to eight months, according to the species, and according to the weather. The length and season of the egg state in the Aphides of hot countries has not yet been observed, and is an interesting subject for enquiry.—*Francis Walker.*

Anaitis plagiata.—It is not stated in the 'History of British Moths,' neither in Stainton's 'Manual,' that the larvæ produced by the second brood of this species hybernate. Such, however, appears to be the case. I took a pair, *in cop.*, the beginning of last September; the female laid me a supply of eggs, which hatched on the 25th of the same month, and I passed them on the next day to my

friend Mr. Bignell, who kindly undertook to look after them during my absence on three weeks' leave. On my return on the 18th of October, I relieved Mr. Bignell of his charge, and was surprised at the small progress they had made in that time, as I imagined they would feed up and turn to pupæ this year, and consequently that they would have grown more rapidly. Mr. Bignell had supplied them with a growing plant, on which they were feeding when I returned, so they could not have been more carefully attended to. On the 23rd of October I took many of these larvæ feeding at large, which were about the same size as those reared from the egg, and on the 30th of the month I took more, some of which were a trifle larger than any I had previously seen, and I observed them exposed on the Hypericum up to the 15th ult., after which date I do not find any notice of them in my journal. There had been several sharp frosts prior to this. The larvæ I have in-doors (with the exception of two or three that still continue to feed slowly, and seem nearly full grown) have crawled to the top of their cage, where they appear determined to remain for the rest of the winter. I have shaken them down once or twice on their food-plant, but they always crawl back to the old position. It is a hard-feeling larva to the touch, and one, I should say, difficult to describe accurately. Some of mine vary from a dark chestnut-brown to a pale putty-colour. When feeding they do not often wander off their food; and this autumn brood shows a decided preference for the seeds of their food-plant, although they do not altogether refuse the leaves, and in the spring, of course, will have nothing else.—*Gervase F. Mathew; Admiralty House, Devonport, December* 8, 1871.

Description of the Larva of Cerigo Cytherea.—The head is narrower than the 2nd segment, highly glabrous, and with tumid cheeks; it is furnished with a few scattered hairs; the body is smooth, velvety, and uniformly cylindrical, the division of the segments being marked with considerable distinctness, and the segments themselves being transversely, but not deeply, divided into sections: the entire colour is pale bistre-brown; the head being somewhat hyaline, and having a few darker marks arranged in two longitudinal series near the median suture of the face; the body is somewhat velvety, and the brown colour slightly tinged with

ochreous; the three thoracic segments and the sides are rather darker; the general surface is varied with numerous linear markings throughout its length; these form a double medio-dorsal series of dark linear spots, a pair on the anterior half of every segment after the 4th; there is also a double lateral stripe, the halves thereof being closely approximate and very slender; the ordinary dorsal trapezoids of black dots are present, but scarcely perceptible; the 13th segment, instead of the double medio-dorsal spots so conspicuous on the preceding segments, has a round dark brown spot in the same situation. I received this larva from my kind friend Mr. Doubleday, who had several feeding on grass throughout the winter, and which appeared full grown in the beginning of January.—*Edward Newman.*

Entomological Notes, Captures, &c.

Opening the Campaign.—A pouring wet day yesterday was succeeded by a fine mild evening, with a fresh breeze from the westward, and my friend Mr. Jones, of Morice Town, who had previously arranged to call for me if the night was fine, arriving a little after six, we started out to open the entomological campaign in this neighbourhood for the year 1872, directing our attention on this occasion against any larvæ that might have wandered forth at such an early period of the season. We were not long in reaching the "happy hunting-ground," a hedge which Mr. Jones knew of old to be a favourite spot for many kinds of larvæ, where we at once endeavoured to light our lanterns; this, however, I found to be a difficult operation, owing to the wind, which seemed to blow round and through everything, and to persist, in spite of the shelter of a wall, in extinguishing my matches as fast as I struck them. But at last I managed to get a light. Mr. Jones was more fortunate, succeeding at the first attempt; and calling out to me that he had discovered a larva of Gnophos obscuraria, while I was still in difficulties with my lantern. This larva was found on a stone in the immediate vicinity of a plant of Geranium lucidum, upon which Mr. Jones tells me he invariably finds them feeding, and that towards the end of March and

beginning of April, when they are full fed, they seem to prefer the flowers to the leaves: they feed entirely by night. A little further on I detected another at rest on a piece of dead grass. The hedges were terribly soaked after the recent heavy rain, and every bush and plant was dripping; but, notwithstanding this, after an hour's careful searching we succeeded in taking some forty larvæ of various species. The most numerous were those of Epunda lichenea, of which about thirty of different sizes, some half grown and others very small, were secured. The greater part of these were found stretched on stems of dead grass, dock, twigs, &c., and several of the smallest individuals were sitting in the Sphinx-like attitude described in Newman's 'British Moths.' I noticed that they generally occurred in little families of five or six, and few of them appeared to be eating, as, no doubt, they had merely crawled up to enjoy the soft balmy air; those that were observed feeding were discussing dock, sorrel, chickweed, and a common sort of grass. In colour, about two-thirds of these larvæ are pale green, the remainder, the largest ones, being of a mottled olive, and a few of them are suffused with a slight pinkish bloom. The other species taken appear to be Tryphæna pronuba, orbona and janthina, Leucania lithargyria, Phlogophora meticulosa, Noctua Xanthographa, and a single larva—a big fellow—we cannot determine, but which may be a variety of Tryphæna fimbria. We reached home again at half-past eight, much pleased with the result of our evening's work. I hope this account will induce other entomologists to bestir themselves at this early season; and, let me tell them, that more larvæ are to be obtained on mild evenings at this time of the year than later on, when they will be more difficult to find, on account of the vegetation growing and becoming thicker.—*Gervase F. Mathew; Admiralty House, Devonport, January* 14, 1872.

Larva of Sphinx Ligustri feeding on Teasel.—In July I observed a larva of S. Ligustri feeding on wild teasel; I think an unusual plant for it. I kept it two or three days, during which time it fed freely on the teasel, but left it as soon as I placed privet within its reach.—*Stephen Clogg; Looe, December* 14, 1871.

Scarcity of Hepialus Humuli.—As far as my observations extend, this common species has ceased to be abundant

in the London district, and from several places where it used to occur it has entirely disappeared. Its life-history is not so well known as that of some of the allied species; and any communications regarding its habits, by those who have had frequent opportunities of seeing it in its different stages, would be interesting to others amongst your readers besides myself.—*J. R. S. Clifford.*

Economy of Liparis Salicis.—I do not know whether the economy of this species varies according to its geographical position. Here, in the vicinity of London, I have several times found the young larvæ in autumn, or enclosed in a slight web during the winter. But it is stated that in some districts the eggs remain unhatched until the spring. And, possibly, it may turn out that, still farther south, the larvæ are matured in the autumn, and the pupation lasts through the winter. Years ago, when the old Battersea Fields were in the process of formation, with the present Battersea Park, the larvæ of L. Salicis were so abundant on the poplars as to almost defoliate the lower branches. Now, it appears in comparatively small numbers in our western suburbs.—*Id.*

Eremobia ochroleuca in Kent and Essex.—In your work on 'British Moths' you say that this is a very local species, and only found in four counties, namely, Sussex, Gloucestershire, Suffolk, and Yorkshire. I have found this insect in two other counties flying in the day-time, or at rest on flowers. In Kent I have taken specimens at Deal, Folkestone and Dover; and I am informed that it is taken near Canterbury in considerable numbers. In Essex I have taken a single specimen at rest on a flower-head, in the parish of Hadleigh, some four miles from here; and I know that it is taken not uncommonly near Saffron Walden, in this county.—*Gilbert H. Raynor; The Ferns, Danbury, Chelmsford, December* 26, 1871.

Economy of Æneana.—On the 20th of this month (January), in company with Mr. Godwin and other friends, I visited Willesden to obtain larvæ of Æneana. Mr. Godwin, who has been very successful in breeding this beautiful Tortrix, pointed out a fact relating to the species I think worth mentioning to the readers of the 'Entomologist,' as it may lead to the discovery of other localities for it. He directed us to pull gently the last years' flower-stalks of the

ragwort, and in every instance where the root contained a larva the stem broke off very readily, leaving a portion standing always two inches high; this was slightly webbed over the hole that led down to the root. On examining the piece that broke off, it had the appearance of recently being eaten nearly through, as though prepared for the rough winds of the coming spring to break off. I succeeded in obtaining about twenty roots containing the larvæ; thanks to the kind information of Mr. Godwin. The larva is very much like that of Tipuliformis.—*J. Russell;* 18, *Mount Pleasant Road.*

Early appearance of P. Pilosaria, T. Stabilis, and T. Instabilis.—To-day (January 26) I found several of the above hatched out in my breeding-cage, and in fine condition. The breeding-cage stands out of doors, only sheltered by an open summer-house.—[*Rev.*] *A. C. Hervey; Colmer, Hants.*

Death of M. Guillaume Capiomont.—We regret to announce the death of Guillaume Capiomont, which took place on the 15th of November, at Luxeuil, where he had removed, hoping to receive benefit from change of air. He was excessively fatigued by the journey, and never rallied; his age was fifty-nine years. During a long residence in Algiers he had devoted all his spare time to the study of insects, and had made a very considerable collection of Coleoptera; he has most carefully observed and studied the life-history of many species. He has recently published a very masterly monograph of the curculionidous family Hyperides, and had very recently completed monographs of the genera Larinus and Lixus.—'*P. N. E.*,' *Dec* 15, 1871.

Death of Herr Heinemann.—I have just heard, through a correspondent, of the death of Herr Heinemann, of Brunswick, one of the most distinguished of German Lepidopterists. His death was painfully sudden, by paralysis, on the 18th December. Herr Heinemann was the author of a very elaborate work, intituled 'Lepidoptera of Germany and Switzerland.' It is in three volumes, published at different periods: the first in 1859, the second in 1863, and the third in 1870. And he was a man possessed of that kindness and courtesy which are the characteristics of men eminent for their attainments in science.—*Edward Newman.*

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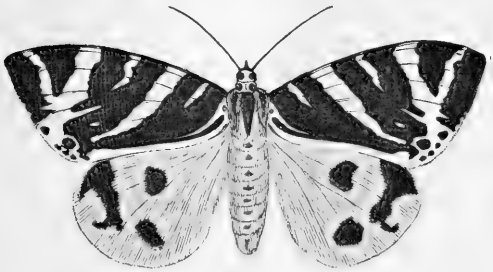
Answers to Correspondents.



THE STRIPED TIGER MOTH (CALLIMORPHA HERA).

Callimorpha Hera.—A correspondent enquires "why this species has not been introduced into the British List, and why the Channel Island insects have not been always admitted, since Sir William Hooker, Professor Babington, and other botanists, have always admitted the plants?" He adds, "If the plants are British, so must be the insects which feed on them." In reply, I will take the last point first. I think it decidedly unwise to admit the Channel Island plants, seeing those islands are politically *only*, and neither naturally nor geographically, a part of Great Britain. On the other point, it may be said of D'Orville's capture, to which my correspondent does not allude, but which, doubtless, induces the enquiry, that Mr. D'Orville lives near a large nursery, and that a hybernating larva of Hera may easily have been introduced from the Continent with imported plants. The Sussex captures, published in the 'Zoologist' and 'Entomologist,' are not so easily accounted for, and are more difficult to explain; but, perhaps, we may apply the

"blown-over" theory to these. However, since it cannot be disputed that the species has occurred in Britain, I present my readers with a figure and description. It is remarkable that a day-flying insect, like Hera, should twice have been taken in the night: once attracted by light, and burning its wings in the lamp; and once attracted by the sugar bait.

68a*. *The Striped Tiger.*—Palpi rather long, ascending, the basal joint ochreous, the second black, the penultimate ochreous, the apical black; face ochreous, with a lozenge-shaped median black spot; crown ochreous, with a black spot on each side, from the centres of which arise the filiform antennæ, which are blackish above and dusky ochreous beneath; the lateral halves of the collar or prothorax are black, each bordered with ochreous in front and on the sides, but not behind; the tippets are elongate-triangular, the scales at the tips long and setiform; the metathorax is black in the middle, pale ochreous or cream-coloured on the sides; the fore wings are variegated with black and cream-colour; the black is glossed with metallic iridescence; the cream-colour is shaded to ochreous at the anal angle; it is thus distributed,—first, at the base of the wing is a pointed stripe parallel with the inner margin (this extends little more than a fourth of the distance between the base of the wing and the anal angle); the second is a short and narrow oblique costal stripe, having nearly the same direction; the third is a much broader and much longer pointed oblique stripe, tending directly towards the anal angle, but not nearly reaching it; the fourth is a short and narrow oblique stripe, corresponding with the second; the fifth stripe is broader and longer, and unites with the sixth, which has a contrary direction, and is parallel with the hind margin; these two stripes form the letter V, and are joined to the ochreous space, already noticed, at the anal angle, in which are four roundish black spots; the hind margin is cream-colour; the hind wings are crimson-scarlet, with three black spots, neither of which is of regular form, although all are clearly defined; one of these, generally the smallest, is situated rather above the middle of the wing, another is between this and the hind margin, and the third, which is much larger than the others, occupies the apical angle, enclosing a crimson-scarlet marginal blotch; the body is pink, with a medio-dorsal series of black spots,

and on each side is a parallel series of blackish markings, less conspicuous than the medio-dorsal series.

Hera is very constant in the disposition and form of its markings, not totally without variation, but constant as compared with Caja, Villica, &c. A variety, however, frequently occurs, in which the crimson colour is replaced by yellow. This is mentioned as an aberration in Staudinger's Catalogue, under the name of *lutescens;* and also in Ochsenheimer's 'Schmetterlinge von Europa,' vol. iv. p. 208.

The eggs are laid soon after midsummer, and, like those of its beautiful congener, Dominula, on several different plants; Boisduval mentions hound's-tongue, mouse-ear, broom, honeysuckle, currant, &c.: they are hatched in the autumn, and the caterpillars live through the winter, feeding and acquiring their full size in the spring, when they spin a flimsy cocoon, like that of Dominula. Through the kindness of my friend Mr. Doubleday I have the opportunity of describing a full-fed caterpillar:—

The head is scarcely so wide as the 2nd segment, very glabrous, distinctly notched on the crown, and with convex cheeks; the body is almost uniformly cylindrical, the 2nd, 3rd, 4th and 13th segments being rather smaller than the rest; each segment has a whorl of twelve warts, some of them compound, and scarcely any two of them are alike, and each bears a radiating fascicle of spine-like bristles; the spiracles are nine, as usual, and situated in the usual segments, each is placed immediately adjoining and just in advance of one of the warts: the colour of the head and legs is black; of the body pale testaceous-brown, with three series of paler markings; the first of these is medio-dorsal, it is faint and irregular in width, being composed of nine bottle-shaped compartments, the base of each being towards the head; the other series are lateral, and each is composed of nine white spots, each of them double, something like figures-of-8 placed end to end, and each having a delicate black border; these figures-of-8 are on a line with the spiracles, and each, excepting the first, is immediately followed by a black spiracle; the warts and bristles are paler than the general surface; the ventral is also paler than the dorsal surface; the claspers are pale, but marked with brown on the outside; like the legs they are glabrous, and somewhat

scaly,—that is, not so distinctly fleshy as the claspers of Lepidoptera generally.

It is many years since Capt. Russell announced the capture of several specimens of Hera in Wales. The announcement, however, like many others to the same purport, was disregarded, I believe, from an impression that the larvæ had been imported from the Channel Islands. This has certainly been the case in some instances; and, therefore, every instance of capture is open to the suspicion, seeing that, like Clostera anachoreta, the species has failed to establish a permanent footing in Britain: the specimens taken on the sea-shore are obnoxious to the "blown-over" interpretation.

On the 5th of September, 1855, Mr. J. J. Reeve took a very good specimen at Newhaven, on the coast of Sussex, as recorded at p. 4953 of the 'Zoologist' for that year. This specimen is now in the magnificent collection of Mr. Henry Cooke, of Brighton.

In the autumn of 1868 Miss Poore, a lady residing at Patcham, near Brighton, took a specimen at light, the wings having been a little burnt by the flame. This capture is recorded at p. 213 of the fourth volume of the 'Entomologist.'

On the 14th of August, 1871, Mr. D'Orville, of Alphington, near Exeter, took a specimen at sugar, with which he had baited a corymb of the common tansy, as recorded in the 'Entomologist's Monthly Magazine' for September, 1871; and, again, at p. 414 of the 'Entomologist' for October.

This beautiful species occurs throughout the central countries of Europe, extending abundantly into the Channel Islands; also in Western Asia, as Asia Minor and Palestine. It may now be safely added to the British List. I may here observe that the rule hitherto observed of including the Channel Islands in Britain botanically, and excluding them zoologically, appears very objectionable. I would venture to suggest that the same practice, whether of inclusion or exclusion, should obtain in both kingdoms.

Mistakes in 'British Butterflies.'—I notice a mistake in your 'Natural History of British Butterflies,' which should be corrected in future editions: page 174, line 20. Actæon has never, to my knowledge, been taken in this locality; and on reference to a press copy of my letter to you of April 1, 1870, in which I sent you a list of butterflies taken

in this locality, I find Actæon is *not* named.—*W. G. Colbourne; Bridge Street, Stratford-upon-Avon, January* 1, 1872.

Portunus longipes and Galathea strigosa in the stomach of a Cod-fish.—I have received a specimen of Portunus longipes taken (with Galathea strigosa) from the stomach of a cod, caught in Mount's Bay. The specimen is nearly perfect, having only lost one joint from the third and fourth right legs. The specimen was procured in the third week in December last.—*Thomas Cornish; Penzance, January* 10, 1872.

Insect Boxes for the Post.—I shall be obliged to any reader of the 'Entomologist' who will inform me where I can get boxes that are not likely to get broken in the post. I have tried Cooke's postal-boxes, and have found they generally travelled in safety; but once or twice a box containing rare insects has been smashed to pieces.—*Samuel Doncaster; Broom Hall Park, Sheffield, January* 17, 1872.

I am like Mr. Doncaster. I have found nothing that will withstand the sledge-hammer of post-office officials.

Name-changing.—"It is evident that strictly speaking the oldest name should have the authority of law; but to change a name that entomologists have accepted for half a century requires the most absolute validity of the reasons assigned. Now, we all know that the figures and descriptions of the older authors serve equally well for several closely-allied species, and it is reasonable, where these fine distinctions were not drawn, to apply the name, as entomologists have done, to the species of most common occurrence in the country where it was described, provided always that the description itself presented no difficulties."—*P. N. E.*

Geometra papilionaria.—No. 27 of the 'Entomologist's Weekly Intelligencer' for 1857 has a communication from Mr. R. H. Fremlin, dated February 17th, in which he says, writing of this species:—"I have taken, with the aid of a friend, seven or eight larvæ of this insect, during the last few days, from the birch." I shall be much obliged to Mr. Fremlin, should he see this note, or to any other entomologist, for particulars as to the mode of procuring this larva at this time of the year, when the birch is not in leaf. Were the larvæ beaten during the day, or taken by night

with the help of a lantern? Do they feed on the young catkins, &c., &c.? Any information will be most acceptable, as the birch grows plentifully in some woods in this neighbourhood. The perfect insect, I believe, occurs here, and I am anxious to obtain the larvæ.—*Gervase F. Mathew; 3, Stopford Place, Stoke, Devonport, February* 12, 1872.

Correspondents will oblige me by replying in the 'Entomologist.'

Colias Edusa in Yorkshire.—Please excuse my asking why you did not give Yorkshire as a locality for Colias Edusa in your 'British Butterflies?' Perhaps you did not consider the evidence quite satisfactory; but its occurrence at Worsborough was genuine, as I saw the insects on the setting-boards. They have not been seen since; but I am on the look out in the season.—*Jos. Goodyear; Worsborough, Barnsley, February* 14, 1872.

I can only account for the omission by supposing the record altogether escaped my notice; of course it ought to have been inserted.

Insect Perforating Lead.—A friend of mine, aware of my love for Entomology, recently called my attention to a large piece of sheet-lead from a neighbouring roof, which had apparently been attacked by insects. The lead had been removed in consequence of the water penetrating the roof; and an examination of it proved that it had been bored in small round holes, in the same way as we so frequently see old timber pierced. There were, besides, some marks on the lead reminding me of the mines made in leaves by certain insects. My friend was of opinion that the mischief was done by the same beetle that does similar damage to timber, insects known in our local dialect as "woodloos." Perhaps you, or some reader of the 'Entomologist,' can enlighten me as to the cause of the above appearances.—*W. Macmillan; Castle Cary, Somerset, February* 16, 1872.

I have known lead to be perforated by a longicorn beetle on its emergence from the pupa state: these have on two occasions proved to be Callidium Bajulus, and on one occasion Callidium violaceum. The insect obviously does this in its desire to escape and increase its kind, and not with a view of converting lead into nutriment. In the present instance I can give no opinion without seeing the lead, and probably not even then.

Beetle damaging Silk Ribbon.—Mr. A Sharland, of 39, Bishopsgate Street Within, has shown me some ribbon perforated through and through with small circular holes, resembling shot-holes. He also brought the roller on which the ribbon had been wound, together with the beetle in its various stages. It proves to be Anobium striatum: it had evidently been feeding on the wood when in the larva state, leaving a number of longitudinal galleries, as in the previously-mentioned case of the Callidium and the lead. Its injurious effect on the silk arose solely from the instinctive desire to escape when mature. No remedy can be applied, because the insect cannot be discovered until the mischief is completed; but more care should be exercised in the choice of wood for these rollers, for if perfectly sound wood is employed in the manufacture, the insect is not very likely to introduce itself afterwards. By burning those that are infected, you may prevent, in some measure, the increase of the injury.

Doritis Apollo at Epping.—I see, at the end of your volume on the butterflies, that you have not seen an authenticated specimen of Doritis Apollo caught in this country. You will be pleased to learn that I have one in my possession, which was taken by my late son at Epping, about the year 1847 or 1848, at the time he was a pupil at Dr. Usmar's school, which was previously that of Isaac Payne, where I was also a scholar for six years, and part of the time with Henry and Edward Doubleday. It is possible Henry Doubleday may have attempted to stock the neighbourhood with some of the rarer butterflies and moths. I think I have heard my son say so, but am not quite certain.—*Geo. Bax Holmes; Alton, February* 6, 1872.

On receipt of this letter I immediately forwarded it to my friend Henry Doubleday, who thinks there must be a mistake in the supposition that the specimen was taken at Epping. I have already expressed my opinion, as alluded to by my correspondent, that there is no authenticated British specimen of Apollo.

The Processionist Caterpillar.—I shall feel much obliged if you can give me a little information about a caterpillar very common here. I have now a nest of these in my room here, and which I am watching with very great interest. The

only name people here can give me is the "processionist" (when they take their walks abroad they go in perfect Indian file). A friend of mine says they are to be found at home. They answer your description of "Cuspidates," but I cannot find any mention of them in the 'Natural History of British Moths;' so I have concluded they are not British. I shall be glad to know if I am correct in this, and also, further, if you will tell me what is the moth. Another fact about them is that the hairs, which their bodies are covered with, are very loose, and, if allowed to get on any part of the person, produce a very unpleasant rash..—*G. F. Heywood; Hotel des Anglais, Menton, France, February* 16, 1872.

The caterpillar is properly called the "Processionist." It is the Cnethocampa processionea of Stephens' and Staudinger's Catalogue; the Bombyx processionea of Linneus: it is an inhabitant of almost all parts of Europe, excepting Sweden, Norway, North Russia, and Britain. The curious habits of these caterpillars of marching in procession is well known, and has been graphically described by Reaumur (Mem. vol. ii. p. 128); Kirby and Spence (vol. i. p. 475); and a great number of subsequent compilers. From the pictures illustrating the processional habits of this species, I should hardly have described them as marching in *single file;* the army seems to be arranged in a gradually increasing file, first a single one as leader, then two abreast, then three abreast, and so on, until they are represented as eight or even nine abreast. The peculiar and irritating character of the hairs is also well known; and I hope to revert to it on a future occasion when I have more space.

Staudinger's and other Synonymic Catalogues of Lepidoptera.—"In a literary point of view this Catalogue is not without a certain kind of merit; from a natural-history point of view such catalogues are positively worthless: nay, more than this, professedly undertaken to remove confusion, they do nothing but increase it."—*M. Breyer; in his "compte rendu" of the Belgian Entomological Society.*

Club Collection.—I beg to express my sincere thanks for the undermentioned contributions since my appeal in the February 'Entomologist:'—Mr. Birchall, of Leeds, 2 Hyale; Mr. Skelton, of Faversham, 4 Polychloros; Mr. Corbin, of Ringwood, 3 Actæon, 3 Sibylla, 2 Cribrum; Mr. W. Ingall, 4 Actæon.

EDWARD NEWMAN.

Economy of Torymidæ. By FRANCIS WALKER, Esq., F.L.S.

(Continued from p. 18.)

The two figures below represent Podagrion splendidum and Torymus caliginosus, and are, like those in the last

PODAGRION SPLENDIDUM.

TORYMUS CALIGINOSUS.

number of the 'Entomologist,' and like others that may appear, from the drawings of the late A. H. Haliday. These drawings were first copied in the 'Entomologist' (1842), and some of them have been lately published

in the 'Notes on Chalcidiæ.' The Eurytomidæ and the Torymidæ have more mutual affinity than there is between either of them and any other family of Chalcidiæ. Some of their forms agree in "colorational pattern;" and this is said by one author to indicate a common origin, and a species will, perhaps, be selected and said to represent the extinct ancestor of both families, and another species will, perhaps, be presumed to be like the original form of all the Chalcidiæ, like as a recent insect has been lately asserted to be the counterpart of the earliest form of the insect-race. The Torymidæ generally resort to galls; and Callimome, which probably includes about nine-tenths of the species of the family, appears to be wholly parasitic in gall-insects: its general colour is golden green; and its chief congregation is in oak-galls, and particularly in oak-apples, where several species of it may be found. Some of these species also inhabit smaller galls; but the oak-apples are the only habitation of one kind, whose especially long oviduct, not exactly adapted for cherry-galls or for currant-galls, enable it to penetrate into the inmost recesses of the oak-apples, which will thus afford matter for useless controversy, as to whether the Callimome came into existence as it now is, or whether its oviduct was successively lengthened by natural selection till it equalled the average half-diameter of the oak-apple. Some species have a blue, a purple, or a copper colour, instead of golden green; and in a few a red, or luteous, hue occupies the basal part of the abdomen. The oak-gall-making insects are by no means coextensive with oak-woods, but appear to have migrated to them in comparatively modern times, for there are few, or none, of them in some parts of England and in Ireland, where oak-woods abound. The Callimome species probably followed the gall-flies, and, like them, have yet to be traced through a large part of Europe to East Russia, China, and Japan, and also to Amourland, where the minute Diptera are very like, if not identical with, the British species, and, perhaps, the minute Hymenoptera may be so also. Megastigmus, another genus of Torymidæ, also preys on gall-insects, and will form two groups: of these one is somewhat like Callimome in structure, and partakes of the golden green hue, which distinguishes the latter; the other group approaches a section of Decatoma in form and in the disposition of

colours. Of the first group there are two species: one of them is peculiar to oak-apples, though its oviduct is not longer than of some species of Callimome which divide their attention between the oak-apple and a small kind of gall; perhaps the "law of inheritance" is stronger in it. The other species inhabits South Europe. I have seen it emerge from galls, for which I was indebted very many years ago to the kindness of the Rev. F. W. Hope. Five other Hymenopterous insects also came forth from these galls: a Cynips (the first possessor of them), Torymus calcaratus, a Fœnus, an Osmia?, and another aculeate species; and thus there is much yet to learn in the natural history of these galls. Glyphomerus stigma represents another genus of Torymidæ; it and a Porizon exercise a limitatory control over Rhodites Rosæ, the inhabitant of the bedeguar, or pincushion-gall of the wild-rose. Two other genera of Torymidæ have no connection with galls: one of them is Monodontomonus, which, with Cirrospilus Acasta, another Chalcid, lives at the expense of Anthophora, a genus of bees; the other is Podagrion, which, and the eggs of Mantis, appear to have been created for each other; it may be coextensive with Mantis, and has been observed in Australia, Asia, Africa, South Europe, and North America. There are a few other genera of Torymidæ, which need not be mentioned, as their economy is unknown; but one of them, Metamorpha, may be noticed as exhibiting transitional characters between Torymidæ and Leucospidæ, and one species of the latter has been found in a gall.

Life-histories of Sawflies. Translated from the Dutch of M. S. C. Snellen van Vollenhoven, President of the Entomological Society of the Netherlands. By J. W. May, Esq.

(Continued from p. 22.)

Macrophya Albicincta, *Schr.*

Imago.—*Schrank, Enum. Insect. Austriæ*, p. 329, No. 661. *Geoffr. Ins.* ii. p. 282, No. 23. *Klug, Blattw. in Magazin 8er Jahrg.* p. 125, No. 94. *Hartig, Blatt. u. Holzw.* p. 295, No. 14. *Lepeletier de St. Farg. Monogr. Tenth.* p. 103, Nos. 290, 291.

Larva undescribed.

Macrophya nigra, margine collaris et segmenti abdominalis primi, tibiarum annulis et coxarum posticarum macula albis.

If I am not mistaken no larva of the genus Macrophya has, hitherto, been either described or figured; and, since Hartig wrote 'Die untergattungen Athalia und Macrophya sind in ihrem Larvenstande noch unbekannt,' not a single word has appeared in print respecting the latter genus. It is, therefore, a particular source of pleasure to me that I am able to describe the metamorphoses of one species of the genus, and the more so that I have been watching for the opportunity—with intervals, of course, which, however, were certainly not of my seeking—for more than fifteen years. It was in the year 1844 that my friend Dr. Verloren sent me some larvæ from Utrecht, one of which is represented at fig. 3. He had found a large number of them on the common elder (Sambucus nigra). Shortly after I had them they hid themselves in the ground, and died without having undergone any part of their metamorphosis. After this, as I could not find any similar sawfly larvæ in my own neighbourhood, I asked Dr. Verloren to send me some more of them from Utrecht, which he did about a year afterwards; but the result of my endeavour to rear them was the same. I was unwilling to trouble my friend any more in the matter; and was thus obliged to wait until, by some good fortune, I should come across similar larvæ again. This happened on the 1st of June, 1864, in the evening, when my youngest son pointed out to me a caterpillar on a twig close to an elder-bush in the garden of my house at Leyden. I immediately recognized it as being of the same species as were those I had received from Utrecht twenty years before; and, concluding that the larva in question had merely crept on to the neighbouring shrub by accident, we carefully examined the elder-bush, and found thirty larvæ of various sizes, but most of them like the one represented at fig. 3. Some few were of the size of fig. 1; others like fig. 2; so that they were evidently from eggs laid at different periods. There were two among them which, as appeared subsequently, had but one more change of skin to undergo, and were, both as to colour and size, like fig. 4.

They all had twenty-two legs. The head was sordid

greenish yellow, with a quadrate shining black spot on the vertex, and two large round similar spots on the sides, in which the eyes were placed; the trophi were somewhat brownish: the head, both above and below, was shortly and sparsely hirsute. In the younger larvæ the body was sordid yellow, with three brown-green stripes, the outer of which were darker than the inner one; the spiracles were pale yellow; above them were some black lines, and below them, just above the legs, was a dark transverse line. Above the anus was a small black spot. The three dorsal lines had the appearance of being ribbed, the inner side of the numerous folds of the skin being of a paler tint. The thoracic legs were of a pale yellow, with black lines on the first or thickest joint, the terminal claws being pale brown. The ventral surface, as also the posterior legs, were pale, without spots, the caudal end being beset with short white hairs. Those of the size of fig. 2 were of a yellowish colour on the ventral surface, purplish gray on the dorsum, with longitudinal stripes.

The little creatures remained quiet during the day, chiefly reposing on the under sides of the leaves; in the evening they seemed more inclined to move about and feed, and ate large holes in the leaves, but did not in all cases begin at the margin, very often eating holes out of the middle of the leaves, so that it might, at first sight, have been thought that the elder-bush was infested by snails.

In a short time all the larvæ attained the size and acquired the colour as shown in fig. 4. I also noticed that on each thoracic leg were two dark gray triangular spots; also that the black spots above the spiracles had increased in size, and that the edges of the stigmata were very pale brown. Above each proleg were two oblique blackish spots, and a triangular black spot above the anus.

On the 6th of June and the following days they moulted for the last time, when they assumed the appearance represented at fig. 8. The head was reddish, and the body wholly of a very pale greenish gray colour, the three dorsal lines being a shade darker than the ground tint. The black points on the sides had entirely disappeared.

About eight days afterwards they crept into the earth, placed in the vessel in which they were kept.

In April of the following year I took out some of the cocoons; most of them had the appearance of fig. 9, some, however, being narrower: all were closely beset with grains of earth on the outside. I was not a little surprised to find all the cocoons filled with a mould, having the appearance of wadding, and so entirely filling the interior that even the horny head of the larva could not be recognized. I concluded from this that I had kept the earth too damp instead of too dry, as had usually been the case, and in consequence of which I had often found the larvæ dried up in their cocoons.

As my attempts at rearing would not succeed, I determined, if possible, to watch the act of oviposition. For this purpose I visited my elder-bush once or twice every day before noon; in clear weather three times; and again between two and four o'clock: this was the same bush which had produced so many larvæ the year before. On one of the first days of May I observed a sawfly on one of the leaves; it looked to me like Macrophya Rapæ: unfortunately the next moment it was driven away by an Ichneumon. On the 7th of May I again found some young larvæ on the same bush (from which I concluded that the sawfly I had seen had deposited some eggs), and, together with these very young larvæ, some empty egg-cases at the tips of the leaves, which were growing at the lowest part of the bush. I need hardly add that the larvæ and the egg-cases occurred on the same leaves. The larvæ, although very small, strongly resembled our fig. 1. At fig. 10*a* are represented the empty egg-cases of the actual size; at *b* are two cases side by side, magnified; the irregular openings can easily be seen, by which the little larvæ had made their escape.

It thus appeared that the complete observation of the metamorphoses of our insect would again have to be deferred to the following spring. I was obliged to content myself with checking my notes of the appearance and habits of the larvæ. In the year 1866, however, the continued daily observation of the elder-bush, which I had recommenced in April, led to a discovery. At half-past eleven on the morning of the 8th of that month I observed a female of M. albicincta, *Schr.*, flying about the bush in a very wild manner, and settling at intervals on the leaves; the temperature was

unusually warm for that time of year, the thermometer standing at 60° Fahr. I thought of the Rapæ of the year before, and at once saw my mistake, which was very pardonable, considering the extremely small difference between the two species. I captured the specimen, and placed it in a confectioner's glass, together with a branch of the elder-bush. When the glass was placed in the shade the animal was quiet, and even fell down and lay on its back. On bringing the glass into the sunshine it revived again, at first moving the antennæ violently up and down, and then running rapidly about. By four o'clock, when I again observed it, it had laid twelve eggs: these were deposited in little receptacles on some of the leaves, of which three are represented at fig. 11. I removed one of the eggs very carefully out of its little pouch, and found it was bean-shaped, as shown at fig. 12; it was, however, rather flat on one side; the colour was pearly white, and the skin remarkably thin and soft. I was now pretty certain that the larvæ, which I had up to this time reared from the elder-bush, were of the same species as the leaf-wasp, which had laid the eggs in question. If I had been able to have kept the eggs, so as to have reared the larvæ from them, I should have made sure upon this point, but I could not preserve the leaves in a fresh state for a sufficiently long time; and so this brood, also, came to nothing.

On the 11th of April I saw two similar wasps on an elder-bush, but I did not find any eggs. On the same day I took two males of this species on the same bush. After this time the weather changed; it became raw, with north and north-easterly winds, accompanied by rain and hail. However, on the 19th of May following, the weather being warm and bright, I saw two wasps pair: a female of Albicincta was seated on a jasmine close to the elder-bush, a male flying backwards and forwards in the neighbourhood; he suddenly alighted next the female, which took refuge on the under side of the leaf; she was followed by the male, and thereupon returned to the upper side, the male pursuing; approaching her he turned round, and the pairing took place, the two insects with the anterior part of the body turned away from each other; the wings of the female remained closed, while those of the male were half opened and vibrating; in both,

the antennæ appeared motionless. The copulation did not last much longer than a minute, when the female pushed away the male with two strong kicks, and then took to flight; the male remained quite still for some moments, and then also flew away, and betook himself to the elder-bush, where he roved about for some time, until I lost sight of him. The female is 1 centimetre long, the male 8 or 9 mm.: both are black, dull on the head and thorax; abdomen and legs shining. The following parts are white (that is to say, bluish white during life, and either sordid white or ivory after death): in the female, the clypeus either entirely or only on the margin; the tip of the labrum: in the male both are entirely white; the palpi with white rings or wholly white, differing in individuals: some have two small white triangular spots on the head. In both sexes the superior margin of the collar and the anterior margin of the shoulder-plates are also white; likewise, in the female, two very small points on the scutellum; and in both sexes the cenchri, and the border of the first abdominal ring on the dorsum. The following parts of the leg are white in both sexes, though in the female to a somewhat less extent than in the male, namely, the trochanters of all the legs, the whole of the anterior surface of the first pair, with the exception of the coxæ, the extremity of the femur of the intermediate pair anteriorly with that of the tarsi, and a broad ring round the tibiæ; on the last pair, the extremities of the coxæ, a spot (very large in the female) on the posterior surface, and a broad ring on the femur; the posterior tarsi are black. Lastly, there is a white spot on the dorsum of the last abdominal segment in the female, the anal appendages in the male being also white; the abdominal rings in this sex having gray margins during the life of the insect.

It need not be said that the male is more slender than the female; there was also a difference in the antennæ, especially recognizable in the living insect. In the male these organs are somewhat shorter and thicker (see fig. 15), and the joints more equal in breadth, and thus less easily distinguishable, while in the female each joint is smaller at the base than at the apex; the wings are smoke-coloured and iridescent, the anterior pair being somewhat darker than the posterior.

About a fortnight after I had observed the last imagos on

the elder-bush, as above described (in 1866), I noticed that the borders of many of the leaves were gnawed, and I discovered some young larvæ of the species with which I was now sufficiently well acquainted, and I considered myself justified in saying that these larvæ produced Macrophya albicincta. The larvæ were full grown by the early part of the following June; and in a short time I could have counted sixty of this species.

Description of the Larva of Cidaria miata.—For the larvæ from which the following description is taken I am indebted to the Rev. G. P. Harris, of Richmond, Yorkshire, from whom I received them on the 19th of July last. It seems to be but little known, common as the perfect insect is:—Very slender, and about an inch and a quarter in length; the head, which has the face slightly flattened, is of the same width as the 2nd segment; body cylindrical, tapering very slightly from the posterior segments to the head; segmental folds overlapping each other, rendering the divisions distinct; on the anal segment are two short pointed projections; the skin has a slightly puckered appearance; ground colour pale green, strongly tinged with yellow, the segmental divisions being of the latter colour; head uniformly pale green; a dark green pulsating vessel forms the medio-dorsal line; this is best seen in young specimens, as it appears to become less conspicuous as the larva approaches maturity; there are no perceptible sub-dorsal lines, and the spiracular lines are very narrow and indistinct, faintly darker than the ground colour; spiracles imperceptible; ventrally, the ground colour is the same as on the dorsal surface, but has a conspicuous central stripe of pinkish brown; the legs, prolegs and anal points are also pinkish brown. Feeds on sallow. Pupa purplish and rather long; it is enclosed in a very frail cocoon, amongst frass, &c., at the bottom of the cage. The first larva spun July 24th; the moth appeared August 21st.—*Geo. T. Porritt; Huddersfield, February* 3, 1872.

Entomological Notes, Captures, &c.

Lateness of the Season of 1871.—My experience, in a great measure, corresponds with that of Mr. Clifford (Entom. v. 446). I took Progemmaria, Rupicapraria, and Multistrigata, about the middle of February, which seemed to me about an average, if not a backward, period for these early species, as in 1869 I took them in January and very early in February. Such incidents, however, would scarcely be worth notice if the season had continued an average one; but during May and June everything seemed more or less late in appearing: for instance, in former seasons I have taken Sibylla and Adippe quite by the middle of June, and occasional specimens early in the month; but this season I did not take either till the end of June, and both were out in *fine condition* up to the 18th or 20th of July. Euphrosyne and Selene were not "well out" till the first or second week in June, and then they did not appear so commonly as usual; in fact, I do not find Selene so abundant now as I did when I began collecting a few years ago. We need scarcely wonder at the lateness of the season if we recollect what a March-like June we experienced, and the biting east and north-east winds, which, night after night, compelled us to return home with empty boxes. The latter portion of the summer and the early autumn seem to have given British collectors a very fair sprinkling of good things. Some nights at the beginning of September, and, indeed, throughout the month, moths swarmed at sugar in this neighbourhood, though all of the commonest species. What was wanting in quality was certainly made up by quantity.—*G. B. Corbin, Ringwood.*

Ivy.—These attractive blossoms have been rather productive, for besides the usual visitors, as Lota, Pistacina, Vaccinii, and Spadicea, whose *absence* would have been worthy of observation, I have had the pleasure of seeing Nigra, Rhizolitha, Exoleta, Rubiginea, and Fluviata, though only one each of the latter. The Rubiginea was taken on the night of October 20th, at which period a very cold wind prevailed, and scarcely a single species of moth seemed to be on the wing; in fact, I saw but three Spadicea on the same evening. It is, perhaps, worthy of remark, that I have never

met with but two specimens of Rubiginea in the autumn—I took a hybernated specimen last spring,—and these were both taken on unusually cold nights, and when scarcely any other species were to be seen. Is it usual for this handsome species to be thus met with? I did not see either Petrificata or Semibrunnea at the ivy, though, in previous seasons, I have occasionally taken a single specimen of each.—*G. B. Corbin.*

Acherontia Atropos.—Was this insect unusually scarce last season? I generally find, or have brought to me, specimens either in the larva or pupa state, from the beginning of July to the end of September; but last season I did not see a specimen at all. I am aware there is not much regularity in its appearance, as, indeed, is the case with other species, but possibly the experience of other collectors might coincide with mine with regard to the occurrence of this particular species. The agricultural community in this neighbourhood call the larvæ of Atropos, "locusts,"—in fact, that name is applied generally to large larvæ,—and the pupa is, in many cases, supposed to be a most dire enemy to the potato crop, and is, as a rule, doomed to be destroyed as soon as disinterred.—*Id.*

[I have elsewhere noticed that the larvæ of Atropos are generally known by our agricultural population as locusts.—*Edward Newman.*]

Early appearance of P. pilosaria.—Whilst out "digging" to-day I met with two males of the above, which is some two weeks earlier than before noticed here. A fortnight since I had a fine Chamomillæ out in my breeding-box, which is kept in-doors.—*R. Kay; Bury, February* 3, 1871.

Earliness of the Season.—Last evening, while out with my friend, Mr. A. N. Innes, hunting for larvæ, I noticed that Larentia multistrigaria was on the wing rather freely. Surely this is remarkably early? We took eight, filling all the boxes we had, as we went out quite unprepared to see so many moths flying about. The weather here, since the beginning of December, has been mild and very wet. In some sheltered places whitethorn bushes are already in leaf, and I saw sallows in bloom nearly three weeks ago.—*Gervase F. Mathew; Admiralty House, Devonport, February* 8, 1872.

Deiopeia pulchella on the Hampshire coast.—Your book

of 'British Moths' has been sent as a present to one of my boys, and on searching it for a moth, caught last September, he identifies his specimen with your "(67) Crimson-speckled (Deiopeia pulchella)," p. 31, a moth which you describe as rare. I have carefully examined the moth with your picture and description, and find it to answer in every respect. My boys caught it on September 2, 1871, on the shingle, at Gilkicker Point, by the Stokes Bay Station, in Hampshire. It seemed weak on the wing. None of us had ever seen it before; and it has been looked on by its owners as a prize.—*F. Simcox Lea; Trinity Parsonage, Bow Road, E., February* 16, 1872.

Acidalia promutata in Essex.—I notice in your excellent work on 'British Moths,' in the description of this insect, you state you do not think it occurs in the eastern counties. Will you permit me to state that during the month of September I take it very commonly at the gas-lamps in this town.—*W. D. Cansdale; White House, Witham, February* 15, 1872.

Eremobia ochroleuca in Essex.—I can also bear testimony to the fact of this insect being caught in Essex, as I have been successful in taking three or four specimens in a season in this district for the past three years.—*Id.*

Captures in Norfolk and Suffolk in 1871.—Syringaria, several about for a few days, then quite disappeared. Elinguaria, common. Lichenaria, common. Cytisaria, common. Papilionaria, 2. Lactearia, 1. Rubricata, not so abundant as in 1870. Emarginata, abundant. Citraria, common. Decolorata, 5. Venosata, common. Berberata, local. Vitalbata, 6. Certata, local. Grisearia, abundant. Spartiata. Obliquaria, 1. Cytherea, common. Albicolon. Puta, abundant. Corticea. Obelisca. Gilvago, common. Pyralina. Diffinis. Affinis. Ochroleuca, 4. Dysodea, 4. Serena, common. Flavocincta, common. Dipsaceus, generally distributed. Sulphuralis, 20. Luctuosa, 4. Unca, 1. Dromedarius, bred. Coryli, 1. Helveola, 2. Stramineola, 1. Complana, 4. Senex, at light. Villica, common.—*W. H. Cole; Croxton, Thetford, Norfolk, February* 15, 1872.

Insects of the Scilly Isles.—CHALCIDIÆ. The six following species were found in St. Agnes:—Asaphes ænea, Dicyclus circulus, Syntomopus incurvus, Pteromalus Ornytus, Encyrtus Phithra, Eulophus Metalarus. Of these species

the first and the fourth are of frequent occurrence in England; the other four are less common; and Syntomopus incurvus is seldom seen.—*Francis Walker.*

Extracts from the Proceedings of the Entomological Society, November 20, 1871, *to January* 1, 1872.

Variety of Bombyx Trifolii.—Mr. Bond exhibited a series of small pale examples of Bombyx Trifolii. He had made a similar exhibition a year or two since, and Mr. Mitford, their discoverer, furnished the following information, tending to prove that they formed, at any rate, a distinct local form. The locality is Romney Marsh, Kent, and the larvæ were first found by Mr. Mitford in May, 1866, feeding in the tufts of a very wiry grass growing in the shingle above high-water mark; they were again found and bred in May, 1867: in August, 1868, two dead moths, exactly similar, were observed in the same locality; and in August, 1871, eighteen examples were bred. While hunting for these larvæ, Mr. Mitford's son found smaller caterpillars, which produced Lithosia caniola, thus showing an entirely new locality for this species.

Variety of Bombyx castrensis.—Mr. Bond further exhibited two remarkable varieties of Bombyx castrensis. One of them, a female, had the left-hand wings shaped like those of the male, though the insect otherwise showed no tendency to be gynandromorphous; the other, also a female, had the right-hand under wing marked and banded as in the upper wing.

Variety of Tryphæna orbona.—Mr. Stainton exhibited, on behalf of Mr. D'Orville, a singular variety of Tryphæna orbona.

Variety of Argynnis Aglaia.—Mr. S. Stevens exhibited, on behalf of Mr. Shearwood, an extraordinarily dark variety of Argynnis Aglaia, captured near Teignmouth.

Malformations of British Lepidoptera.—Mr. Bond exhibited, on behalf of Mr. Doubleday, varieties or malformations of British Lepidoptera, as follows:—(1) Melitæa Artemis, with the antennæ scarcely more than half the usual length; (2) Pieris Rapæ, female, with only a faint trace of the second spot on the upper wing; (3) Anchocelis lunosa, male, taken at sugar, the right-hand upper wing much broader than the

other, and differently formed; (4) Cheimatobia brumata, naturally with only three wings, and varying in colour and markings.

Papilio Hyale of Linneus.—It will, perhaps, be recollected that Mr. W. F. Kirby proposes in his Catalogue to drop the name of Edusa, and to substitute that of Croceus for this familiar butterfly. He now informs us that Hyale is the name to be adopted for our Edusa; and the only name which he can find for Hyale is Sareptensis, applied by Staudinger, in his 'Catalog' (1871), p. 5, to a variety. It is a very inappropriate name for an insect of so extensive a range; but unless all the misnomers in Entomology are to be rejected, Mr. Kirby does not think we can avoid adopting it. My very unpopular view on this subject of name-changing is well known. If the names of our familiar insects are changed once a month, as seems probable, I shall not adopt the changes.

Dragon-flies attacked by Birds.—The Secretary read a communication from Mr. Gould respecting the question of the liability of Odonata to the attacks of birds, of which the following is an extract:—"I believe that the larger dragon-flies are very liable to the attacks of birds, and have no doubt that the hobby and kestrel occasionally feed upon them. With regard to the small blue-bodied species (Agrionidæ) frequenting the sedgy banks of the Thames, I have seen smaller birds—sparrows, &c.—capture and eat them before my eyes, after having carefully nipped off the wings, which are not swallowed. This must take place to a considerable extent, as I have observed the tow-path strewn with the rejected wings."

Ants storing Seeds.—Mr. F. Smith communicated a long letter from Mr. J. T. Moggridge, dated from Mentone, November 7th, relating to the habits of certain species of ants belonging to the genus Aphenogaster. Mr. Moggridge had observed that two species of this genus (A. Structor and A. capitata) frequenting the sandstone slopes of that neighbourhood were, in the winter months, in the habit of carrying into their nests the seeds of certain late-fruiting plants, especially of Polygonum vulgare. The nests of A. capitata extend a long way into the rock: with the aid of a chisel and hammer these excavations had been traced to their limits,

and in one case the channels ended in a spherical chamber, filled with the seeds of a grass which he had seen the ants in the act of transporting. Outside the channels there was generally a heap of the husks of the various seeds, and sometimes one of these heaps would fill a quart measure. These husks had had their farinaceous contents extracted through a hole on one side. He purposely strewed near the nests large quantities of millet and hemp-seeds. After the lapse of a fortnight many of these seeds, previously conveyed into the nests, had been brought out again, they having evidently commenced to germinate, and he then found that the radicle was gnawed off from each seed, so as to prevent further growth, and, this being effected, the seeds were carried back again. The cotyledons of germinated seeds were removed from the nests. The oily seeds of hemp appeared to be greatly in request. He had not found any true Myrmecophilous beetles in the nests, but a specimen of a Choleva was observed, and Aleochara nitida swarmed about the entrance of the galleries. There were, however, numerous immature examples of a Lepisma, and a Coleopterous larva, to which the ants paid great attention, an agitated group of workers seizing one of them when placed near them, removing it to a place where there was loose friable earth, into which it immediately began to burrow. The only recent account of the storing of grain by ants that Mr. Moggridge was able to find was in the 'Encyclopædia Popolare,' Torino, 1845, in which the explanation given was that the ants used the seeds for building materials. He promised to make further observations on these grain-storing species, and to communicate the results to the Society.

Death of Professor Ratzeburg.—Professor J. T. C. Ratzeburg died at Berlin on the 24th of October last, in his seventy-first year. He occupied himself especially with the metamorphoses and the ravages of insects injurious to forests, and his great work 'Die Forstinsekten' is a lasting proof of his industry and keen powers of observation. He also published a popular edition of this work, as well as the portion relating to the parasitic Hymenoptera (which play so

important a part in checking the ravages of forest insects), in a separate form. He was also a constant contributor to German entomological periodicals. He was one of the few Entomologists who devote themselves, almost exclusively, to a study of the habits and economy of known insects rather than to the description of new ones; and will always be remembered by the Coleopterist for his elaborate researches into the Natural History of the Xylophagous beetles.—*A. R. Wallace; in President's Address to Entomological Society.*

Death of M. Victor von Motchulsky.—This illustrious entomologist died on the 5th of June, 1871. His position of colonel in the Russian army led him through the remotest parts of that vast empire. He collected, catalogued, and described an immense number of Coleoptera new to science. He embraced none of the crude hypotheses afloat of late years; and his laborious works are, therefore, pronounced injurious rather than beneficial.—*Edward Newman.*

Death of Mr. Dale.—Mr. J. C. Dale, who may be called the father of British Entomology, died at his seat, Glanville's Wootton, near Sherborne, in Dorsetshire, on Tuesday, the 6th of the present month (February), 1872, aged eighty-one years. Throughout his long life he was a most diligent collector of our native insects, and a most methodical recorder of his captures. He commenced a journal in 1808, and continued it without intermission to the last day of his life. This journal is, perhaps, the most continuous entomological diary in existence, and, the last entry being dated February 6, exhibits a remarkable evidence of the "ruling passion strong in death." His contributions to Curtis's beautiful 'British Entomology,' and to my own 'Illustrated Natural History of Butterflies,' are familiar to every entomologist. In both these works he took unceasing interest; and there is scarcely a fasciculus of the former, or a species in the latter, but has derived advantage from the knowledge he possessed, and was ever ready to communicate. He was a kind and indulgent parent, and worthily filled the station of a country gentleman and county magistrate. Eight of his own labourers bore the body to its last resting-place, and six of his principal tenants were pall-bearers. The coffin was of oak, grown on his own estate. Mr. Dale was one of the oldest Fellows of the Linnean Society, having been elected in 1818. —*Id.*

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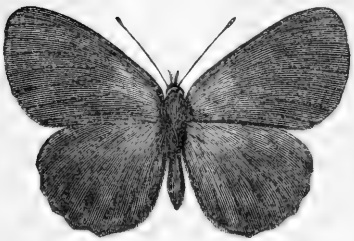
Answers to Correspondents.



MELANAGRIA GALATHEA (MELANIC VARIETY).

Variety of Melanagria Galathea.—I am indebted to Mr. Farn for the loan of the remarkable specimen represented by the preceding figure. In the outline of wings and in size there is no deviation from the normal character; but as an instance of that singular aberration of colour to which I gave the name of melanism, it is truly remarkable. The antennæ are black, with the usual ferruginous tip; the upper surface of the wings is uniform smoky black, and, if viewed perpendicularly and steadfastly, there does not appear any trace of the normal white markings, but by shifting the position, and altering the angle at which the light falls on the upper surface, a slight indication—a *soupçon*, as the French call it—of the position of the markings is now and then to be obtained; the long hair-like scales clothing the base of the wings, more particularly the hind wings, are smoky gray; the under side is of the same smoky black colour, with a gray

patch at the base of the fore wing; the six eye-like spots, which I have described as forming a band parallel to the hind margin, are obviously indicated, but very obscure; a few dull ochreous scales are scattered over the under surface of the hind wing. It was taken near Rochester, at a time when the normal form of Galathea was flying in profusion.

Earliness of the Season.—Owing to the extraordinary mildness of the season, insects have been remarkably forward in this locality, and have been met with in large numbers. Sallows were fit for working by the end of February, and produced the commoner Tæniocampæ, as well as several hybernated species. Many local species have also been taken; such as A. Prodromaria, commonly (appeared as early as February 29th), T. Piniperda, T. Munda (both these at sallows), X. Rhizolitha, X. Semibrunnea, L. Multistrigaria, and this evening I found that P. Hippocastanaria had appeared on the extensive heaths, lying between here and Ringwood.—*A. J. Spiller; Wimborne, Dorset, March* 11.

Distinctive differences of the Females of Lycæna Corydon and Adonis.—In 'Stainton's Manual' and in 'Newman's British Butterflies' a difficulty is intimated in distinguishing the females of these two species. I can hardly understand this, as to my mind the difference is marked and constant. In the female Corydon the fringe is *cream* coloured, and the veins or wing-rays continuing through it are brown; but in the female Adonis the fringe is pure *white*, and the wing-rays running through it black or blackish, *not* brown. In good fresh specimens you cannot fail to discern the species at a glance.—*W. H. Tugwell;* 3, *Lewisham Road, Greenwich, March* 1, 1872.

Colias Hyale.—In 'Newman's British Butterflies' this species is said to "deposit its eggs in the spring," after hybernating. On the only occasion I had of testing this, the eggs were deposited in *August*, and hatched in the middle of September; the larvæ were about one-third fed by the end of October. Unfortunately they died during the winter; so that I have good proof that the eggs are not always spring-laid.—*Id.*

Posting Boxes.—In answer to Mr. Doncaster's enquiry respecting insect-boxes for post, I think I can suggest a remedy. Cooke's postal-boxes answer admirably, provided

you are careful to affix the stamps for postage and direction on an ordinary luggage-label (not adhesive), which may then be securely tied to the box with a piece of twine. I have frequently made use of this plan, and on no occasion have the postal authorities been tempted to impress a stamp on the box, which consequently entirely escapes injury.—*Arthur W. Owen;* 33, *Liverpool Street, Dover, March* 14, 1872.

I should suppose Mr. Doncaster was perfectly familiar with Cooke's postal-boxes. We have all been using them a long time, but find they do not always resist the Herculean powers at the post office.

Larva of Geometra papilionaria.—In answer to Mr. Mathew I may observe that I fancy this larva is not easy to obtain at any time. I have beaten for it in vain, both in autumn and spring, in woods where the imago occurs. The females I have noticed occasionally flying amongst the higher boughs of birches, and am inclined to think that they deposit their eggs at some elevation; and as the larvæ feed only a short time in the autumn, I suppose they do not descend before they hybernate, and would therefore not be easily obtained, unless they were brought lower by being shaken down in windy weather. Some collectors, so it is said, have captured these larvæ on oak in the spring.—*J. R. S. Clifford;* 59, *Robert Street, Chelsea, S.W., March* 4, 1872.

Dipterous Larvæ in the mines of Sesia Tipuliformis.—I enclose some Dipterous larvæ, about which I am in doubt. They were inhabiting the empty mines of S. Tipuliformis in living wood. From the examination of a number of currant branches, I have found larvæ of that moth of two different sizes, one of the smaller of which I enclose; and this seems to favour the supposition that the species passes two seasons in the larval condition, as I have suggested in the 'Entomologist.' It seems only in rare instances that it causes the death of the bushes. I have some under my observation that have borne broods of the species for fifteen or twenty years. —*Id.*

I incline to think the Dipterous larvæ are those of a Cecidomyia; but I cannot think what business they have in the galleries of a Sesia.

Rhodocera Rhamni in Cumberland.—Seeing in your 'British Butterflies' that you have no first-hand record of Rhodocera Rhamni from Cumberland, I thought it might interest you to hear it was rather common in the neighbourhood of Keswick last autumn: it is occasionally found there, but is not often common.—*W. C. Marshall; Trinity College, Cambridge, March* 1, 1872.

Bombyx processionea.—I think entomologists are wrong in saying that Bombyx processionea seldom travels in single file. I can meet with no one of the annual visitors here who has ever seen them march in any other way. Since I wrote you last I have noticed this variation in their style of walking—that when the fore part of the procession halts for any length of time the rear become impatient, and start in a second single file; and when again they all move it is in double column. I rarely see one by itself; even if only two are out of the nest, these two march one immediately behind the other. Their appetites are enormous; they commence eating—or, I should rather say, tearing—their food in this way,—one caterpillar to each needle of the fir, beginning at the tip and eating towards the branch, leaving only a short stump and just a thin edge of the needle. I enclose you one that has been finished in this manner. They eat from side to side of the needle.—*G. H. Heywood; Hotel des Anglais, Menton, France, March* 4, 1872.

"*Processions*" *of the Processionist* (*Cnethocampa processionea*).—As the Editor of the 'Entomologist' promises some further contributions to the life-history of the species, there is, I would suggest, matter of interest not fully elucidated, with reference not only to the irritating properties of the larvæ, but also their mode of marching. I have a strong suspicion myself that the very ingenious representations given us by certain artists are partly imaginary. A favourite delineation of this processional order is to exhibit first of all some half dozen marching in Indian file; then two or three pairs; then threes and fours; gradually increasing to a rank of a dozen or so. Now, is this really the case; do they not proceed rather in a manner somewhat similar to our own "lackeys" (Bombyx neustria) and other nest-makers? A few may precede the army as pioneers, and then the rest follow on, four, five, or six abreast, according to the width of the

opening they issue from, and the accommodation on the branch they are travelling over. This point could easily be settled by observers.—*J. R. S. Clifford.*

Nocturnal Spider.—Will you tell me the name of this large spider? It has never before been found or noticed in the neighbourhood of Lichfield. Is it not unusual for garden spiders of any kind to be seen in the winter?—*T. Williams.*

Not trusting to my own limited knowledge of Arachnology, I sent this specimen to the Rev. O. Pickard Cambridge, who kindly and immediately returned its name—Epeira umbratica. I have long been familiar with this spider in my own garden: it is nocturnal, and a geometrician, readily distinguished from E. diadema by its depressed body, and by the presence of two conspicuous white spots on the under side of the body. I never recollect seeing one in winter; they seem to disappear, after depositing their bundle of eggs, in the autumn.

Caterpillars in Belgium.—A valued correspondent (Mr. William Johnson, of Liverpool) has recently paid a visit to Belgium, and, as his observations throw some light on the subject referred to under the above title in your February number (p. 13), with his permission I make the following extract from his letter:—"The decree you mention refers principally to the eggs and larvæ of Lepidoptera; the quantity I saw of these, during my visit to Belgium at the end of September, was really astonishing. My brother has a garden a few miles from Antwerp, and, knowing that I was interested in Entomology, he asked me the best means of destroying caterpillars, as he had a large cherry-tree, all the leaves of which had been eaten off, and consequently there had been no fruit. I counted no less than fifteen batches of the eggs of Liparis dispar on the trunk of this tree; and after filling a large pill-box with them, I got a stone and crushed the rest. My brother had no idea that the woolly masses contained the germs of the destroyers of his cherries. I went by train from Antwerp to Brussels *en route* to Waterloo, and was particularly struck with the appearance of the small oak-trees everywhere along the line: the top branches of the trees had the appearance of bearing branches of white blossoms, but, on inspection, these proved to be large white webs enclosing numberless small caterpillars just

hatched: I could not tell the species with certainty, but think they were of the Liparis family. The country being low-lying and flat, poplars and willows are very numerous, and every tree had several batches of Liparis dispar, Salicis, and others I did not know, upon it; there were also abundant indications of the Cerura family and of the goat-moth. Small birds seemed very scarce, and I had an opportunity of learning one cause of this: there are societies of bird-catchers, and I was very much amused one Sunday to see a party of them dressed up in fantastic garbs, similar to what we see in our own country 'peace-egging' at Easter; they had a fife and drum, and one carried a wicker-cage with a wood-owl confined in it; others with bird-lime sticks, four or five feet long: they go out into the fields, and set the sticks around the cage; I suppose the small birds, attracted by seeing their enemy fluttering in the cage, come and are caught. The party I saw had a lot of little birds: tomtits, robins, wrens, &c. After their sport they go round to the public-houses, sing a chorus, have a drink, and away to the next house; fife and drum going all the time. The weather was very unfavourable for collecting; it rained most of the time. The only imagos I saw were four or five Catocala Nupta on the trees, and one specimen of Atropos on a garden-fence. Larvæ of Papilio Machaon were common on the carrot; there seemed to be two varieties, differently marked both in the larvæ and pupæ." It is probable the destruction of insectivorous birds is, to some extent, the cause of the wonderful profusion of insects which Mr. Johnson describes, and which is so different to anything we see in England; but still I think there must also be climatic causes at work, for if it is worth while to make such elaborate arrangements for the capture of the birds, they may be assumed to exist in no inconsiderable numbers; but how anyone can find it profitable to delude and slaughter a miserable little tomtit for the sake of food, when a pound of Australian mutton can be had for sixpence, passes my comprehension.—*Edwin Birchall; February* 18, 1872.

Larvæ of Phyllopertha horticola.—Will you kindly name the enclosed grubs? They are to be found in myriads just under the surface of my croquet-lawn, and confine their mischievous doings to the sloping sides which have been raised to prevent the balls going out of bounds: the turf is

completely destroyed on these slopes, and little scraps of dried grass are flying all over the place; it is evident that the grub eats the roots of the grass, which then dies. This is not the worst, for something, and I suppose it must be these grubs, attracts hosts of those pests of the gardener—starlings and sparrows, which are a perfect plague: my gardener's son is popping away at them all day. Can you send us a remedy for the grubs? we will do our best to defeat the birds. I do not take the 'Entomologist;' but a friend has told me you understand the subject, and will reply.—*X. Y. Z.; Ruabon.*

The grubs sent are the larvæ of a small leaf-eating beetle, familiarly known in Wales as the coch-y-bonddu: its scientific name is Phyllopertha horticola. It by no means confines its mischievous doings to banks and slopes, but works unseen in meadows and lawns. Starlings and sparrows are especially fond of these grubs, and devour enormous numbers. If you and your gardener will leave the grubs to the tender mercies of the birds, you will find them settle matters among themselves, and both will disappear simultaneously. A similar communication has reached me from Scotland, and a similar reply has been sent to the 'Field' newspaper, and was published in that journal on the 17th of February.

Vanessa Urticæ and V. Io in February.—I may inform Mr. J. Potts, of Doncaster, and numerous other correspondents on the same subject, that I do not consider it anything unusual for hybernated specimens of these insects to make their appearance in February; but the following notice is more remarkable.

Pieris Rapæ in February.—I have received a specimen of this insect from Herefordshire, and another from Hampshire, both early in February, without doubt vernal specimens.

Division of Rows of Insects in Drawers.—Could you kindly let me know if the drawers in a cabinet are divided with wood, or the labels merely, as I have never seen a right cabinet, and have no idea how to proceed in arrangement of my insects. I do not understand Mr. Greene's explanation in his book with regard to this.—*John Oliver; 26, Mayfield Place, Edinburgh.*

The rows of insects are totally undivided in my own cabinet; and I have never seen *wooden* divisions in *any* cabinet; but perpendicular lines are ruled in many cabinets

with a black-lead pencil between the rows. In my 'Illustrated Natural History of British Butterflies' I think I have made this clear to my readers.

Improvement of the Lobster Fisheries.—There has been of late years much done in the way of legislation for the salmon and oyster fisheries of Great Britain. Can nothing be done to improve the lobster fishery on our coast? The quantity of one-pound tins of this fish preserved annually imported into Great Britain from the United States and Canada cannot be short of 12,000,000 pounds weight, valued at £400,000 sterling. If the lobsters could be caught on our shores, no inconsiderable saving in the resources of the country would be effected; besides, an additional source of emolument would be opened up to our fishing population.

Thus writes an anonymous correspondent of the 'Field.' I cannot say that I agree with him. All legislation, in my opinion, should be based on knowledge; and particular legislation, as in the case of Natural History, should be based on a knowledge of a particular subject or science, as the science of Natural History. This idea will be stigmatised at once as absurd, altogether foreign to the question. The florid school will reply: "We appoint commissioners with liberal salaries; we hold public meetings quite openly; we eat and drink together, make eloquent speeches, and propose appropriate toasts. What does the man want? He does not know what he is talking about." I reply: "I want no commissioners; no salaries; no public meetings; no eating; no drinking; no toasts; no eloquent speeches;—I want men who have the opportunity to study the natural history of the lobster, and who will act on the knowledge they acquire by actual observation. If such men can be obtained, well; if not, leave the poor lobsters alone."

Beautiful Pyralis.—Mr. Doubleday pronounces the magnificent specimen, so kindly brought by Mr. J. A. Clark, to be a foreign species. I hope to give the name and country in the next number of the 'Entomologist.'

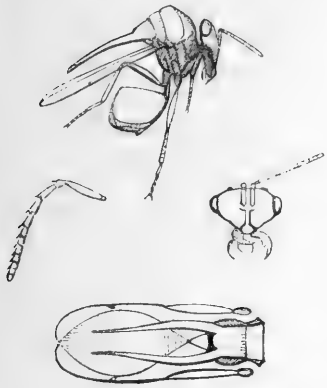
Varieties for Figuring in the 'Entomologist.'—Mr. Moore, Mr. Bond, and Mr. Wellman, will please receive my best thanks for the loan of the extraordinary varieties they have sent for this purpose. These will be figured and described in course.

EDWARD NEWMAN.

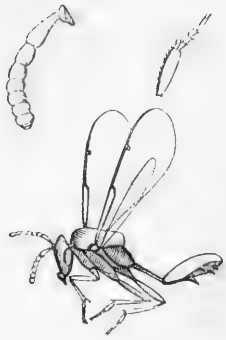
Economy of Chalcidiæ. By Francis Walker, Esq., F.L.S.

(Continued from p. 43.)

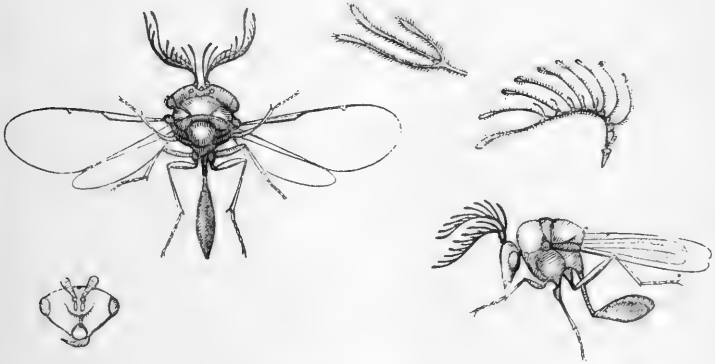
The accompanying figures illustrate the Eucharidæ, whose economy is wholly or nearly unknown. This family is



SCHISASPIDIA FURCATA.



EUCHARIS IELLO.



STILBULA VOLUSUS.

remarkable for the great development and various forms of the mesothorax and of its appendages, a peculiarity more remarkable in some of the other exotic genera than in those

here figured, and perhaps a compensation for their greater feebleness and inertness as compared with the rest of the tribe. Corresponding enlargements of the mesothorax occur in families of some other orders of insects. The Perilampidæ are contiguous to the Eucharidæ, and are not illustrated here, and rarely occur in England, and are parasites of wood-feeding insects. I have seen only two British specimens of P. Italicus, and there are several other instances of only one or two individuals of a Chalcid species having been found, while Pteromalus domesticus and Diglyphus Isæa occur in hundreds of thousands. It is easy to account for this abundance; but there is much matter for research in the scarcity above mentioned, whether it is caused by original slow increase, or by the destruction of the flies in one or other of their stages of growth from the egg onwards.

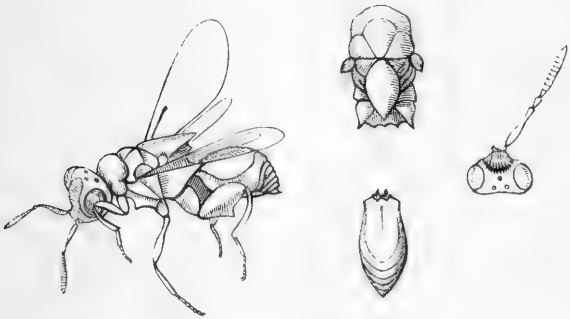
The Leucospidæ were mentioned in the last number of the 'Entomologist.' They appear to have migrated northward in the Old World more slowly than most of the other families of Chalcidiæ, for they are unknown in England and in Sweden; and, though one occurs in Germany, the species to the north of the equator chiefly inhabit the shores of the Mediterranean, and Egypt and Arabia. In the New World they extend from Chili to Canada. They are said to live as parasites in the nests of bees. The Chalcididæ resemble the Leucospidæ in being chiefly inhabitants of warm countries, and the species of Smicra especially abound in equatorial America. A few prey on Lepidoptera, and S. xanthostigma has been reared from the pupa of a Hylotoma.

Notaspis formiciformis, here figured, is very far removed in structure from the typical genera of Chalcididæ. In continuation of the parasitism of Chalcidiæ I will mention what has been said elsewhere on this subject, omitting a few species already noticed, and beginning with Nees ab Essenbeck, the author of the first comparatively complete work on the tribe. The Eurytomidæ, which, by two of their representatives, limit the American materials for bread and wine, vacillate between injurious and beneficial insects; and Nees places them in a debatable situation, as appears by the following extract:—

"Latreillium et Dalmanum secutus, Eurytomæ genus inter Pteromalinos posui, quibus re vera habitu notisque ex

antennis alisque haustis proxime conjunctum videtur. Sed vitæ ratio Cyniphum potius est, quibus Eucharide genere medio conciliatur, neque errabit, qui, utriusque ordinis, Cyniphum et Pteromalinorum inquam, novo certiorique charactere invento, Eurytomas Cyniphibus restituet."

He gives to the genus the character of a gall-maker, and then mentions the exceptions observed by him, which do not apply to Eurytoma as now restricted, and he has no suspicions that the latter is a parasite. Several species in the genera of this family have such a close mutual resemblance that the names of the earliest authors cannot be referred to them



NOTASPIS FORMICIFORMIS.

individually with certainty. The question of synonyms would occupy a vast number of pages, and the few words about it here are merely in reference to the parasitism. The species which Nees describes as Eurytoma plumata, *Rossi*, seems to be one that has not been found in England. He says that it inhabits a gall,—woody, many-chambered, rounded, attenuated at each end,—in the stalks of Serratula arvensis; and in another place he mentions, as a synonym of it, E. serratulæ, *Bouché*, which destroys a beneficial insect, Microgaster Liparidis. His description of E. Abrotani, *Illiger*, probably refers to the species for which I have adopted the name E. plumata, and is the thistle-gall—Eurytoma, which extends to North Africa; but in another place he says that E. Abrotani inhabits the galls of his Cynips Potentillæ; and his second description certainly does not refer to the

species of the thistle-galls. He speaks with certainty of E. Rosæ as being the cause of galls by oviposition on Rosa centifolia. Of E. verticillata, *Illiger* (an Isosoma), he mentions as a synonym, in part, E. Abrotani, *Fonscol.*, which is said to destroy the larva of Cynips Rosæ; there appeârs to be some confusion here.

His Eurytoma ænea has been since named Asaphes ænea, and has little affinity with the Eurytomidæ; he has observed it to destroy Aphidius varius. It may be often reared from the body of an Aphis, and, if it confines its attention to Aphidius, it is the cause of much increase of Aphides, by stopping the increase of their destroyers. His Eurytoma signata is a Decatoma, and may include more than one species; he has reared it in July from the galls of Cynips Quercus-gemma, *Linn.*, and has observed it in September to lay eggs in the oak spangles. As to Perilampus, he mentions Dalman's belief that it is parasitic on wood-feeding insects, and he includes Caratomus megacephalus with Perilampus. I have occasionally seen this species running over palings. "Callimome regius," he says, "lives in the galls of Cynips Quercus; C. bedeguaris, in galls of the rose and of the oak (the latter notice may refer to another species); C. Puparum, in the galls of the rose, on the authority of Spinola; C. muscarum, in the grubs of Aphidivorous flies? (there may be an error here, and another in the quotations given); C. Capreæ, in the galls of Cecidomyia, *Schr.*, perhaps this species is C. Cecidomyæ, which has been observed by Dr. Barnston, near Hudson's Bay."

C. caudatus or C. difficilis is supposed by him to be identical with Juniperi, which is a parasite of Lasioptera Juniperina. C. globiceps, in galls of Cynips Potentillæ, *Deg.* Torymus fuliginosus, in the fungous many-chambered galls on the twigs of oaks, on the authority of Spinola, apparently the type of an unnamed genus. Eupelmus annulatus, from the pupa of Cryptocephalus 12-punctatus; he cites the previously-described Diplolepis albicauda of Spinola as a synonym of this species. E. Degeeri, in galls of Cynips Potentillæ. Cheiropachys quadrum, from the galls of Quercus Tojæ, on the authority of Spinola; it is also parasitic on wood-feeding insects. Pteromalus Cynipedis, *Linn.*, in galls of the willow; two or three species are here included in one. Pt. Apum, *Retz.*, in nests of some kind of bee.

P. Salicis (= Tridymus or Seladerma or Selaoderma), in willow-galls of Cecidomyia Salicis, where Encyrtus Tennes and Platygaster niger are its companions. P. Puparum, *Linn*, the well-known destroyer of European butterflies in the chrysalis state; it also occurs in various parts of North America, and as far north as Hudson's Bay. Chrysolampus suspensus (= Coryna clavata) lives in the larvæ of Aphidius Rosarum, and is thereby an injurious insect. Elachistus albiventris, in larvæ of Noctuites (*e. g.* trapezina). Eulophus ramicornis, in larvæ of Noctuites (*e. g.* Aceris). E. pectinicornis, in subcutaneous larvæ of oak-leaves. E. pennicornis, in larvæ of Plusia Gamma. E. Larvarum, *Linn.*, in larvæ of Noctuites (*e. g.* Aceris); various species have been described by various authors under this name, and Nees observes that it is a most obscure species. E. abdominalis, in larvæ of N. pyramidea. E. Gallarum, *Linn.*, in larvæ of Cynips Quercus-ramuli, the originator of oak-apples. E. Roesellæ, in larvæ of Œcophora Roesella. E. exiguus, from "folliculi," on Festuca ovina. Encyrtus scutellaris, in Cocci of Betula alba and of Prunus. E. varicornis, in larvæ of Eumenes coarctata. E. scutellaris, in Cocci of Corylus Avellana and of Acer platanoides, &c. E. gravis, in eggs of Lepidoptera; Nees observes that it may be also a parasite of Cocci, and that it is identical with Ichneumon Coccorum, *Linn.*, and with E. æruginosus, *var.* β., *Dalm.* E. æruginosus, in Cocci of Prunus. E. zephyrinus, in Cocci of Betula alba.

When types of descriptions of species are not accessible, and when these descriptions will answer for two or more species, the record of the parasitism may be of much service as a proof of identity; when this help is wanting it may chance that a name, to use the words of Nees, "obscurum est semperque manebit." The few following species are noticed by Nees in the supplement to his work. Callimome aurulentus, in galls of Cecidomyia on Rhamnus Alaternus. C. cyaneus, *Fonsc.*, in galls on Cornus sanguineus. C. sapphyrinus, *Fonsc.*, in galls of Eryngium campestre, in galls of the rose, and in larvæ; it may be a compound species. Monodontomerus obsoletus, in pupæ of Lepidoptera, and in nests of bees. Eupelmus Syrphi, *Bouché*, in pupæ of Syrphus Ribesii and of S. balteatus. Ormyrus brevicauda, in galls of Cynips Potentillæ. Pteromalus Larvarum, in larvæ

of Rogas linearis. P. fungosus, in galls of the oak (this species may be mentioned in another notice). P. Microgastris, in pupæ of Microgaster glomeratus. P. Capreæ, *Fonsc.* (= Salicis?), in willow-galls, formed by a Tenthredo. P. Aphidis, in Aphides. P.? Quercus-ramuli, *Fonsc.*? in galls of Verbascum nigrum; this may be a Decatoma. P.? Chermes, in Coccus Ilicis tinctoriæ. Chrysolampus tristis and Myina? Ovulorum, in the eggs of Clisiocampa neustria. C.? binotatus and C.? rufus, in galls of oaks; these are species of Decatoma. Eulophus Blancardellæ, in larvæ of Elachista Blancardellæ. E. Upupænellæ, in larvæ of Ornix Upupænellæ. E. Cecidomyiarum, in Cecidomyia Artemisiæ. E. Galerucæ, in the eggs of Galeruca Calmariensis. E. Eurytomæ, in galls of the rose, originated by Eurytoma Rosæ. Encyrtus fuscicollis, in larvæ of Yponomeuta Evonymellæ.

Life-histories of Sawflies. Translated from the Dutch of M. S. C. Snellen van Vollenhoven, President of the Entomological Society of the Netherlands. By J. W. May, Esq.

(Continued from p. 49.)

Phyllotoma Melanopyga, *Klug.*

Imago.—*Klug, Blattwespen in Magazin Naturf. Freunde*, viii. p. 275, No. 185. *Hartig, Blatt-und Holzwespen*, p. 255, No. 4.

Larva hitherto undescribed.

Phyllotoma nigra, abdomine pedibusque luteis, illius apice nigricante, antennarum articulis undecim.

I believe neither Réaumur nor De Geer make any mention of a sawfly larva having its habitat between the tissues of leaves, unless, indeed, we place in this category the species living in the bean-shaped galls of the willow. None are described as miners. In 1848, however, the larva of Fenusa Rubi, *Boie* (= Pumilio, *Klug*), was described by Mr. F. Boie in the 'Stettiner Entomologische Zeitung,' and it is there stated that this species lives between the tissues of the leaves of the raspberry. Since this Professor Zaddach has mentioned

in his 'Beschreibung neuer oder wenig bekannter Blattwespen,' that the larva of Fenusa pumila lives in the same way in the leaves of the alder; he has also described the larva of Fenusa Betulæ, *sibi*, as living in the leaves of the birch.

The subject of the present paper is a species of Phyllotoma (a genus new to the Fauna of the Netherlands), the larva of which, hitherto undescribed, has a nearly identical habit. It is, however, more especially remarkable on account of its method of spinning up, and the number and structure of its legs.

I am indebted to my friend, P. C. T. Snellen, for my acquaintance with this insect. In the middle of September, 1861, I received from him some larvæ, which he had met with in bladders on alder-leaves, in the neighbourhood of Rotterdam. He had noticed similar larvæ before, and had taken them for a species of moth; but on rearing them he had found them to be Hymenopterous larvæ. The specimens, or the specimen, which he had reared was, however, no longer in his possession, so that I was wholly uncertain as to its appearance and species. The alder-leaves which were sent to me had simply a scar where the parenchyma, between the upper and lower epidermis, was wanting, as shown at fig. 1 *a*. On holding the leaf up to the light it was apparent that it had been eaten out, as the rays of light showed the presence of a little animal of an oblong shape, as also some pieces of excrement. On opening one of the leaves I found a flattened white larva, 8 mm. long, differing conspicuously from the usual appearance of sawfly larvæ. The depressed form of the larva, and the breadth of its anterior segments, gave it the appearance of an Orchestes among the Coleoptera, while the absence of abdominal legs presented itself as a singular feature among sawfly larvæ not belonging to the genus Lyda, to which, however, it could not be referred on account of the shortness of the imperfectly developed thoracic legs, the absence of the two jointed anal projections, and the fact of its solitary habit.

The larva (fig. 2) was greenish white, depressed, broad, and diminishing in width from the head towards the tail; head short and broad, ferruginous, with dark eyes and brown trophi. On the dorsum of the 1st segment were two black

transverse horny plates, only divided by a very narrow line; on the ventral surface, in the middle, a black triangular spot. On the 2nd and 3rd segments (fig. 3) were two small black spots; and from this point the remaining segments gradually became narrower and longer, each projecting anteriorly on both sides on approaching the posterior margin of the preceding segment. Along the middle of the dorsal surface a black line was visible beneath the skin, broader at the middle than at either end. The structure of the thoracic legs was very remarkable (see fig. 4); they consisted only of two horny knobs and a similar projecting spot placed in a row, the upper of the two knobs projecting a considerable distance from the surface; next to these was a brownish black spot. The question arises, are these thoracic legs simply undeveloped, and do these projections indicate the joints? If this be so, as I think it is, then the largest and most projecting knob will represent the last joint, to which, in the case of other normally constructed sawfly larvæ, the claw is attached. On comparing this description with that given by Boie and Zaddach of the larvæ of the genus Fenusa, *Leach*, it will be seen that these last offer many points of agreement, but are specially distinguished—first, by the presence of five pairs of abdominal legs; secondly, by the normal structure of the six thoracic legs; and thirdly, by a single anal leg under the last segment.

After a short time the larvæ betook themselves to a spot on the leaf, at a little distance from that where they had eaten out the parenchyma, each larva making a circular depression, the walls of which were somewhat raised, giving it an appearance of a blister on the leaf; both the walls bounding this hollow in the leaf speedily became brown, as represented at *b* in fig. 1: in this circular space the larvæ passed the winter.

It is extremely difficult to keep these little animals at the requisite degree of moisture during the winter. Mr. Snellen, who collected and kept a large number of mined leaves, was only able to send me two imagos reared from them, and from all the leaves containing larvæ, which I have kept in my room for some consecutive years, not a single wasp has appeared in the spring. I succeeded better with leaves which I kept in the cellar, but the harvest was always

extremely scanty, and in nearly all the bladders, which I opened about the end of June, I found the larvæ dried up or mouldy. For four years I have had a supply of mined alder-leaves: to begin with, I have twice received them from Mr. Snellen; I then myself met with the larvæ on alders in the plantation near Leyden; and again on the Hoogeland, near Amersfoort, in the neighbourhood of the grounds of Coelhorst.

I have no information respecting the pupa, as I have not hitherto been fortunate enough to meet with one; most probably the pupa state is of short duration.

The imagos appeared between the 16th and the 31st of May: all the examples I have seen were females.

They belong to the little-known genus Phyllotoma; according to Klug, the seventh family of the genus Tenthredo, and in Hartig's classification a subgenus of Emphytus. It appears to me that the characteristics presented by this group entitle it to rank as a distinct genus, unless we adopt the views of the Berlin philosopher and unite them with Emphytus and Fenusa as a divergent group of the great genus Tenthredo. The principal points in which the Phyllotoma especially differ from other Tenthredinidæ are the short broad head, the projecting eyes, the number of joints in the antennæ, and the neuration of the wings. This is, however, not the place to enter further on the value of these characteristics.

The description of our species is as follows:—The head, seen from above, is very broad, with projecting eyes and depressed forehead; regarded from the front, broadly triangular. Colour black, with the exception of a triangular spot between the antennæ and two lines along the inner margins of the eyes of a sordid yellow colour; the labrum and palpi are also of this tint; the other parts of the mouth being brown. The clypeus is notched in the centre (fig. 10); the lip itself being semicircular. The antennæ (figs. 5 and 6) are not longer than the head and thorax together, hirsute, and consisting of eleven joints, the first of which arises from a projecting knob, which may, perhaps, have appeared to Klug as a twelfth joint. At all events, this author describes the antennæ as 12-jointed; as does also Hartig. The latter may have simply followed Klug's description, and not have counted the joints himself. It may also be that in some

examples the last joint is divided into two. However this may be, the antennæ of my examples were of the form represented in the figure. Their colour was black; the first two joints, however, having gray margins.

The thorax, above and beneath, is shining black; legs yellow, with brown claws; the ends of the tibiæ and of the separate joints of the tarsi of the posterior legs being griseous. The penultimate joint of the tarsi is pointedly prolonged on the under side.

The wings are somewhat dark, blackish, but iridescent; the anterior wings darker than the posterior; the anterior margin and the stigma are brownish. There is an indication of the commencement of a nervure, which would divide the first submarginal cell into two, the normal neuration in Tenthredo.

The cenchri are whitish. Abdomen pale orange; the last two segments are bordered with black on the upper margin, the valves of the ovipositor being also black. The form of saw and ovipositor is represented at fig. 8: they seem to me to have most resemblance to the same organs in Selandria ovata.

Although this life-history is so far imperfect, that descriptions of the egg and the pupa state of the insect are wanting, I have thought it as well to call attention to the abnormal features in its habit and the form of the larva, hoping to be able to fill in the picture at some future time.

Irish Captures in 1870 *and* 1871.

By the Hon. Emily Lawless.

I now send an account of some of the more interesting Lepidoptera I have taken during the two past seasons. Those recorded for 1870 were captured in a very out-of-the-way corner of Ireland, or rather not in Ireland proper at all, but on a little island of some fifteen acres, lying about a quarter of a mile off the northern shore of the Bay of Kenmare, one of an archipelago of little wooded islands, which help to make the coast of Kerry—lovely everywhere—especially lovely there. My hunting-ground *last* season (with the exception of a three days' visit to the

Nubigena country) was restricted to one or two inland localities in Galway, and it strikes me as rather curious that so many identical species should occur both there and in Kerry; not merely on account of their distance apart, but because of their total dissimilarity in every point of view: one—precipitous, covered with a luxuriant natural vegetation, and washed on every side by the Atlantic; the other—a flat limestone plain, treeless, except in a few favoured spots, and twenty miles from the nearest sea. In both instances I captured all the insects enumerated between the first week in June and the second or third in July.

DIURNI.

L. Sinapis.—Rather abundant last season, from 4th to 13th of June. St. Clerans and Dunsandle Woods, near Athenry, Co. Galway. I noticed it on the 6th in enormous numbers at Coole Park, near Gort. (In your 'British Butterflies' *St. Clerans* has, by some accident, been misprinted *Florens!*).

G. Rhamni.—One pair (hybernated, of course), first week in June. St. Clerans, Galway.

A. Paphia.—Very abundant, end of June, 1870, on Garinish Island, Kerry; also, last season, at St. Clerans, Galway. This is, I think, the only really common Irish fritillary. I have found it in profusion everywhere I have collected.

M. Artemis.—Occasionally. Boggy fields. St. Clerans and its neighbourhood, Co. Galway.

S. Tithonus.—Very abundant indeed, first week in July, 1870, on Garinish Island, Kerry. I never met with it on the mainland. Mr. Birchall, in his invaluable 'Lepidoptera of Ireland,' includes Semele (the grayling) with Egeria, Megæra and Janira, as generally abundant in Ireland; but, though I have been now a good many years collecting, I have *never* met with it. Of course that only proves that I have missed its locality; but still I do not think it can be *as* abundant as the other three above-mentioned, which are of universal occurrence.

S. Hyperanthus.—Very common. Garinish Island, Kerry, and St. Clerans, Galway; and everywhere I have collected in Munster and Connaught.

C. Davus.—I only met with two or three last season, as it does not occur in cultivated districts.

T. Rubi.—1st to 10th of June. Garinish Island, Kerry. Rather abundant. Took it occasionally last season in Galway, on heather.

L. Alsus.—Garinish Island, Kerry; rare. St. Clerans, Galway; not uncommon. Very abundant in the Nubigena district. This is the only "blue," besides Alexis, I have ever taken; nor have I ever met with any "skippers" in Ireland.

The three common Pieridæ, Cardamines, Urticæ, Atalanta, Cardui, Egeria, Megæra, Janira, Phlæas, and Alexis, are so universally common in Ireland that I do not think them worth mentioning.

NOCTURNI.

S. Populi.—Common. Garinish Island, Kerry; St. Clerans, &c., Galway.

C. Porcellus.—Two were found last year, July 6th, on a garden-wall, near Ballinasloe, Galway, and brought to me.

C. Elpenor.—Very abundant; end of June, 1870. Garinish Island, Kerry. Also last season, St. Clerans, Galway, took a large number hovering over the common monkshood (Aconitum Napellus).

M. Bombyliformis.—Took nine or ten flying at buckbean (Menyanthes trifoliata), in bogs, near Athenry, beginning of June.

S. Bembeciformis.—Very abundant indeed in 1870, on Garinish Island, Kerry; also, last season, at Clonbrock, Galway; and everywhere I have collected in the south and west.

H. Velleda.—Very common, 1870, on Garinish Island, Kerry; also, last season, in Galway, but not so abundantly.

P. Statices.—Very common in the Nubigena district; end of June. Nothing could exceed the beauty of the two insects when flying together.

Z. Nubigena.—Clare coast; end of June. I could not have believed the incredible multitudes this species occurs in, had I not seen it. At Black Head, on the horizontal limestone slabs, at the very *edge* of the cliff, where nothing grows but a few stunted tussocks of grass, and—strange contrast!—the rare Adiantum Capillus-Veneris, with Saxifraga hypnoides and Saxifraga tridactylites, and the lovely

fragile crane's-bill (Geranium sanguineum),—there the Nubigenas occur in such countless thousands, that when I passed my net along the edge of the cliff it came back full of them, "looking," as Mr. Birchall truly says, "just like little red bees!"

Z. Filipendulæ.—I mention this common insect, because there is a circumstance in connection with it which puzzled me, and which, perhaps, some of your readers may be able to explain. The moth occurred in immense numbers on Garinish Island, on the short grass at the top of the cliffs of old red sandstone, which form a barrier on the Atlantic side of the island; and one day I noticed that the top of the rock and the grass was in one sheltered part quite crimson for about twenty yards, and on examining closer I found that the reason was that it was densely covered with the wings of Filipendulæ. After that I watched carefully for several days, and distinctly saw numbers of birds—chiefly, I think, starlings and buntings—catch the Filipendulæ, neatly snip their wings off, and carry the body away in triumph: sometimes I saw two, and in one case *three*, incredible as it may appear, caught by a single bird at the same instant. Now, the point I should like explained is this:—Mr. Wallace, in his deeply interesting Essay on "Mimicry, and other Protective Resemblances among Animals," speaks of the larva of Filipendulæ as one never eaten by birds; and from the very slight experiments I have made on the subject, I have come to the same conclusion. Then how and when is the change wrought that alters the larva, which the birds find so unpalatable, into the imago, which they evidently consider a *bon bouche?* Perhaps you may be able to give me some information.* At any rate, if I chance to be anywhere this season, where Filipendulæ is abundant, I will test the pupa at different stages, and see what the birds say to *it*. In the meantime, pray excuse this long digression.

L. Complanula.—Four. Garinish Island, Kerry, 1870. Also a few last season, near St. Clerans, Galway.

* Thus courteously invited to say a few words on this interesting subject, I may observe that cuckoos very generally feed on the larva of Zygænæ, a fact perfectly familiar to practical entomologists. A well-known and universally-respected lepidopterist told me he once saw more than thirty cuckoos in one field, attracted by this their favourite food. Starlings also eat these larvæ, but do not make them so exclusively their food, eating insects of all kinds and many fruits.—*Edward Newman.*

L. Rubricollis.—Took sixteen of this species last season, in a small larch wood. St. Clerans, Galway. June 12th to 16th.

E. Russula.—Garinish Island, Kerry, 1870. Not common. Rather plentiful last season, in a boggy field, near St. Clerans, Galway.

C. Plantaginis.—Rather common; end of June. Same localities as Russula.

A. Fuliginosa.—Pupæ abundant on all Galway bogs; early in June; but about fifteen in twenty seem, as a rule, to be attacked by ichneumons.

P. Populi.—This was forwarded to me last December, from Clonbrook, Co. Galway. I found the pupæ very abundant some years ago in Kildare.

B. Rubi.—Very common on the mainland, near Sneem, and at Derrynane, Co. Kerry, 1870. Also last season on boggy land, near the village of Crangwell, Galway.

B. Quercus.—Larvæ common everywhere. All that I have taken *appear* to me to be the typical Quercus; but of course I cannot say so with certainty.

S. Carpini.—Common. Garinish Island, Kerry; and heaths, &c., Galway.

(To be continued in May.)

Entomological Notes, Captures, &c.

Insects of the Scilly Isles (continued from p. 52).—Chalcidiæ. Some of the Scilly species of this tribe appear to be undescribed. Like many British species in the same predicament they will continue unnamed, till the occurrence of a means for the publication of their characters. St. Mary: Callimone, 1 *n.? sp.;* Encyrtus subcupratus; E. hemipterus (the single specimen seen was, as usual, wingless; it may be called the Fern Encyrtus, as it always occurs on ferns); Asaphes ænea; Sphegigaster, 1 *n.? sp.;* Pachyneuron Pruni; Pteromalus fasciiventris, P. Irus, and 10 *n.? sp.* of this genus, one of them found also in Samson and in Annette; Entedon Amyrtæus; Eulophus Metalarus; E. Faustitas; Diglyphus Isæa (also in Bryer); Tetrastichus, 1 *n.? sp.* Bryer: Pteromalus, 1 *n.? sp.* St. Martin: Encyrtus Teuteus;

Sphegigaster, 1 *n.? sp.*; Dicyclus nigroæneus. Annette: Pteromalus, 3 *n.? sp.*—*Francis Walker.*

Sesia Apiformis feeding on Cork.—A pair of Sesia Apiformis emerged from some pupæ of this species in my possession in June last, and the female laid a number of eggs, which I watched carefully for a month, expecting them to hatch. As they did not do so I considered that they were not fertile, and put them away with some old setting-boards in a closet, and thought no more about them. At the end of January this year, requiring one of these boards for setting out my first captures this year, I was surprised to see a larva of this species crawling along the groove in which I was setting out B. Pilosaria, and being curious to see where it could have come from I examined the spreaders more closely, and found that the cork along the groove was completely riddled by small galleries made by this larva. Further search discovered another of these delinquents comfortably ensconced in the cork, where he remains to this day, as I am anxious to see whether he will arrive at maturity on this strange diet.—*G. H. Raynor; Tonbridge, March* 9, 1872.

Captures at light at Tonbridge in 1871.—During February I took Pilosaria pretty freely at light, and one specimen of Hispidaria turned up on the 22nd. In March I took nine specimens of Prodromaria; the Tæniocampæ did not come very freely to light, but I took Gothica (in great numbers), Opima (3), Populeti (2), and Rubricosa (2). In April I took another specimen of Prodromaria, and several each of Badiata, Derivata, and Hirtaria; I also came across Abruptaria and Biundulata (3 each), a single Consignata (on the 23rd), Dictæa (on the 24th), and Dubitata (on the 30th). May proved the most productive month in the year, yielding, among other things, Trepida (3), Dodonæa (2), Ziczac (2), Dictæa (1), Palpina (3), Silaceata (1), Decolorata (1), S. Populi (4), Consignata (1, on the 19th), and Pudibunda in abundance (no females). June was scarcely less productive, although the Cuspidates were over, except Palpina, of which I took two more; and, among other things, Tiliæ (2), Venosata (2), Promutata (1), Margaritata (2), and several of the commoner Eupitheciæ. With July came Dotata, Subnotata, Iota (1), Roboraria (1), Tenebrosa (2), Papilionaria (2), Subfulvata, Elinguaria, and Quercifolia (5). The

remaining five months produced Tiliaria, Fuscantaria (2), Cervinaria, Spartiata, Pennaria, and Cassinea: the latter were more plentiful than I have ever found them before, and I secured fifteen males and nine females. On the whole (as far as light is concerned), I consider that I had a more successful season than usual.—*G. H. Raynor; Tonbridge, March* 9, 1872.

Moths at Sea.—Captain Robert Fuller, of the S. S. Northumbria, informs me that last September, when about twenty miles off Oporto, "weather fine," a very considerable number of moths made their appearance during the evening, and settled on the masts and sails of the ship by hundreds. So numerous were they, that with one grasp of the hand you could secure four or five moths. Several specimens were caught for me; but until yesterday I had not been able to see them. They all prove to be our common Plusia Gamma; and Capt. F. told me he did not observe any other kind on that occasion. These must have been part of a large flight, as he described them as clustering in masses all over the ship. I certainly think that many of the rare insects occasionally captured round our coasts are brought here in the above manner: after a long and almost exhausting flight over the sea, they very often gain foothold on some passing vessel, and some day or two may elapse before they again take wing; then it may often happen to be near the English coast; the fugitive possibly captured, and dubbed an English specimen, worth a considerable sum, of course. These particular insects, P. Gamma, are most common here; but it is just as likely to happen to a continental species. Doubtless we owe many of our present extensive list of new species to homeward-bound shipping.—*W. H. Tugwell;* 3, *Lewisham Road, Greenwich, S.E., March* 14, 1872.

South London Entomological Society.—I am requested to state that a society under this name has commenced its meetings at the reading-room of Dunn's Institute, Newington Causeway (near the Elephant and Castle), and that new members can be admitted on Wednesday evenings from 8 to 10 P.M.—*Edward Newman.*

THE ENTOMOLOGIST.

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Answers to Correspondents.

CHŒROCAMPA ELPENOR (VARIETY).

Variety of Chœrocampa Elpenor.—The fore wings have a large central area, in which the membrane is without scales, the wing-rays only being furnished with scales, and these ochreous; the rest of the wing is smoky brown. In the hind wings is a similar central area, but not so completely denuded of scales as that in the fore wings; at the apical angle the wings are smoky brown, and partially of the same colour as the fore wings; but the scales towards the anal angle, and nearer the centre of the wing, are dull ochreous. The palpi, crown of the head, and collar, are dull olive-brown; the thorax ochreous-brown tinged with rosy; the abdomen brown, the margins of the segments ochreous, and the tip rosy. The specimen was bred by Mr. Last, of Ipswich; and has been kindly lent me by Mr. Bond for figuring in the 'Entomologist.'

Is Lithosia rubricollis double-brooded?—For the last few days I have had several specimens of Lithosia rubricollis emerge in my breeding-cages, from pupæ taken at Tilgate

Forest in the autumn (they have been kept out of doors all the winter). As you give, in your 'History of British Moths,' August for their appearance, are they double-brooded? or is it a freak of nature? If you will kindly answer this in next month's 'Entomologist,' I shall feel much obliged.—*F. Trangmar;* 20, *Tidy Street, Brighton, April* 4, 1872.

Mr. Merrin gives June for the imago, and August for the larva.

Rose Beetle.—Is it usual to find specimens of this Coleopterous insect hybernating in the earth? A few days ago I dug up two in a torpid state, which revived after being placed for a few hours in a warm room. The fact of such hybernation is probably well known; but I do not recollect ever meeting with this particular species in such a situation before.—*G. Bentley Corbin.*

It had probably undergone its final change in the ground, which is not unusual. I do not think Cetonia ever enters the ground to hybernate.

Posting Boxes.—Even the most strongly-made boxes (Entom. 102, p. 58) get smashed in their transmission through the post, as most of us know from experience. A very good plan is to *cover* the boxes with calico or some such material, using *glue* to secure it. If the boxes have been in use they should be thoroughly cleaned from any greasy matter, or the glue will not hold so well upon them. In the case of a box where the lid and bottom are formed of cork, I cannot speak so positively; but if a box is wholly formed of wood on the outside it is surprising how much its strength is increased by the plan I have named.—*G. B. Corbin; Ringwood.*

Post Boxes.—I would recommend boxes made of some light strong wood, to admit of specimens top and bottom of box, and of such dimensions suitable to allow of a casing of cotton-wool placed round; then enclose inside a tin case. Half-a-pound or pound mustard tins might be brought into use, or such cases as Bragg's charcoal biscuits are sold in might be requisitioned: these, with an additional roll of cotton-wool, may be safely adopted. I have used cardboard and leather cases in the same way, and they have carried well. If for a large number of insects, I should say pack well, and enclose inside a much larger box, and send per rail.—*J. Bryant;* 63, *Old Broad Street, E.C., March* 18, 1872.

Transmission of Insects by Post.—This is so unsatisfactory at present, and so frequently reflects vexation on both sender and recipient, that, until a new generation of officials arises, I would advise entomologists to relinquish it, at least as far as larvæ and imagos are concerned. Pupæ may be packed so as to travel safely, if the box be strong, and the "padding-in" be done carefully; and eggs will rarely take any harm, if enclosed in quills or small metal tubes.—*J. R. S. Clifford; 59, Robert Street, Chelsea.*

Abundance of Trichoptera.—From our situation so near the river, we have usually a supply of various caddis-flies in this neighbourhood; but during the past week the enclosed species has appeared in such incredible numbers that I think their occurrence worthy of notice. I did not notice their abundance till Sunday, the 7th inst., and on the three following days they seemed to increase in numbers; for on Wednesday, the 10th, the air seemed literally full, and this not by the river only, but in the streets there were countless thousands of this particular insect. It would be interesting to know whether the species has been universally abundant in other localities as well as here. The meadows near the river have been flooded during much of the past season; but whether the inundation combined with a mild winter has proved favourable to the development of these insects, is a question I must leave to be answered by any kind brother entomologist, whose knowledge of this class of insects must of necessity be superior to my own, as I have never paid any decided attention to them. I may here state, that after the 10th inst. there was a great falling off in their numbers; and now the insects are no commoner than usual.—*G. B. Corbin.*

The insects sent are Glossosoma Boltoni of Curtis.

Hybernation of Bombyx Rubi.—Mr. Clifford's experience differs some little from my own with regard to these larvæ (Entom. 100, p. 15). Those I have reared, as a rule, hybernated on the surface of the earth, underneath the moss, &c., prepared for them at the bottom of the rearing-box; and I have, on more than one occasion, found a larva in the winter, under the dead leaves on a hedge-bank; and in each case the larva was in a slightly contracted ring, and to all appearance full grown. It is very true that it is a species which does not hybernate till very late in the season; in fact,

it seems that the *cold* alone forces it to retreat. My larvæ of Rubi very seldom, if ever, fed in the spring, although they seemed to enjoy the sun's rays after their winter sleep. I may state that my larva-box was always exposed to the weather—*out of doors*. The larvæ of B. Quercus undoubtedly come out from their winter retreat before those of Rubi, as I have found those of the former species on several occasions whilst beating the leafless hawthorn branches for females of H. rupicapraria. The larvæ of Rubi, when kept in confinement, are sometimes attacked to a considerable extent with a white kind of mould, arising, no doubt, from too much dampness.—*G. B. Corbin.*

Anisopteryx Æscularia.—Would you kindly inform me what is the name of the enclosed little moth? I took it off a young cherry-tree, and it was laying a ring of eggs round a twig, after the manner of Bombyx neustria, and covering them slightly with down from its body. The eggs are large and numerous, so that the moth must have been twice as large previous to laying. I have taken another ring of the same kind of eggs off another cherry-tree, since I took the others, a few days ago.—*W. J. Skelton; The Bounds, Herne Hill, near Faversham, March* 7, 1872.

The moth is Anisopteryx Æscularia (the March moth), described and figured at p. 105 of 'British Moths.'

Scarlet Spider.—I have sent you a little insect that has been found amongst long grass. If you would kindly tell me the name of it, and what class of insects it belongs to, I should be much obliged.—*Thomas Marson; Kay's Buildings, Sanderson Street, Wakefield.*

The little creature is Trombidium holosericeum, commonly known as the scarlet spider. It belongs to the division of articulate animals called Acaridea, or mites; its eggs are a pleasing microscopic object, and have more than once been described as fungi. In April and May they may often be found on stones.

Does the Larva of Russula hybernate?—Can you give me any information in the next 'Entomologist' respecting E. Russula, *viz.*, Does the larva hybernate? If so, in what month does it come abroad before pupation? Does it spin up on the ground, or on the food-plant?—*E. D. Kemp-Welch; Bournemouth, February* 24, 1872.

I know very little of the life-history of this species, but Vogel says:—"The young larvæ are found from July to September, when they hybernate and feed again in April and May, when they spin up, and the moths appear in June. The larvæ feed upon plantain, dandelion, scabious, hawk-weed, chickweed, &c."—*H. Doubleday.*

Heliothis armiger near Wakefield.—Will you be so kind as to name the enclosed insect? It was taken by me in October last at Hoo Park, near here. I have shown it to Mr. W. Talbot, but he does not know it. If you will give me your opinion of it I shall esteem it as a favour.—*Henry Sims; Howard Street, Wakefield.*

The moth is Heliothis armiger: a light-coloured and wasted specimen.

Geometra Papilionaria.—On several occasions I have met with the larvæ of this species the first week in April, and afterwards. Usually I find the larvæ at the extreme end of the twigs of birch, and not more than five feet from the ground. I do not doubt their going higher, but I have never found them so. I have seen them beaten out, but think this a dangerous practice, as the larvæ hold so fast to the food. I advise patience, and a sharp look at the young birches; where the leaves are eaten it is more easy to detect the larvæ. I think it would be difficult to find the larvæ in February or March, unless exceedingly mild weather, and the birches are forward in leaf.—*J. R. S. Clifford.*

Insect Perforating Lead.—May not the borings described by Mr. Macmillan (Entom. vi. 38) be the work of some species of Sirex? It seems at least likely that from some deal which had been used in the roofing, the imagos had emerged, and, in order to effect their extrication, had pierced through the metal above them. Two coniferous trees, Pinus sylvestris and Abies Excelsa, are frequently attacked by Sirex Gigas, Juvencus, and other species, and these supply timber used for rafters. M. Guerin-Melville and others have given instances where these insects had perforated metal, one of these a well-authenticated one:—some cases of cartridges, forwarded to the French troops during the Crimean war, having had the balls bored through, the larvæ or pupæ having been enclosed with the fir boxes containing them. And it would seem that several years are

required to bring these insects to maturity, if the statements, regarding their appearance in the imago state some years after timber had been laid down as flooring, are credible.—*J. R. S. Clifford.*

Priority in Nomenclature.—What do we mean by the prior name of an insect? A fool, so it is said, may sometimes strike upon a thought which a wise man misses; and, without setting myself down as the former, I venture to think that I may point out a circumstance which has escaped the notice of some, at least, of our entomological dons, upon whom falls the duty of giving names to new species, and admitting alterations in nomenclature. The first name of an insect is surely not always the first actually applied to it in order of time, but the first which has received a certain measure of recognition from other students. To illustrate this by an instance allied to it in human life:—a name given to a child, to be valid, must pass through due formalities, and thus gains acceptance; while a familiar name, though actually conferred earlier, is not regarded beyond the household. It is a question, as it seems to me, whether we ought to permit the displacement of a name which an insect has borne many years, undisputed, because it is discovered that some entomologist, living in a state of isolation perhaps, had, at an earlier period, designated it differently. Usage ought to stamp permanence on a name after years have elapsed: but if recent alterations amongst the Lepidoptera are to be carried out amongst the other orders of insects in a manner somewhat similar, very much of our entomological literature of the past will be rendered perplexing or obscure. One of the strongest arguments which has been urged in favour of Latin names, as opposed to vernacular, is that of their general recognition amongst scientific men of all countries. But at this moment it seems as if their permanence was in some danger; and, as aliases multiply, the detection of a fugitive species will become more difficult to all entomologists, no matter of what nationality they may be.—*Id.*

Glow-worm in March.—The adult female glow-worm is generally seen only in summer. I scarcely like to venture an opinion when I have not seen the objects to which my correspondent refers. I stated in the 'Zoologist,' many years back, that the glow-worm emitted its phophorescent

light in all its stages,—egg, larva, pupa, and imago. I think it probable that D. R. I. has seen larvæ only, at this season.

Queen Wasps.—There is nothing unusual in the fact of a queen wasp being abroad at this time of year. G. G. C. and other correspondents, who have noticed them, are referred to Mr. Frederick Smith's 'Catalogue of Fossorial Hymenoptera,' p. 211, and Dr. Ormerod, in his 'British Social Wasps,' p. 186, has fully explained this. A few lines from Dr. Ormerod are worth quoting:—"With the first promise of spring, with the violet and primrose, with the snake and the bee, on the same bank from which the warmth of the sun has called them forth, the mother wasp enters into active life. During the cold wet winter months she has sheltered herself, as she best might, in dry banks or old walls, in the folds of curtains, or in the toes of shoes laid by, like herself, for a season; and if, by chance, she has been disturbed from her hiding-place, dusty, half torpid, she has seemed more like an outcast from her old nest than the future mother of a colony. But all this is altered now; and as she flies quietly along examining each crevice in quest of a proper place to build her nest in, the eye of the gardener recognizes in her no helpless wanderer seeking a hiding-place, but an instrument of destruction, which he will do well to crush in the bud." Every March these queens have a fearful ordeal to pass through, because such large insects are sure not only to attract the notice of gardeners,—and of that section of the scientific public who delight in "curiosities," and in communicating their discoveries to various periodicals, which always thankfully receive them,—but in many places there is an organization, a sort of crusade, against queen wasps in March; and little boys prefer the remuneration offered for killing them to attending their schools, where the curriculum of study is somewhat more monotonous.

Lepidoptera at the British Museum.—Happening to be in London a short time ago I made my way to the British Museum, feeling sure I should find a fine collection of our British moths and butterflies in good condition. You may imagine my disappointment, as the poor bleached representatives of our Lepidoptera met my eyes. Surely it would not be too much to ask that curtains should be provided for this

department of the British-Museum collection!—*W. Macmillan; Castle Cary, Somerset.*

There is a second collection of moths and butterflies not generally exhibited, but which may be seen on application to the proper authorities.

Thecla Betulæ taken at Night.—On October 2nd, 1871, I took a specimen of the brown hairstreak, Thecla Betulæ, at night, on a blackberry bush. Is not this an unusual occurrence?—*Waldegrave; Bookham Lodge, Cobham, Surrey.*

I do not recollect a previous instance of Thecla Betulæ having been taken by night; but it does not appear to me extraordinary that it should be taken by night *at rest:* had it been flying it would have been more remarkable. I have recorded more than one instance of Antiopa being taken flying by night.

Polychloros Larvæ feeding on Nettle.—In the spring of last year I took the larvæ of what I considered V. Urticæ, feeding on nettles, and from time to time added other larvæ of Urticæ in the same breeding-cage kept for nettle-feeders only; and, to my surprise, a number of imagos resemble Polychloros in colour and marking, keeping the size of Urticæ. I submit them to you for your remarks. There was no apparent difference in the larvæ that I observed while feeding.—*Jas. A. Tawell; Earl's Colne, March* 11, 1872.

These specimens have a wonderful similarity to Urticæ, which they do not at all exceed in size; still the colour is nearer to that of Polychloros than that of Urticæ; and the black spot at the anal angle of the fore wing is present, as in Polychloros; the white spot on the costa of Urticæ is absent, also as in Polychloros.

White Variety of Phlæas.—Some time since I captured a specimen of Phlæas (small copper), in which the copper ground colour of the wings is entirely replaced by white. Is this variety an unusual one, or has it been noticed before?—*E. H. Allis; Bristol, March* 22, 1872.

"There is a variety of this species in which the parts which are usually copper-coloured are of a pure and brilliant white." (Newman's 'British Butterflies,' p. 115.)

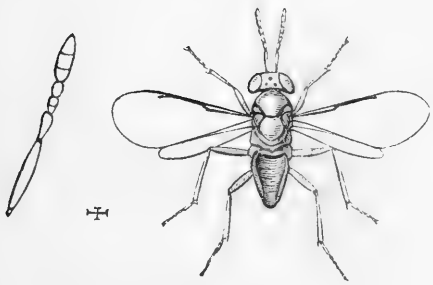
EDWARD NEWMAN.

Economy of Chalcidiæ. By Francis Walker, Esq., F.L.S.

(Continued from p. 70.)

The accompanying three figures represent Ormyrus punctiger, Aphelinus basalis, and Coccophagus scutellaris. Ormyrus is the typical genus of the Ormyridæ, and is peculiar in the sculpture of the abdomen; the species inhabit

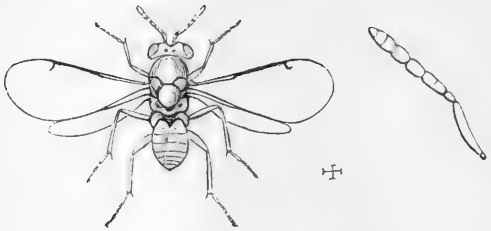
ORMYRUS PUNCTIGER.



APHELINUS BASALIS.

galls as parasites. O. punctiger is not rare in England, but never occurs in abundance; it extends far to the north, and I have found it near the North Cape. Aphelinus basalis and Coccophagus scutellaris represent the Myinidæ: this family is most allied to the Encyrtidæ; the species are all of very small size: some infest Cocci, others Aphides: like the

Encyrtidæ they excel the other Chalcidiæ in their power of leaping, for which they are adapted by the structure of their middle legs.



COCCOPHAGUS SCUTELLARIS.

The following notice of the parasitism of Chalcidiæ refers to what Ratzeburg, by information received from his numerous correspondents, says on that subject in his work, 'Die Ichneumonen,' &c., 1844. He mentions several species as being certainly or probably destroyers of other parasitic insects, and terms them parasites-parasites, which word, being inconveniently long, may be shortened to parparasites. They will, therefore, be considered as hurtful, and not as beneficial insects, supposing that such a distinction is not erroneous, nor owing to limited comprehension of cosmical order.

There is much space for investigation in testing the observations already published, and in adding to them. Reference to synonyms is reserved for a future opportunity. The parasitism of this tribe is somewhat like the distribution of vegetation on the earth, neither unvarying nor without order. One species lives for a year as a parasite in a gall, and when it emerges it finds a new gall, and a victim there ready for its successors; others, when they are of age, may find no habitations like their own for their prospective race, and the law of necessity may impel them to seek for and choose different kinds of dwelling-places.

Eupelmus azureus. Parasitic on Teras terminalis in oak-apples, and on Microgaster dispar: in the latter case it is associated with Eurytoma Abrotani, Pteromalus tenuis, and P. Boucheanus.

Eulophus bombycicornis. On ? Eriogaster lanestris.

E. pilicornis, E. flavomaculatus, E. sesquifasciatus, E. obscuripes, E. Orchestis, E. dendricornis, E. cyclogaster, and Pteromalus Orchestis. On Orchestes Quercus. E. dendricornis, also, on a species of Cynipidæ, that forms galls on the rose.

E. Lophyrorum. On Lophyrus Pini.

E. ramicornis. On Acronycta Aceris.

E. elongatus and E. collega. On Cecidomyia Fagi.

E. skianeuros. Reared from oak-apples.

E. albitarsus. On some species of Cynipidæ.

E. albipes. Came forth from apple-wood, devoured by Eccoptogaster rugulosus, Saperda præusta, and some species of Magdalis, and thereby indicating its parasitism on one or more of these beetles.

E. Padellæ. On Yponomeuta Padella.

E. Phalænarum. On Tortrix viridana.

E. Strobilana. On T. Strobilana, in which Torymus chalybæus had an earlier occurrence.

E. xanthopus. Between 600 and 700 individuals from one pupa of Gastropacha Pini.

E. Hylesinorum. On Hylesinus minimus.

E. leptoneuros and E. pachyneuros. On Coccus Quercus.

E. xanthops. On Orchestes Fagi.

E. Hylotomarum. On Hylotoma Rosæ.

E. geniculatus. On Coccyx resinana.

E. Turionum. On Coccyx Buoliana.

E. Agrilorum. On Agrilus nocivus.

E. galactopus. On Microgaster Vinulæ.

Elachestus leucogramma. On Eccoptogaster rugulosus.

Tetrastichus erythrophthalmus. On ? Tortrix Strobilana.

Isosoma and Decatoma are included by Ratzeburg with Eurytoma.

Eurytoma signata. On Teras terminalis.

E. flavoscapularis. On Hylesinus Fraxini.

E. Abrotani. On the Microgaster of Liparis dispar.

E. Eccoptogastri. On Eccoptogaster rugulosus.

E. Abieticola. On Magdalis violacea.

E. Ischioxanthos. On Hylesinus Fraxini.

Monodontomerus obsoletus. On Liparis auriflua and on Cimbex variabilis, or more probably on Cryptus incubitor, the parasite of the Cimbex.

M. anephelus (obsoletus *var.?*). On Liparis auriflua.

Callimome Forsteri. On Rhodites Rosæ and on Cecidomyia Fagi.

C. longicaudis. On Cynips Quercus-folii and on Teras terminalis.

C. Cyniphidum. On Teras terminalis.

C. rubripes. From galls on trunks of oaks; frequents this kind of gall in England, where it has been described by another name.

C. appropinquans. On Teras terminalis.

C. cultriventris. On Cecidomyia Fagi.

C. Nordlingeri. On Teras terminalis.

C. crinicaudis. On a Cynips.

C. chalybæus. On Tortrix strobilana.

C. difficilis. On Cecidomyia brachynteros.

C. pumilus. On galls on the willow.

Chrysolampus solitarius. On eggs of some Bombycid on fir trees.

Pteromalus guttatus. On Pissodes notatus.

P. Brandtii. On Yponomenta Padella.

P. Lichtensteinii. On Rhodites Rosæ.

P. suspensus. On Cecidomyia Fagi.

P. spinolæ. On ? Bostrichus typographus, or on Hylesinus palliatus.

P. bicaliginosus. On ? Eccoptogaster rugulosus.

P. binævius (binubeculatus, *fœm.?*) On ? Eccoptogaster rugulosus, or Saperda præusta.

P. Fraxini, P. bivestigatus, and P. bininobatus. On Hylesinus Fraxini.

P. punctatus. On eggs of some Bombycid.

P. Cecidomyiæ. On Cecidomyia Pini.

P. Pini. On Gastropacha Pini, on Microgaster of Pieris Cratægi, on Microgaster solitarius, on ? Pissodes notatus.

P. pilosus. On Rhodites Rosæ, or on some parasite of the latter.

P. Puparum. This is the well-known butterfly-chrysalis parasite, and has been lately welcomed in the American States, as counteracting the influence of Pieris Rapæ there.

P. tenuis. On a Microgaster (male ? of P. Boucheanus).

P. Boucheanus. This, the author remarks, is probably a parasite "in the third potency," a third-class circle of life,

appropriating the substance of a second-class circle. He supposes it to be the parasite of a Microgaster, which is the parasite of Anomalon circumflexum, which is the parasite of a moth. But he observes that it sometimes belongs to the second-class circle, or is even a first-class parasite, as it feeds on Hemiteles and on Tachina, and on Gastropacha pinivora.

P. complanatus. On Rhodites Rosæ, or on one of its parasites.

P. Einersbergensis. On Cecidomyia Fagi.

P. Hohenheinensis. From fir cones, inhabited by Tortrix strobilana and by Anobium Abietis.

P. Klugii. On Nematus Erichsonii.

P. pygmæanæ. On Tortrix pygmæana.

P. albinervis. On Yponomeuta Padella.

P. Muscarum. On Musca stabulans, the latter being a parasite of Gastropacha Pini. This is not the golden green Pteromalus frequent on windows, and appearing there in March.

P. Pogonochœri. On Pogonochœrus fascicularis.

P. Braconidis. On Bracon linearis.

P. annulatus. On Coccus racemosus.

P. variabilis. On Yponomeuta cognatella.

P. Dahlbomii. On Pogonochœrus fascicularis and on Pissodes notatus.

P. violaceus. On Magdalis violaceus.

P. flavipalpus. From the gall of a Cynips.

P. Diachymatis and P. Orchestis. On Orchestes viminalis.

P. Neesii and P. leucopezus (= ? P. Hercyniæ). On Teras terminalis, or on one of its parasites.

P. Audouinii. On a Microgaster, and probably on Eurytoma Abrotani.

P. Cordairii. On Teras terminalis.

Platymesopus Westwoodii. On an oak Cynips.

P. Erichsonii. On Teras terminalis.

Ormyrus chalybæus. On T. terminalis, or on one of its parasites.

Styloceras (= Rhaphitelus) Ladenbergii. On Hylesinus Fraxini.

Hybothorax Graffii. On a Myrmeleon.

Encyrtus Boucheanus. On Yponomeuta Evonymella.

E. Eytelweinii. On Coccinella ocellata.
E. duplicatus. On ? Coccus racemosus.
E. atricollis. On Yponomeuta Evonymella and cognatella.
E. zephyrinus and E. sylvius. On Coccus Betulæ-albæ.
E. ? embryophagus. On eggs of a Bombycid on fir trees.

Life-histories of Sawflies. Translated from the Dutch of M. S. C. Snellen van Vollenhoven, President of the Entomological Society of the Netherlands. By J. W. May, Esq.

(Continued from p. 74.)

Nematus Aquilegiæ, *Voll.*

Larva and imago undescribed.

Nematus niger, labro, mandibularum basi, alarum squamulis, femoribus tibiisque flavo-rufis, articulo primo tarsorum posticorum non dilatato.

In the month of May, 1860, I received from my late friend, Dr. Wttewaall, some full-grown sawfly larvæ, which he had taken in Gelderland on Aquilegia vulgaris (the common columbine), and which I succeeded in rearing to the imago state. I afterwards saw similar larvæ on the same species of plant, at Renkum, also in Gelderland. I was unable to meet with the larvæ in Holland, and, as I had omitted to take complete drawings of my first brood, I requested my relative, Mr. R. P. van Vollenhoven, residing at Renkum, to send me some similar larvæ in case he should be able to find any, with which request he obligingly complied: this was in the spring of 1866. I am consequently enabled to give the history of the development of this species, with the exception of a description of the egg. No doubt the egg is deposited in the epidermis of a leaf, or the petiole, very early in the spring.

On the 8th of May I received seven larvæ from Renkum: they were not of the same age, but none had yet undergone the last change of skin. The smallest was 5 mm. long; they had twenty feet. The head was dark olive-brown, the thoracic legs being of a paler tint of the same colour; one

had the head and feet very nearly black. The body was yellowish green on the back, the ventral surface and anal extremity being paler (see fig. 1). On the 15th of May some had moulted for the last time: they retained the colour which they then assumed until they began to spin up, when they were about 1.6 centimetre long. The head was shining, pale olive-brown or brownish green; the sutures of the vertex somewhat greener; the mandibles somewhat browner, with a black border to the serratures; maxillæ and palpi greener. The eyes were inserted in round black spots; the vertex was beset with short, stiff little hairs (fig. 4). The body was pale green, of a somewhat less yellow tint than before; not only were the abdominal and anal legs of that colour, but even the thoracic legs also, which were glassy green, with brown claws. Not only did the legs of the larvæ at this stage differ from those of the younger larvæ in colour, but also, to a certain extent, in form; and in order to show this more clearly I have given, at fig. 3, a magnified drawing of the two placed next to each other. From this it will be seen that the legs of the young larvæ have a smooth brown-margined space on the femur, where the skin appears to be thinner than on the sides. Can it be that the body of the younger larvæ presses more upon the feet, which causes these latter always to form a sharp angle between the tibia and femur, so that the tibiæ are continually pressed against the upper part of the femora? I omitted to observe this point in the living animal; it might, however, afford some explanation of the origin of this peculiar spot. The abdomen was much wrinkled on the dorsum, more especially on the anterior segments: on each segment, from the first to the sixth, were two transverse rows of extremely minute spines of a dark green colour. The spiracles were very small, and deep brown.

The most advanced larva of those which I had received from Renkum spun up on the 18th of May; those sent by Dr. Wttewaal did not spin up till the 27th of May, and in all cases at the bottom of the box in which they were kept. Under natural conditions they probably form their cocoon on the surface of the ground, against or among the stems of the columbine. Some of the cocoons were deep yellow; others were straw-coloured, with a tinge of green: they were all

shining, single, and somewhat thin. On the 27th I cut open the cocoon spun on the 18th, and found in it a female pupa of a greenish tint: eyes black, antennæ and legs transparent white, wing-cases yellow. At the apex of the abdomen, where the saw was distinctly perceptible, was the shrivelled-up larval skin. By the evening of the 1st of June the pupa in question had become of a blackish green colour; and on the morning of the 2nd the head, thorax and dorsum of the abdomen, as also the antennæ, were black; the ventral surface was covered with black transverse plates; the sides and interstices of the abdomen (the skin between the said plates), as also the wings and the sheath of the saw, were sordid olive-green; legs very pale ferruginous. The little animal was lying on its back, and drew up its legs from time to time, from which it was concluded that it would make its appearance in the winged state on the following day; which proved to be the case, for on the morning of the 3rd I found the wasp had shed the pupa skin: two days later two others emerged from the cocoon, and another on the day after. The insect which I had taken out of the cocoon in the pupa state did not attain its full coloration during the first two days (the black was decidedly of an olive tint), while the others made their appearance entirely of a deep shining black: it seems to follow from this that the imago remains a day or two in the cocoon after shedding the last skin.

The description of the imago is as follows:—the whole body is shining black with the exception of the trophi, the legs, the squamulæ, and, in the case of some individuals, the anus and the anal processes; the upper lip, which is non-emarginate, is reddish yellow, as are also the bases of the mandibles, the apices of these latter being black; the four palpi are pale greenish yellow, the base of the first joint being black; the labium is also black; the legs are pale orange, the following parts being black or cinereous, namely, the coxæ, some spots at the base of the anterior and intermediate femora, the four last joints of the tarsi of the first and second pair, the entire tarsi, and the apex of the tibiæ of the posterior pair. In some examples the anterior legs are somewhat more yellowish; in others distinctly red. The females are larger and—especially as regards the abdomen—broader than the males; besides which there is a difference

in the antennæ, which in the latter sex are somewhat thicker than in the former (fig. 8). The seventh abdominal segment in the male has a flat, rounded triangular plate; the wings are smoke-coloured; the costa and stigma are pale brown; the other nervures black. I find no description of this species in any book to which I have access. It has much resemblance to Nematus sulcipes, *Fall.*, which I only know from Hartig's description (p. 186): the latter is, however, twice the size of our insect, has a blue-black stigma, and, apparently, the first joint of the posterior tarsi somewhat broader than usual; the name, moreover, seems to imply a furrow in the femur or coxa, which I do not perceive in the present species. With regard to its habits this new species agrees with the group of Crassicornis, Vallator, and Abbreviatus.

It is high time that some entomologist should undertake the grouping and describing of all the unnamed Nemati which are to be met with in various collections.

Irish Captures in 1870 *and* 1871.

By the Hon. Emily Lawless.

(Concluded from p. 78.)

Geometræ.

O. Sambucata.—Very common. Garinish Island, Kerry; also at St. Clerans and its neighbourhood, Galway.

C. Elinguaria.—Very common. Garinish Island, Kerry; also at St. Clerans and its neighbourhood, Galway.

B. Repandata.—This and Rhomboidaria I find common everywhere. I captured a variety in Galway, which I think must be Conversaria.

P. Cytisaria.—Took ten of this on Garinish Island, Kerry; end of June, 1870.

G. Papilionaria.—Noticed some larvæ, which I believe to have been this species, on Garinish Island, Kerry, 1870, but cannot say for certain, as I was unable to rear them. The imago I took some years since at Lyons, Co. Kildare.

T. Lactearia.—Very common. Garinish Island, Kerry; and St. Clerans, Galway.

H. Thymaria.—Same localities; but rarer.

A. Scutulata.—Very common. Garinish Island, Kerry.

A. Remutata.—Very common. Garinish Island, Kerry.

S. Clathrata.—This, with F. Atomaria and E. Palumbaria, flies on every bog and heath in Kerry and Galway.

L. Adustata.—St. Clerans, Galway. Very common. Also Garinish Island, Kerry; but less abundant.

S. Marginata.—Common everywhere.

L. Didymata.—This, with Pectinaria and Albulata, is common everywhere I have collected in Kerry and Galway.

E. Centaureata.—Very common on Garinish Island, Kerry. June, 1870.

E. Castigata.—Very common on Garinish Island, Kerry. June, 1870. Also at St. Clerans and its neighbourhood, Galway.

E. Nanata.—Very common on Garinish Island, Kerry. June, 1870. Also at St. Clerans and its neighbourhood, Galway.

E. Subnotata.—In immense profusion on Garinish Island, Kerry. I captured other Eupitheciæ, but am not quite sure what species to refer them to.

M. Albicillata.—Occasionally. St. Clerans, Galway. I took this and the following in boundless profusion on Garinish and neighbouring islands, Kerry; but though I searched assiduously for them and many others on the *mainland*, which was at one part only separated by a narrow sound, I never found any but the most abundant species common to both; indeed, the shores of the bay were singularly barren in Lepidoptera of *all* sorts, so that it would appear as if many species lingered on in the islands, where their condition of life remained unchanged, after they had been driven, by the destruction of the woods or the partial cultivation of the soil, from the neighbouring shores of the bay; and I have no doubt that a thorough exploration of islands off this coast—that have been still longer separated from any mainland, such as Scariff, Dinish, above all the *Skelligs*, and many others—would result in the discovery of Lepidoptera new to Britain; possibly, like the little group of plants that still linger on these shores, of a South European type.

M. Hastata.—Rare. St. Clerans, Galway. Very common indeed; early in July. Garinish Island, Kerry.

C. Ferrugata.—Common everywhere.

S. Undulata.—Not uncommon; St. Clerans, Galway. Very common; Garinish Island, Kerry.

C. Testata and *Populata.*—Common; St. Clerans, Galway. Very common; Garinish Island, Kerry.

A. Plagiata.—Abundant in woods near St. Clerans and neighbourhood, Galway.

T. Chærophyllata. Common everywhere in Galway and Kerry.

Cuspidates.

P. Lacertula.—Very plentiful. Garinish Island, Kerry; end of June. I took ten one night. Also a few in Galway last season.

D. Vinula.—Common everywhere, of course.

N. Camelina.—Not uncommon. Galway. I met with a large number three years ago, near Kecep, Connemara.

Noctuæ.

In this group I made scarcely any captures, as, from circumstances, I was able to do but very little sugaring or other night-capturing in Kerry, and absolutely *none* in Galway; so that almost the only Noctuæ I met with were a few day-flying species.

T. Derasa.—Common (but not so much so as Batis). Garinish Island, Kerry.

T. Batis.—Very abundant, indeed, on Garinish Island, flying over flowers, near the sea. One night I took a large number at sugar.

C. Duplaris.—I took ten of this uncommon species in one night (end of June, 1870), in a small wood on Garinish Island, flying slowly over honeysuckle.

T. Fimbria.—Common. Garinish Island, Kerry; end of June.

N. Triangulum.—Common. Garinish Island, Kerry; end of June.

N. Brunnea.—Common. Garinish Island, Kerry; early in July.

D. Capsincola.—Common on all the coasts of Kerry, especially near Derrynane Abbey, flying over Silene. I met with no other Dianthœcia.

H. Serena.—In immense profusion all June, on Garinish

Island, Kerry. A few were attracted into the house by a lamp last season, at St. Clerans, Galway.

M. Oxyacanthæ.—This, with P. Meticulosa and E. Lucipara, I have found common everywhere.

H. Dentina.—Very common in Kerry.

H. Pisi.—Very common in Kerry.

H. Oleracea.—Less common than the foregoing.

A. Myrtilli.—On most Galway heaths. Took it in profusion at Clonbrock, near Ballinasloe.

H. Unca.—Common on one piece of boggy ground, near St. Clerans, Galway, last season. Took it three years ago in immense numbers, near the Killeries, Connemara.

P. Festucæ.—Not uncommon on Silene maritima, on the very edge of the sea, Kerry. Very abundant; Connemara, in similar localities.

P. Interrogationis.—This is, I think, the first record of an Irish capture of this insect. I noticed it last season on the 4th of July, flying in some numbers over heather, in a wood skirting a large bog, at Clonbrock, near Ballinasloe, Galway; but having no entomological apparatus with me at the time, I was only able to secure a single specimen. Its mode of flight seemed much like that of the common Gamma. The specimen I took has the silver mark considerably larger, and altogether varies a good deal from the typical *English* form of Interrogationis.

E. Mi.—This, with Ænea, I have taken on all the Kerry and Galway bogs. Glyphica seems rarer.

I think I have now enumerated all the Lepidoptera I met with of any interest. Had circumstances enabled me to do more in the way of night-mothing and larvæ-rearing, and had my time been less limited, I have no doubt the list could have been largely increased.

EMILY LAWLESS.

Entomological Notes, Captures, &c.

Hybernating Moths and Butterflies.—I send the following extract from my journal of twenty years ago. I then lived in a rambling old house in the country; I dare say the examination of the roofs of any such would repay the young

entomologist. I shall never forget the surprise and pleasure I experienced at finding so many fine specimens in mid-winter. "1852. Jan. 12.—Got through the trap-door on to the roof of my house to clear away the snow that had drifted through the tiles: found seven beautiful specimens of the herald moth sticking on the rafters; five pretty green carpet moths (Cidaria miata—I have found the larvæ of this moth on scarlet-beans in gardens, and bred it freely); a number of a curious rough-winged moth (Hypena rostralis); several small yellowish long-winged moths, that sat up like cats (Gracilaria Syringella?); plenty of small tortoiseshell butterflies; and one very large wasp.—*D. T. Button; Gravesend.*

Early appearance of Abraxas Grossulariata.—Early this month I had the pleasure of obtaining pupæ of the currant moth. They were found reposing beneath the protective rim of a large garden-pot, containing stonecrop; and, much to my surprise, one of the pupæ, on the 12th inst., changed to an imago. These interesting chrysalids, and the imago, were shown by me at the ensuing Wednesday meeting of the Eastern Entomological Society. I have also taken the ichneumon of P. Bucephala,—insects that amply repay any amount of trouble attendant upon "setting out."—*George Pratt; Lower Clapton, March* 20, 1872.

Note on Cynips lignicola.—Two supposed parasites, a Callimome and a Decatoma, have been long ago recorded as inhabiting the Devonshire gall. I have lately received from Mr. Newman two other species reared from these galls; they have not yet been recorded as British, and may be new species. One is a Eurytoma; the other a Callimome. The latter has been also reared by Mr. Fitch.—*Francis Walker.*

Deiopeia pulchella in the Isle of Wight.—I took a specimen of Deiopeia pulchella by beating the coarse herbage in a field by the shore, about a mile west of Ventnor, in the Isle of Wight, on Thursday, August 31, 1871.—*James Kirkby; Trentham, Nottingham, February* 29, 1872.

Eremobia ochroleuca in the Isle of Wight.—I also took Ochroleuca, either near the same place on the same day, or between Easton and the Needles on the previous day; but, not recognizing it, I did not make a memorandum of it. Is not the Isle of Wight a new locality for the latter?—*Id.*

Lepidoptera of Ireland.—I do not quite understand a

remark of the Hon. Emily Lawless, printed in your April 'Entomologist,' *viz.*, that "C. Davus does not occur in cultivated districts." Westmeath—though interspersed with lakes, bogs and plantations—is highly cultivated, yet C. Davus occurs in our neighbourhood. I can quite endorse her statement about Semele, of which I have never captured or beheld a living specimen, though Egeria, Megæra, and Janira abound. Tithonus is also unknown in Westmeath as a native butterfly, nor is Sinapis found. Dr. Battersby captured Semele last summer, 1871, at Killarney, having accidentally discovered a habitat for this insect. Our list of native moths far exceeds that of our butterflies. Ocellatus, Elpenor, Porcellus, Bombyliformis, Tiliaria, Ophiogramma, Conspersa, Petrificata, Plusia Interrogationis, Bractea, Festucæ and V-aureum, H. Unca and P. Stramentalis, Adela Cuprella and the lovely Thyatira Batis and Derasa, Calocampa Vetusta and Exoleta, have been taken within half a mile of our house, upon our own grounds.—*F. J. Battersby; Cromlyn, Rathowen, April* 3, 1871.

Xylomiges conspicillaris in Gloucestershire.—On Monday, the 8th inst., I had a fine specimen of X. conspicillaris brought me by a working collector of Cheltenham. It emerged the previous week from a pupa dug in that neighbourhood, and he obtained it from a lad there who does a little "butterfly catching," &c., but is quite innocent of scientific collecting, so much so, indeed, that he was on the point of throwing this specimen away, when his friend called and told him he had a good thing in it. It was unset when I received it, but is now on my boards, and will shortly appear in the cabinet of the Rev. Mr. White, of Stonehouse. —*H. W. Marsden; Gloucester, April* 12, 1872.

Xylomiges conspicillaris at Malvern.—This has been quite a red-letter year with the above species at Malvern and the Link, something like thirteen specimens having been bred by my brother entomologists and myself, five of which have fallen to my share: *i.e.* one on the 10th of this month, two on the 11th, one on the 12th, and one on the 13th. You will, no doubt, receive notice of the others.—*Thomas Goodyear; Church Road, Malvern Link, April* 19, 1872.

On the Distribution and Habits of Photedes Captiuncula. —I generally take this species sparingly at Marsden Rocks,

which is situated two miles from here, on the cliffs that overhang the sea-coast. It has also been met with at Castle-Eden Dene, by Mr. George Wailes, of Newcastle, and Mr. Morrison, at Chester-le-Street; it is also said to be common at Urpeth. I am of opinion that if the habits of the insect were better known it would be found to occur in other localities as well as those enumerated. It is a local species, and when on the wing reminds one much of the Crambi. The only receipt I can give to find it is as follows:—Let the entomologist select a meadow, field, or a piece of waste ground, with a well-mixed short herbage that is late in being mown, or better if not mown at all; then take his net in hand about the middle of July (it does not occur here before August, and is a day-flying species, only to be obtained between the hours of 2 to 5 P.M.); then let him examine every insect he sees that is flying in a quick zigzag direction, pitching on the grass every twenty yards, and it is not improbable that some of those rather common-looking insects may be the object of his search; but should he not succeed in finding one between the hours mentioned above, his chance is a bad one for that day.—*Christopher Eales;* 21, *Grace Street, South Shields, March* 25, 1872.

Lycæna Argiolus.—In Mr. Newman's 'British Butterflies' (p. 156), the 7th of May is recorded as an early date for the appearance of the azure blue, and the 8th of April appears to be considered as the earliest date on record for its appearance. I beg to state that I took a fine specimen of this insect at rest on the 5th of April last year, and saw a second specimen on the 9th of the same month. This year I saw a specimen on the 12th and another on the 15th of April. In 1870, I believe I first saw the azure blue on the 16th of April; but in this instance I am trusting to memory, having failed to notice the date in my diary.—*M. Macmillan; Castle Cary, Somerset, April* 20, 1872.

Vanessa Antiopa near Ipswich.—On March the 10th of this year a specimen of Vanessa Antiopa was captured here, flying across a field, by a little boy. It is now in the possession of an intimate friend of mine. It is a fair specimen, but evidently hybernated.—*C. F. Long, Medical Superintendent; Ipswich Borough Asylum, March* 20, 1872.

Sphinx Pinastri at Crewkerne.—Perhaps it may interest

you to know that there exists in the Institute, at Crewkerne, a specimen of Sphinx Pinastri, taken (I think about the year 1863) by Miss Bicknell, of Hinton St. George, Somerset, at rest on a tree trunk. I had the pleasure of seeing this specimen both in 1868 and 1869, whilst visiting at Crewkerne. For my own part I have no doubt that the insect is purely British.—*A. J. Spiller; Wimborne, Dorset.*

Dasycampa rubiginea at Cobham.—Last night I was fortunate enough to take a fairly good specimen of Dasycampa rubiginea (of course hybernated, I suppose) on the blossoms of a greengage tree; the wind was north-west, with a cold rain, and there were scarcely any moths out. I took a very good specimen of D. rubiginea here, in October, 1870, on blackberry.—*Waldegrave; Bookham Lodge, Cobham, Surrey.*

South London Entomological Society, 26 & 28, *Newington Causeway, S.E.*—This Society, which meets every Wednesday at 8 P.M., has twenty-three members on the books. Papers upon Entomological subjects will be read on Wednesday, May 1st. New members and visitors (to be introduced by members) are invited.—*J. P. Barrett;* 33, *Radnor Street, Peckham, S.E.*

Death of Mr. Horne.—Mr. Charles Horne, a well-known and much-respected zoologist and entomologist, whose friendship I have enjoyed almost continuously from his boyhood, died on March 28th, at his residence, Innisfail, Beulah Hill, Norwood, after a few days illness, at the age of forty-eight. He was taken ill at the meeting of the Royal Horticultural Society, held on the 20th March, and never rallied. He was a member of the Scientific Committee of that Society, and also of the Asiatic and other Societies. During the early part of his residence in India, in the Bengal Civil Service, he made large collections in Natural History; but these were unfortunately destroyed during the mutiny. Undaunted by this calamity he began again at its close, and succeeded in forming a valuable museum, especially of Entomology. He was a frequent contributor to the 'Zoologist,' more particularly on the poisonous snakes of India, which he studied very successfully, and published many valuable remedies for their bites.—*Edward Newman.*

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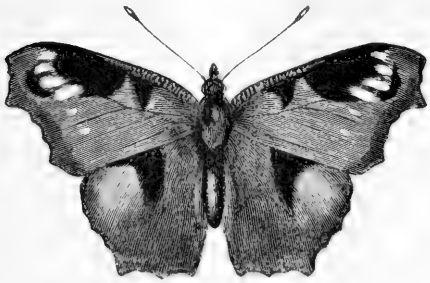
Answers to Correspondents.



VANESSA IO (VARIETY).

Variety of Vanessa Io.—In the fore wings the large black costal spot is united to and fused with the apical eye-like spot, the three white marks in which are contiguous and much larger than in the type; the purple surrounding these white marks is scarcely perceptible: in the hind wings the eye is completely obliterated, and its site occupied by an ill-defined pale blotch. This specimen has been kindly lent me by Mr. Bond for figuring in the 'Entomologist.' It was bred from a larva found near Lea Bridge. Mr. Bond received it from Mr. Eedle, who had it from the man who bred it.

C. Villica.—I have taken several larvæ of Villica here, all feeding on furze. Is not this unusual? I mention this as others, who have been unsuccessful in finding Villica, may now find it on the above-mentioned food-plant.—[*Rev.*] *A. C. Hervey, Pokesdown, Ringwood.*

I never recollect hearing of Villica feeding on furze.

E. Lanestris.—Last year I reared a considerable number of larvæ of Lanestris. As yet only three imagos have emerged. The pupæ are all healthy, and as transparent-looking about the wing-cases as they were at first. It seems as if they were going to pass a second winter in the pupa state. Is this a common thing for them to do?—[*Rev.*] *A. C. Hervey.*

It is not uncommon.

Grease on Lepidoptera.—Can you kindly inform me through the 'Entomologist' if there is any effectual means of checking and removing this? Some of my own specimens have become so saturated that I have had to remove them from the cabinet. The evil always seems to me to attack the more valuable insects. My cabinet is built of teak, and I can discover no traces of resin or damp.—*C. Lovekin;* 10, *Darnley Road, Notting Hill.*

I believe the best way to remove grease is by soaking the specimens thoroughly in benzole, and then drying them as thoroughly: the operation often requires repetition. Cabinets should be made only of mahogany. I often see cheap cabinets advertised, but I consider a cheap cabinet the most expensive luxury in which an entomologist can possibly indulge.

Halophila prasinana and bicolorana: Newman's British Butterflies.—(1) I hope you will excuse the liberty I take in thus addressing you; but being in possession of a copy of your very excellent work on Moths, and being unable to find a description therein of the green and scarce green-silver lines, I thought that perhaps they were unintentionally omitted. (2) I shall feel much obliged if you will inform me, at your leisure, if your description of Butterflies, uniform with the Moths, is ready, and price.—*Edward Sutton;* 134, *Falmouth Road, New Kent Road.*

(1) These two moths, Hylophila prasinana and H. bicolorana of Staudinger's Catalogue (2nd ed. p. 51), have puzzled and perplexed entomologists more than any others. Staudinger has placed them in company with Sarrothripa undulana and Halias Clorana, at the head of the Bombyces, immediately after the Sphinges, which terminate with Zygæna and Naclia. In Doubleday's 'Synonymic Catalogue' we find the genus in question removed altogether

from both the Sphinges and Bombyces, and placed at the head of the Tortrices. In my 'Illustrated Natural History of British Moths' I do not include the Tortrices, because they are usually considered to belong to the Micro-Lepidoptera, and my work applies only to the Macro-Lepidoptera: moreover, a Mr. S. J. Wilkinson has published a work on the British Tortrices, to which I have alluded in my preface, and I scrupulously abstain from interfering with any department of Entomology which another has selected for elucidation. The omission of these two moths was, therefore, intentional. (2) The 'Illustrated Natural History of British Butterflies' was published early last year, at seven shillings and sixpence.

Early occurrence of Ophion obscurus.—Exclusive of Lepidoptera, the insects that most constantly resort to a light are Bradycellus fulvus, Aphodius rufipes, and Ophion luteus; and it may be supposed that these three transact their business in the night, and rest during the day. The only living specimen that I have seen of Acentropus niveus came to me in like manner. Ophion obscurus was attracted by a candle on the 2nd of March; its early appearance corresponding with the unusual mildness of the season.—*Francis Walker.*

American Aphides and Cocci.—In the 'Transactions of the American Entomological Society,' vol. i. p. 283, Dr. Shimer has founded a new genus of Aphides, which he names Hamameliotes, and describes two species—H. cornu and H. spinosus: they both feed on Hamamelis Virginica (witch hazel). The first forms obliquely-conical or horn-like galls on the under side of the leaves; the other forms spiny galls, which are transformed fruit. The first species may be the Byrsocrypta Hamamelidis of Fitch; the second is more remarkable on account of the change of fruit into galls, and no like metamorphose has been observed to be caused by European Aphides. The same author gives a full description of Coccus conchiformis, *Gmel.*, which has been transferred from Europe to America, and is there more destructive to apple-trees than in its earlier region. But there is a remedy for this evil in America, which remedy does not occur in Europe, and it is in the person of Acarus? Malus, *Shimer*, which uses the Cocci for food, and rapidly diminishes their

numbers. Dr. Shimer constructs a new genus, Lepidoraphis, for this species, and proposes for it a new family, Lepidoraphidæ, which he adds to the two previous families, Dactylosphæridæ and Coccidæ.—*Francis Walker.*

Ravages of the Winter Moth.—I enclose you a box of larvæ which are doing an immense amount of harm to our cherry orchards now. Last season, about this time, the trees (over 1000) in a neighbour's orchard were entirely stripped of leaves. Our orchard, which is about the same size and only separated by a field, was not nearly so bad, yet there were enough to deface the trees considerably. The orchard which was most attacked last year is again very full of the caterpillar, and our neighbour is having the trees washed with a mixture, the same as we use for hop-washing, which effectually destroys Aphides; but I think as the larvæ spin the leaves together they will not be much hurt by it. Would you kindly tell me the name of the moth they will come to, and impart any information respecting them? Do you know of any plan of destroying them? I shall try and study their habits myself this year.—*W. J. Skelton; The Bounds, Herne Hill, near Faversham, May* 3, 1872.

The larvæ sent are those of the winter moth, Cheimatobia brumata. I have given a full life-history of this insect at p. 106 of the 'British Moths,' but will recapitulate a few of the leading particulars. The eggs are laid during November and December in the crevices of the bark of fruit trees, or even on the rind of the small twigs: when laid they are greenish white, but become orange, and subsequently brown before hatching, which takes place about the end of April. The caterpillars commence their destructive career by eating the young unexpanded buds. At this time of year bullfinches, sparrows and titmice render the most important service to the gardener by eating these buds, and thus destroying this little pest of the orchard and garden. When the leaves have begun to expand each caterpillar draws two or three together, and unites them by a silken web, coming out partially to feed, and retiring again within the domicile when satisfied. All the passerine birds feed on these larvæ: the young nestlings are supplied with no other support than the larvæ of moths, and these of the winter moth, being the most abundant, are most in demand; millions upon millions are pulled out of their

retreats by the busy beaks of the assiduous parents, and transferred to the gaping beaks of the ever-expectant little ones. Gilbert White and others have counted the number of times in an hour that these little benefactors have returned to their nest laden with larvæ. We may assist the birds in this labour of love to man by pouring coal-tar on the ground at a little distance from the trunk, or by painting the trunk itself with anything sticky,—a mixture of Stockholm tar and cart-grease in equal quantities has been found to answer best. The larvæ may be beaten down or shaken down, and, instinctively returning to the trunk as if drawn by a magnet, they are arrested on their way upwards by the mixture, which is always fatal to them, clogging their spiracles and inducing speedy death. When the larvæ are full fed they spontaneously descend the trees in order to turn to chrysalids in the earth about their roots. By digging and loosening this earth the chrysalids are again exposed to the birds, and also to the mice, which are prompt to avail themselves of the opportunity. On the approach of winter the female moths, which are queer spider-like creatures without wings, come out of the chrysalids, and mount the trunks for the purpose of laying their eggs. The same remedy of a sticky mixture, applied as already recommended, will effectually arrest their upward progress.

New Names for European Butterflies.—What are we coming to, when a man of Mr. Kirby's reputation devotes an entire page of the Ent. Soc. Proceedings to an attempt to upset the name of our long-established favourite *Colias Hyale*, with nothing to offer in its stead but the ridiculously inappropriate title of *Sareptensis?* This is reducing us to the dry bones of Science with a vengeance. What are names worth but as means of recording and identifying the objects they represent? If a name conveys no object to the mind it is useless. Do the entomologists of the present day really think they are advancing the cause of true science by this incessant and uncalled-for change of well-established names? rendering all previous records of the species unintelligible to a future generation without going back upon the old synonymy, and learning to know the insect by two or three names instead of one. It is pure pedantry, instead of science, this hobby of the closet naturalists: making the names of more consequence

than the objects which they represent, and defeating many of the best reasons for having names at all.—*R. F. Logan; Duddingston, Edinburgh, April* 8, 1872.

What is the English type of Xylomiges conspicillaris?—May I invite your attention to your omission of Gloucestershire in your list of localities for Xylomiges conspicillaris in 'British Moths,' p. 288? I should also like to know what the English type of this species really is. The text of your description would lead me to suppose that the lowest of the three figures, given on p. 288 of 'British Moths,' is that most generally met with in this country. I have had a long series of Continental specimens, hardly two of which are alike, and your three figures are very true, as giving the three leading types; but I have only seen three or four specimens that I know of a certainty to be English. These are all Gloucestershire captures, and are all exactly alike, except in size (which varies slightly), and agree with the top one of your figures. They are, too, more intense in their markings than any European specimen I have seen, although many of these approach very nearly to the Gloucesterians. What are the Worcester and other captures like?—*H. W. Marsden; Gloucester, April* 12, 1872.

I am not sufficiently acquainted with this species to pronounce with authority on this question. I have seen five or six specimens like the upper figure, and only one or two like the middle or lower, but this evidence is insufficient for forming a decided opinion. I have not seen intermediate varieties; and I may say that Mr. Willis has represented the three forms in question with marvellous accuracy.

Substitute for Camphor.—Can you tell me a good substitute for camphor in my insect-cabinet? I think camphor has a tendency to make the insect grease; benzine causes a dampness, which relaxes them, I think. If you can assist me I shall feel greatly obliged.—*F. Boyes; Beverley, March* 26, 1872.

Camphor has a decided tendency to make insects grease. I was not aware of the objection to benzine; but if you can do without either it is far better to do so.

Typhœus vulgaris on the Sand-hills.—There is a kind of horned beetle common here; it burrows in the sand-hills. Perhaps the accompanying sketch may give you an idea of

it; there is a horn on each side, and one over the head. Would you like a specimen?—[*Rev.*] *A. C. Hervey.*

The beetle is Typhœus vulgaris, one of the coprophagous lamellicorns; it is common on all our heaths in Surrey. I am obliged for the offer of this insect and of Medea, but I have plenty of both.

Food of Russula.—Russula feeds best upon lettuce, and so does the wood tiger. I have bred them freely from eggs, a continuity of broods in captivity, at least three broods in a year: in every respect, according to my observation, it is similar to Caja in confinement. A friend of mine was breeding a lot of Caja at Christmas, last year, and only in a regular temperature in his own house. The larva of Russula makes up in the same way as Caja does. I never found the larva of Russula outside, so cannot speak on that point. —*J. B. Hodgkinson.*

Sirex Juvencus.—The insects sent by I. K. have usually been called Sirex Juvencus. The great discrepancy in size has frequently been noticed, but no entomologist had considered size as justifying the establishing of species in wood-feeding insects. Three names have, however, been given to these blue-bodied Sirices:—Juvencus, Nigricornis, and Abietis. I express no opinion of the specific difference of the insects to which they have been applied.

Anthophora retusa.—I should be much obliged if you could name the enclosed bee for me in the 'Entomologist.' They literally swarm on a bank about two miles from here, the ground-ivy seeming to afford great attraction. They make separate holes in the bank, and become very furious when any one approaches.—*G. H. Raynor; St. John's College, Cambridge.*

"This bee is found in all parts of the United Kingdom; in some situations it literally swarms: there is a colony of this bee in the chalk-pits at Northfleet, of such amazing extent, that in the middle of April a dark flickering shadow is cast on the ground from the countless numbers assembled." Thus says Mr. Smith in his admirable 'Catalogue of British Bees,' wherein he names this species Anthophora Acervorum, but I prefer giving it the more usual name of Anthophora retusa; not that I have gone into the matter of priority, or have any inclination to do so, but because every entomologist will

understand me when using a specific name settled by the great monographer of bees, William Kirby, and adopted in this country for three-quarters of a century. I give Mr. Smith full credit for his ingenuity and research in discovering a second and perhaps earlier name.

Miners of Turnip-leaves.—These are not the larvæ of Micro-Lepidoptera as M. P. suggests, but of Diptera. At p. 84 of his 'Farm Insects,' Mr. Curtis has figured two species which have this habit, together with the larva, pupa, and mine of the former. Mr. Curtis adds: "The turnip-leaf miners may generate diseases in cattle where they greatly abound. The one called Drosophila flava causes large blisters on the upper sides of the leaves, which contain the maggots; the other, named Phytomyza nigricornis, is the parent of a maggot which eats galleries in the under side of the leaves." Mr. Curtis gives no remedy; neither can I suggest one.

Weevil on Rose-trees.—The beetle John Woods has sent is Otiorhynchus scabrosus: it appears to be unusually abundant and destructive this year; it is an intolerable nuisance; and I know of no remedy but picking the beetles off by hand, and in the night by the light of a lantern: it is a tedious, but safe and effectual, process. I have long declined to recommend "something that will destroy the vermin." I have sent a similar reply to the 'Field,' as well as to several individuals who have consulted me.

The Unicorn Fly.—L. C. is informed that this formidable-looking insect is quite harmless. Mr. Verrall has named my specimens Bombylius discolor of Mikan. We used to call it Bombylius medius; and it is so called by Mr. Walker, who describes it at p. 82 of the first volume of his Diptera. It is not uncommon, invariably appearing in the spring, and occurring as long as the primroses are in blossom.

Early Butterflies and Humming-bird Hawk-Moths.—Please not to send any more records on these subjects. I do not like to pass them over without notice, but they are really of no value in a scientific point of view.

Erratum.—The note in last month's 'Entomologist' on G. Papilionaria (Entom. vi. 85), signed *J. R. S. Clifford*, should have borne the signature *James Bryant*.

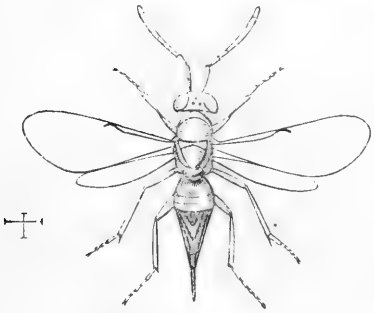
EDWARD NEWMAN.

Economy of Chalcidiæ. By FRANCIS WALKER, Esq., F.L.S.

(Continued from p. 94.)

The accompanying three figures represent Ericydnus strigosus, Cerchysius Urocerus, and Cercobelus Jugæus. The first seems more allied to the Encyrtidæ than to any other Chalcidiæ, but is distinguished from all other species of

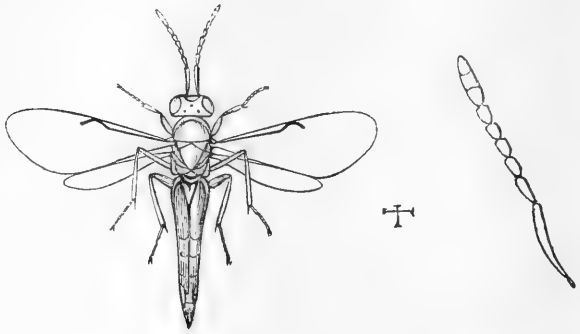
ERICYDNUS STRIGOSUS.



CERCHYSIUS UROCERUS.

that family by its long ulna, the extreme shortness of that part of the wing-vein being one of the chief distinctive characters of the Encyrtidæ. In the Chalcididæ the genus Halticella has some resemblance to the Encyrtidæ in the shortness of the ulna and in the low insertion of the antennæ. The second and third figures belong to the Encyrtidæ, and

the projecting oviduct is one of the characteristics wherein Cerchysius differs from the other Encyrtidæ. The third is



CERCOBELUS JUGÆUS.

established as a genus on account of the fewness of the joints of the antennæ, and on account of the compressed abdomen.

Entomology at Leominster. By THOMAS P. LUCAS, M.B.

Leominster is a small market-town in Herefordshire, dull and monotonous, excepting on the ever-eventful market-day. Once the richest priory in the kingdom, its old church is but a portion of the grand cathedral, which formerly defended the heads of devout worshippers. The beautiful lake—which long ago spread its crystal waters beneath the canopied heaven, and afforded recreation to the skilled oarsman or adept fisherman—has disappeared: middle-aged men remember a vast extent of marsh land, formerly its bed, where Artemis was wont to linger; but now nearly all this has disappeared before scientific agriculture and its concomitant drainage. Once the classical Acis was common here, and afforded amusement to one of the fathers of Entomology; but now, alas, both have retired from the scene; the one to reward the diligent searcher no more; the other still, we rejoice to say, abiding to instruct and encourage the student of Nature. But all the rarities have not departed from

Leominster; and though I need not here repeat names well known to the scientific world, I may, perhaps, be allowed to refer to a few insects I have taken during the few months of my residence at Leominster, confining myself, excepting when otherwise stated, to the year that has just departed.

During the winter months I obtained, by digging, nearly three hundred pupæ. Four Tæniocampas—Stabilis, Instabilis, Gothica, and Cruda,—were very common at the roots of oaks, especially in Berrington Park. Munda, also, occurred sparingly. A few Eupithecia abbreviata had spun their slight earthen cocoons at the root of a hawthorn tree. Leucophearia had taken up its winter-quarters among tufts of grass. At the foot of a poplar I turned up one Smerinthus Populi, one Prodromaria, two Pilosaria, and three other chrysalids. Betularia and Tiliæ were not uncommon at roots of elm. Ocellatus and Pisi were in company at the root of a willow. Oleracea, Pronuba and Orbona occurred among rubbish at the bottom of a garden hedge-row. I also took Typica, Augur, Segetum, and the ubiquitous Brassicæ.

War to the knife with the bobbies, or an occasional *tip*,—the latter availed me best; so being quietly passed by these officials, and even occasionally assisted by them to a half-torn or rubbed insect, I ventured to brave the wrath or remarks of the passers by,—no friends to, or admirers of, science,—in order to take a few sleeping beauties from the lamp-posts: assuredly we had the best of it, securing a goodly series of rarities; whilst our friends had to endure all the torments, aches, and pains,—not the "pleasures" of imagination,—on making the discovery that I was collecting moths to make into pills and healing draughts for my patients. In February, Rupicapraria, Æscularia, Progemmaria and Pilosaria were common. In March my best take was Prodromaria, of which I captured four specimens in one night. April, however, was the best month at the lamp-posts. The weather was particularly warm for the season of the year, and consequently many insects had emerged before their time. On the 17th I took Eupithecia consignata and E. Lariciata; the former I failed to take on the trunks of apple trees, only seeing it once in such a situation, and then missing it, not having my net. On the eventful 17th I also took Scotosia certata, the first record of this insect, I

believe, in Herefordshire: I took four specimens, and missed others; it was much commoner than its ally, Dubitata, which also occurred. Illustraria occasionally put in an appearance; but Illunaria was as a hundred to one in comparison, and nearly three times as large as the summer brood, called by courtesy "Juliaria." Suffumata, Derivata, Badiata, hybernated; Miata, Abruptaria, Ferrugata, and Unidentata, rewarded a diligent search in moderate numbers. May and June were less productive; single specimens of Ziczac and Bifida occurred on the black beams opposite some of the lamps. I was absent during the greater part of July; but August and September were very good months; from ten o'clock to midnight was the best time, and filled up the evening nicely after sugaring. Popularis, with its beautifully feathered antennæ, was side by side with Lunosa. Testacea was very common. A few specimens of Quercifolia occurred about the end of July. Xerampelina was sadly too fond of light, most of those I took being damaged by the flame. Cratægi was rare. The beautiful canary-coloured thorn, Tiliaria, visited a couple of the lamps, near water; and in the same place last year I took Fuscantaria. Propugnata was not common. How many of the garden carpets I netted, hoping they might be something else, it would be difficult to say. Perla appeared as fond of glass plates as of its prescriptive brick walls. The specimens of Micacea were small. I failed to take Ravida, Citraria, or Cervinaria, although they had rewarded my search in the previous season. A few stray specimens of Apiciaria were obtained, but the best take of that insect was with the net at dusk; it was much later than in the previous year. Plagiata formed a very conspicuous object, and many other common species occurred in greater or smaller numbers. Necessity is the mother of invention: at first I lost many Noctuas, but at last generally secured them by holding a large open umbrella to receive them—touching their highnesses with the fine end of a fishing-rod, the pieces of which were conveniently carried without attracting attention, and could be adjusted to any length.

At the sallows, in March, I had one or two good nights, but the wind was so high that the blossom lasted only for a few days; however, I took all the Tæniocampas, excepting

Miniosa. Populeti was the most common of the rarer species, occurring principally by the side of the railway. Opima was the rarest of the lot. Lithoriza, with its delicate pink-tinted wings, flew off immediately on showing the light, and required a sharp look-out to take it. Libatrix, Exoleta, Satellitia, and the common chestnuts, with Eupithecia abbreviata, were also among my takes at the sallows. On one large bush or tree, I imagine, there must have been at least ten thousand moths; such a sight I never saw before—they were literally swarming. My takes at sugar were very few at the beginning of the season, my first prize being at the end of June: I visited Dinmore Wood, sugaring a large number of trees, and, full of excitement, expected a good night; my expectations appeared about to be realized, for I quickly took a splendid specimen of Ocularis; but, alas, a storm was brewing in the distance, and one of those muggy blights came over and spoilt the sport. I patiently visited and revisited my trees, but took nothing more all the evening. This rare insect occurred again in a wood near the town, as many as four specimens presenting themselves for capture in one evening. Trilinea was one of the first species to come to sugar; some specimens were very fine. Strigilis, Furuncula and Fasciuncula soon followed; Nebulosa was common; Festiva was a pest; Janthina was joined occasionally by Fimbria and Interjecta; Rubi and Baja were scarce; Tragopogonis and Hepatica were much less common than the many-varied and impudent Polyodon; one specimen of Cytherea occurred. The third and fourth weeks in August were the best for numbers at sugar: Affinis and Diffinis were very plentiful; Proteus was beautifully fresh; Rhizolitha and Petrificata were not uncommon; Pyramidea, Maura and Nupta disputed with large unfriendly slugs the right of sacrificing to Bacchus. I had to leave in September, when the ivy was about to bloom. As entomologists may imagine, I hunted carefully; and, luckily, about the 20th found one single bush in full flower. I had two or three good nights at this spot, my best bags being Gilvago and Aurago, of both of which I had obtained occasional specimens from sugar; Cerago, Silago and Ferruginea were very common; Miata and Psittacata did not appear at all afraid of their stronger cousins; I took a dozen of the latter in one evening; Lota

was very common, and Macilenta had just put in an appearance; Lunosa was passing off, and being replaced by Pistacina, which was just emerging from the pupa state; Litura was very fine; Proteus just showed itself; Semibrunnea and Petrificata were both represented; Vaccinii and Spadicea were as yet rare, and Meticulosa was not common; whereas Oxyacanthæ, Segetum and Suffusa, so common the season before, had not yet arrived. Of Segetum I had bred specimens, which emerged in the spring, and others which I, at the same time, took at sugar; thus, I think, clearly proving that there are two broods of this insect.

Considering the short time, and other unfavourable circumstances, I was not by any means dissatisfied with my excursions to the ivy, as I took about two hundred good insects during the few evenings I was able to attend to them. Up to this year I had never done much with caterpillar rearing. During May and June I collected hundreds by beating, and, like most amateurs, found that many of my captured ones were cannibals. Beside numbers which I did not know, I took Thecla Quercus in Dinmore Wood; Lanestris and Neustria were very common; Verbasci occurred in considerable numbers; Trapezina was most deceitful, displaying qualities of the lion and the lamb; some apple-trees were covered with E. Rectangulata; Lichenaria was not uncommon; Cæruleocephala occurred everywhere; Flavicornis, Aprilina, Pœcilocampa Populi, Thymiaria, Quercana, and a number of others, were among my takes in the larva state. A day, about the middle of May, in a wood near Wofferton, about seven miles distant from Leominster, was among my best for the Diurni; Lucina and Euphrosyne were very common; Selene, afterwards so plentiful, was just coming out; Tages and Alveolus, Linea and Sylvanus, were common; Glyphica, Mi and Arbuti were all in their glory; Maculata was just out; Euphorbiata, Atomaria, Marginata, Palumbaria, with many others, tolerably abundant; on an elm the larvæ of Thecla W-Album were feeding; and one specimen of Sesia Culiciformis occurred. As already recorded in the 'Entomologist' I took a specimen of Cynipiformis, near Leominster, the year before, both, I believe, new to the neighbourhood. During the year I took a few Noctuas at rest on trees and palings; Leporina occurred sparingly on

willows; Genistæ and Thalassina were not uncommon on gates, the former always on the iron bar, the colour of which formed a good protection for it; Psi and Megacephala were common; Capsincola and Lithoxylea occurred about the town and near the railway. I took two beautiful specimens of Unanimis; and afterwards two more on flowers; Chi, which was plentiful the year before, I failed to take in 1871. The insects which I took on the wing are too many to mention here; I will, however, just name a few of the best: Batis, Derasa and Duplaris occurred sparingly, with Chrysitis, Arcuosa, Putris, Plecta, Brunnea, Triplasia, and Umbratica; Saponariæ and Dentina were not as common as the year before, when I took Rurea at the flowers of the Cornus sanguinea; Elinguaria and Spinula were not uncommon; Statices, Loniceræ and Filipendulæ were all common; the first brood of Argiolus was a large one, whilst of the second, in August, I only noticed a few specimens; T. Rubi and Sinapis were scarce; the hop-cats (larvæ of Pudibunda), hop-dogs (larvæ of Betularia), and silver grubs (pupæ of C-Album), were very scarce this season, probably owing to the failure of the hops. Among the Geometers which I captured I may mention Petraria, Pulveraria, Emarginata, Punctulata, Punctaria, Pendularia, Lactearia, Bajularia, rare; Luteata, Griseola, Affinitata, uncommon; Decolorata not common; Impluviata, Rubiginata, Ocellata, Picata, rare; Corylata, Adustata, Didymata, Russata, and Ribesiaria, in gardens; Imitaria, Amataria, and Tersata, flying about a bush of clematis; Immutata, rare; Scutulata, Bisetata, Incanaria, and very fine Repandata. Mundana, Albulata, Ulmata, and Syringaria, did not fall to my lot this year, although I had taken them more or less plentifully before. Many of the above, I believe, have not been recorded in the neighbourhood before, and some are new to the county. Looking back, and considering that during the year I took nearly three hundred species of Lepidoptera, I think that Leominster may fairly be considered a first-rate locality.

Thomas P. Lucas.

169, Kennington Road, Lambeth.

List of Captures in the New Forest during July and the beginning of August, 1871. By A. B. Farn, Esq.

In spite of very cold weather (so cold, that a fire on the last day of July was most acceptable), accompanied with much wind and rain, there was no dearth of insects in the New Forest during the past season, although butterflies were not nearly so numerous as during the previous season:—

A. Cratægi.—A series.

L. Sinapis.—Very few.

L. Sibylla.—Plentiful.

V. Polychloros.—Not uncommon.

A. Paphia, *A. Adippe*, *A. Aglaia.*—As usual, common.

A. Selene.—Not quite over.

P. Ægon.—Not uncommon; but difficult to obtain in fine condition owing to the bad weather.

C. Ligniperda.—One. At sugar.

N. Strigula.—Plentiful. At sugar.

D. Chaonia.—Larvæ not uncommon.

P. Monacha.—By no means so common as in last season.

C. Miniata.—By no means so common as in last season.

L. Helveola, *L. Mesomella.*—By no means so common as in last season.

L. Stramineola.—Two.

L. Complana.—Not uncommon.

L. Complanula.—Very common.

L. Quadra.—Not rare. This species seems as if it would again become common. The males, judging from my experience, come to sugar earlier in the evening than the females: thus, on the 21st July, I took six males before 10.30 P.M., and six females after that time.

E. Russula.—Not uncommon.

C. Jacobææ.—Plentiful—as larvæ.

D. Hamula.—One. At sugar.

T. Derasa, *T. Batis.*—By no means so common as during last season.

C. Ridens.—Common. In larval state.

D. Orion.—One only.

A. Leporina.—Saw two that had been taken.

A. Ligustri.—Not common.

L. Turca.—Common.
L. Pudorina.—A few.
X. Polyodon.—A very nice variety.
A. Gemina.—A very nice variety.
C. Cytherea.—Common.
M. Arcuosa.—Not uncommon.
A. Caliginosa.—Owing to bad weather difficult to obtain in fine condition in any numbers.
C. Alsines.—Not uncommon.
T. Janthina and Fimbria.—Very common.
T. Interjecta.—Not common.
T. Subsequa.—By no means a rarity. I took fourteen in two rounds, at my sugar, in one night.
N. Rhomboidea.—Just coming out when I left.
D. Oo. Very common. Comes to sugar very early.
E. Viminalis, E. Lucipara.—Rare, as compared to previous season.
H. Thalassina and Contigua.—Not uncommon.
H. Dipsacea.—Common, and widely distributed. In 1870 very local, but occurring in profusion in one place.
E. Fuscula.—Nearly over.
C. Promissa and Sponsa.—In great numbers: dozens could be taken in a night. Promissa is by far the more wary of the two; but on one night, when the rain was coming down in torrents and with a high wind, this insect closed its wings directly it came to the sugar, and could be easily captured.
M. Margaritata.—Very common.
E. Fasciaria.—Not uncommon.
E. Dolobraria.—One. At sugar.
P. Syringaria. Two or three.
E. Angularia.—Common. In larval state.
A. Prodromaria. Larvæ. Not uncommon.
C. Lichenaria.—Common.
B. Repandata.—Common. *Var.* Conversaria.—Not uncommon.
B. Rhomboidaria.—Common.
B. Roboraria.—Not very uncommon.
T. Crepuscularia.—Second brood. Common.
G. Obscurata.—Common.
P. Bajularia.—Common.
H. Auroraria.—Not common.

E. Heparata.—Plentiful.
A. Trigeminata. Very plentiful on one evening.
A. Straminata.—No rarity.
A. Immutata.—Common.
A. Emutaria.—One female, from which I bred.
M. Alternata.—Three specimens.
M. Liturata.—Not uncommon.
S. Plumaria.—Very common, and widely distributed. The female by no means uncommon, but difficult to obtain in fine condition. It is curious that this insect, of which I did not see one specimen the season before last, should have been so very common last year.
M. Euphorbiata.—Not uncommon.
E. Pumilata.—Common.
M. Rubiginata.—Common.
M. Albicillata.—Not common.
E. Plumbaria.—Very common.
E. Mensuraria.—Common.
O. Chærophyllata.—Common.
H. Quercana.—Not uncommon. At sugar.

A. B. Farn.

Lepidoptera on the Sand-hills.—Mr. Porritt, of Huddersfield, and I, visited the Lancashire and Cheshire sand-hills in the second week after Easter. Some account of our doings at so early a season may be interesting. Fortunately we had the good luck to hit upon one of the few fine weeks we have had for a long time,—with the exception of the first night the weather was all that could be desired,—bright and hot in the daytime, and still and warm at night. We met at Southport Station at mid-day on Monday, April 8th, and, having secured quarters, went on the sand-hills to look for larvæ of O. fascelina on the sallows: though not so plentiful as usual, during the afternoon and following morning we managed to secure nearly two hundred between us. On Monday night we sallied forth with lanterns; but the wind was high and the atmosphere cold, and a smart shower or two soon sent us back, after having lost our way among the sand-hills, and for a short time trudging away in the direction of Lytham, one of us maintaining that the lights of that town

were the lights of Southport pier. Not a moth was to be seen at the sallow-bloom; and a couple of larvæ of S. Semele and two or three of O. fascelina were all we got for our walk. Next day we crossed the Mersey into Cheshire, and—having secured the services of Mr. William Greasley, of Wallasey, a most intelligent and observant entomologist—we turned out in the dark to look for T. opima, which we were told was out and in unusual abundance. We made for a certain valley, and had no sooner lighted our lamps than we were among them, and in the course of a couple of hours had boxed no less than sixty-five, all in good condition: some we took from the sallow-bloom; but many were at rest on the marram and dead stems of hound's-tongue, ragwort, &c. The greater part of these last were females, in the act of oviposition. The night was just right,—calm and warm. The following night we took twenty-six, and on the last night fifteen. One hundred and six in all. We certainly were in luck: so great a take was never heard of before; and there is no doubt Opima is unusually plentiful this season. On the second night we only hunted a short time for Opima, and then went on to look for Lichenea larvæ on Sedum acre. We were also successful here,—thanks to Mr. Greasley,—from twenty to thirty being taken. On Wednesday morning we went to the sand-hills for the day-flyers and larvæ: E. lineolata was out in excellent condition; also N. zonaria on the marram (this we took both by day and night), it is a very sluggish insect, even the male seldom flies,—only about nine o'clock in the morning, says Greasley. Larvæ of B. Quercus and Rubi were scarce; we only found three of the latter, and they were all in the act of spinning up. We also found a few larvæ of L. littoralis by raking the sand. Nothing could exceed the beauty of the sallow-bloom in the slacks of the sand-hills:—acres of it, one mass of gold,—a "golden floor,"—the perfume delicious; while the natterjack toads kept up a continual and somewhat monotonous croaking in the clear fresh-water ponds, and the larks' singing at heaven's gate, and the bees' murmur at the bloom, made delightful music to the ear; the green lizards ran along the hot sand with rapid movement; and altogether the scene was one not to be easily forgotten. It is worth one's while to pay a visit to the sand-hills in bright weather, when the sallows

are in bloom. The atmosphere being so calm the tracks of the different animals were clearly visible on the driven sand: very curious is that of the natterjack; but still more curious is the track of larvæ, every ring being marked as it were in steps. Besides the insects above mentioned we also took the minute hybernated larvæ of L. Salicis in abundance at one spot; T. rubricosa and gracilis, and A. badiata at the sallows at night; E. pumilata and S. illunaria at lamps. As may be supposed, we returned home well satisfied with our very pleasant "out" and our "spolia *opima*."—[*Rev.*] *Thomas W. Daltry.*

Description of the Larva of Apamea oculea.—Though the imago of Apamea oculea is so abundant an insect as to become almost a pest, I have never seen a description of its larva, and, indeed, it seems to be but little known amongst Lepidopterists generally. It is full-fed about the first or second week in May, and may then readily be found, by those who choose to look for it, feeding inside the main stem, and eating the undeveloped flower, of the common cock's-foot grass, Dactylus glomerata. It is about an inch in length, and of average bulk in proportion; head globular, much smaller than the 2nd segment, into which it can be partially withdrawn; body cylindrical, and tapering very decidedly from near the head to the anal segment; skin smooth and glossy, and very tough to the touch; the whole shape, handle, and manner of twisting about when annoyed, reminding one of the mealworm, or some other Coleopterous larva: the ground colour is dull semi-translucent green; head pale brown, with the mouth sienna-brown; a distinct narrow dark green pulsating vessel forms the medio-dorsal line; the subdorsal lines are purplish brown, rather broad, but interrupted at the segmental divisions; there are no perceptible spiracular lines; spiracles small, black; the ventral surface and claspers similar to the ground colour of the dorsal surface; legs pale brown. When crawling, the internal backward and forward working of the muscles of the larva is distinctly seen through the transparent skin.—*Geo. T. Porritt; Huddersfield, April* 17, 1872.

Agrotis spinifera of Hübner discovered in Britain.—Three seasons ago I obtained a Valligera-like Noctua flying in the sunshine during an afternoon in August, in the Isle of

Man, just as Valligera flies here in some seasons. Thinking it a curious specimen I secured it, but did not set it until some months afterwards. In the meantime several of my friends saw the specimen, but no one seemed to care much about it, and my "swan" was fast dwindling itself and me into a goose; but strong in my conviction that it was a moth I had never seen, and not a variety, but a good species, I relaxed and set it; then its distinctly *white abdomen* and its peculiarly white under wings spoke out, "*I'm new to Britain!*" And I searched my books through, but failed to find a description applicable to my new moth. Thinking, however, so fine an Agrotis must be known on the Continent, I have waited until now before I announced my good fortune. By the kindness of my friend E. Ragonot, of Paris, I have received a specimen of Hübner's A. spinifera from Spain, which, though smaller than my insect and perhaps a little darker, is undoubtedly specifically identical with mine. That A. spinifera is scarce abroad is best seen by the great price asked for it by continental dealers (about 12*s.* each, English); whilst in a priced catalogue before me "Ditrapezium" is offered for 6*d.*, Cinerea for 1*s.* 2*d.*, and Trux for 9*d.*, English money.—*C. S. Gregson; Rose Bank, Fletcher Grove, Edge Lane, Liverpool, April* 21, 1872.

Larva of Eupithecia subciliata.—In the month of August, 1871, Mr. Sang, of Darlington, kindly sent me two living females of E. subciliata: one of them was at the point of death when it arrived; the other, which was very lively, I at once placed under a large bell-glass, with some sprigs of maple in a vial of water. In about a week I found she had deposited about twenty eggs at the junction of the footstalk of the leaf with the stem: some were laid upon the next years' bud; others upon the sheath-like covering of the footstalk: all were carefully pushed in and concealed from view, and could only be discovered by pulling off the old leaf; they were at first whitish in colour, but turned red in a few days. During the first week in April thirteen young larvæ hatched out, and fed well for a few days on young maple-leaves; but before the end of the month, with one exception, all died off. I have no doubt the sudden and ungenial changes of the weather were too much for their delicate constitutions. The sole survivor has, I am rejoiced to say,

arrived at a healthy maturity, and was despatched by yesterday's post to Mr. Buckler, of Emsworth, who has promised to take its likeness with his usual life-like accuracy. I append a description, which I took before its departure:—Short, of uniform bulk; rests with the head slightly incurved; ground colour pale yellowish green; central dorsal line dark green, somewhat elliptically enlarged at the centre of each segmental division; on each segment, on either side of the dorsal line, a small dark green spot; subdorsal and spiracular lines yellowish white, waved and indistinct; belly without markings; segmental divisions yellowish; tip of caudal dorsal segment whitish; whole body more or less translucent, and sparsely strewed with short whitish hairs. Hatched, first week in April; full fed, first week in May.—[*Rev.*] *H. Harpur Crewe; Drayton-Beauchamp Rectory, Tring, May* 3, 1872.

Description of the Larva of Anchocelis rufina.—Uniformly cylindrical and velvety; it rolls itself into a compact ring when annoyed; the head is rather narrower than the 2nd segment, into which it is partially received; the divisions of the segments are strongly marked when it is rolled in a ring, and each segment is tumid; the head is glabrous, and of a semitransparent brown colour, reticulated with darker brown; the body is sienna-brown, slightly reticulated with darker brown; it has a conspicuous and moderately broad side-stripe of snowy whiteness,—this commences on the 2nd segment, immediately behind the head, and is continuous to the base of the anal claspers, passing beneath the spiracles which appear to rest on it, each in a small sinus or notch of the stripe; there are four white dots arranged in something like a quadrangle on the back of each segment, the anterior pair nearer together than the posterior pair: this is the arrangement which Guenée so often describes as trapezoid; on the anterior margin of each segment, and below this quadrangle, is a similar white dot, and still another lower down on each side, and immediately above the spiracle; every white dot has a black point in the centre, and this emits a short hair. I am indebted to Mr. Bryant for a supply of this very beautiful larva, which were full fed on the 11th of March: he bred them from eggs laid in October, and fed them on Cratægus oxyacantha (whitethorn), in the autumn,

and again in spring, they ate the leaves with great voracity as soon as they appeared, and long before they were fully developed. I may observe that this larva totally differs from the figure published by Hübner and approved by Guenée. Since the preceding description was written I have received the following note on this insect from Mr. Bryant:—"The eggs of Anchocelis rufina were laid in a pill-box on or about the 20th of October, 1871, and the young larvæ appeared on the 2nd or 3rd of February following: they fed up very quickly, and every larva had gone down by the 28th of March."—*Edward Newman.*

Entomological Notes, Captures, &c.

Xylomyges conspicillaris at Malvern and Malvern Link.—I have the pleasure of sending you the intelligence of the appearance of several specimens of X. conspicillaris in the breeding-cages of collectors in this neighbourhood. Mr. Wilson, pupil of Malvern College, heads the list with three specimens. I am not aware of the dates of appearance of these. Mr. Edwards, of Malvern, had a cripple emerge on February 16th, and a perfect insect on March 1st. I had a beautiful male on March 16th, and a female on the following day.—*R. F. Towndrow; Malvern Link, March* 21, 1872

Black Crepuscularia.—On the 27th of April I took, quietly at rest on a Scotch fir, a fine black variety of T. crepuscularia. The only mark on it is a white zigzag line on the four wings near the hind margin, in place of the black one in ordinary specimens. It is quite as black as the ordinary black variety of Betularia. I should be glad to know if this is an unusual occurrence.—*E. Earl; Newcastle, Staffordshire, May* 8, 1872.

Sphinx Pinastri in Devonshire.—I have in my possession a specimen of this moth found by Miss Jones, in her garden, September, 1861. I have no doubt that when taken it was a fine specimen, but, it not having been taken much care of, it is faded and broken slightly. I have very little doubt but this lady's label with it is correct, as she had no general collection, only a few British Lepidoptera taken in her own locality.—*John Purdue; Ridgeway, Plympton, Devon, May* 8, 1872.

"*Re*" *Geometra Papilionaria.*—Since I wrote you a short account of the way of finding the larva of this insect (the 18th of March), I visited Darenth Wood for an hour or two on the 14th April: the birches were not so forward as in previous seasons; but I and Mr. Dow found the larva of Papilionaria there: four others were searching, but were unsuccessful. I have not had an opportunity of making a search since, although the weather has been more favourable. —*James Bryant;* 63, *Old Broad Street*, *May* 2, 1872.

A. Pictaria at Danbury.—I met with three specimens of this insect on the 15th of April, in a lane near Danbury, Essex: one was flying round the flowers of a sloe bush, and the other two not far from the same place. I tried at the same lane for two or three nights after, but did not succeed in taking any more, owing probably to the brightness of the moon. On the 16th I found a female specimen in a pool of water, at Hazeleigh; and another on the 20th in some water near Maldon; so that the species seems to be pretty widely distributed about that part of Essex, although it is some twenty miles from the original locality at Colchester.— *Gilbert H. Raynor; St. John's College, Cambridge, April* 22, 1872.

Eremobia ochroleuca.—I believe this species is more extended in its range than is generally supposed. I have seen one or two specimens of it, which were taken by my friend Mr. A. Taylor, in the neighbourhood of Christchurch, Hants.—*G. B. Corbin.*

Death of Mr. George Robert Gray.—Mr. Gray, so long at the head of the ornithological department of the British Museum, died on the 6th of the present month, May, 1872. In addition to his 'Genera of Birds' and 'Hand-list of Birds,' lately completed, he wrote several papers on Entomology, more particularly a monograph on the Australian Phasmidæ, which was beautifully illustrated. He also published in the 'Zoologist' for 1843, "Descriptions of several species of the genus Phyllium, in the collection of the British Museum and that of the Rev. F. W. Hope," in which thirteen new species are made known. Mr. Gray was, however, best known through his works on ornithology.—*Edward Newman.*

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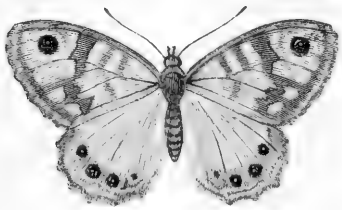
Answers to Correspondents.



PYRARGA MEGÆRA (VARIETY).

Variety of Pyrarga Megæra.—The fore wings of this female specimen are scarcely different from those of the type; the hind wings present a marked contrast; the basal area, generally dark brown, is of a pale dull brown, but clothed as usual with long ochreous hairs inclining to golden,—this portion of the wing is very sparingly clothed with scales, and is semi-transparent; the submarginal series of ocellated spots is very distinct, more so than usual, an appearance to which the paler general area certainly contributes. This insect has been kindly lent me by Mr. Bond for figuring in the 'Entomologist.' Mr. Bond obtained the specimen from the late Mr. Edmonds' collection, of Worcester.

Cossùs Ligniperda.—I shall be much obliged if you will kindly answer the following questions respecting C. Ligniperda in the 'Entomologist.' When does it spin its cocoon? and how long does it remain in it before the perfect moth comes out? Mine is about the size of a man's finger, and it has lost the dull red stripe down the back: I thought this

might be the result of confinement in a dark tin box.—*George R. Dawson; Poundsworth, Driffield, June* 11, 1872.

It will probably appear this month.

X. Conspicillaris.—In last month's 'Entomologist' (Entom. vi. 110) I see Mr. Marsden, in giving Gloucestershire as one of the localities where the above species are taken, and also a description of the same, asks what the Worcestershire specimens are like. In answer to that enquiry I, for one, may say I have bred eleven specimens, and have seen several others, all of which (with one slight exception) are faithfully represented in the top figure of the three specimens given in 'British Moths' (p. 288).—*Thomas Goodyear; Church Road, Malvern Link, June* 6, 1872.

Cymatophora Ocularis.—Until the year 1870 I never found more than one pupa of Ocularis at a tree, and, therefore, was under the impression they only occurred singly. In the above year I turned up six at one tree, and on May the 2nd of this year, accidentally coming across two or three poplars, and with my knife for a digger, I turned up no less than twelve pupæ of the above species at a single tree. Is not this unusual?—*Thomas Goodyear.*

Yes; it is extremely good fortune.

Lithosia rubricollis.—I do not think the early appearance of Rubricollis unusual. I have been in the habit, the last few years, of taking it on the wing in June. I have never observed it in August, though it is abundant enough in June. —[*Rev.*] *A. C. Hervey; Pokesdown.*

Saturnia Carpini.—Last winter I had some pupæ of S. Carpini, and at the beginning of April they all emerged except one. After waiting some time I cut open the cocoon to see if the pupa had perished, but it was all right and very lively. As it has not yet come out, I wanted to ask you whether they ever pass a second winter in the pupa state? I should be much obliged if you would tell me.—*G. B. Hulme; Hope Cottage, Wormley, June* 21, 1872.

Several instances have occurred within my knowledge of Saturnia Carpini remaining in the pupa state until a second season.

Sesia Apiformis.—I should be much obliged if you could inform me, through your 'Entomologist,' how to rear the larva of Sesia Apiformis from the egg.—*C. Sayers;* 48, *West Street, Horsham, June* 17, 1872.

I shall be obliged to any entomologist who will state his experience in rearing Sesia Apiformis.

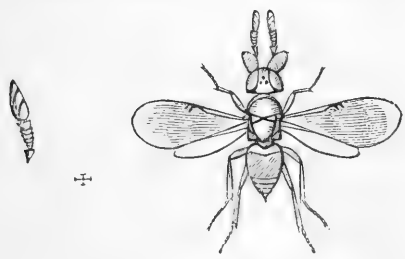
Edward B. Poulton.—In answer to the first query, I cannot say that I have any rule: I have rarely, if ever, received specimens worth returning; but of course I should return specimens if desired: they usually go in the fire. 2. Offers in the Exchange list are never charged. 3. I cannot think of describing insects sent for names: it would be impossible. 4. Livornica is a very rare species. 5. Sugar on trunks of trees or fences anywhere: I prefer exposed trees to those in a wood.

EDWARD NEWMAN.

Economy of Chalcidiæ. By FRANCIS WALKER, Esq., F.L.S.

(Continued from p. 114.)

Encyrtus corniger, Cerapterocerus mirabilis, and Ectroma fulvescens, here figured, are types of three genera of



ENCYRTUS CORNIGER.

CERAPTEROCERUS MIRABILIS.

Encyrtidæ, and are remarkable forms: the first and second, because of the dilated basal joint of the antennæ; and the

third, because of being wingless, and by having a corresponding want of development in the mesothorax. Their mode of life is unknown.

ECTROMA FULVESCENS.

Life-histories of Sawflies. Translated from the Dutch of M. S. C. Snellen van Vollenhoven, President of the Entomological Society of the Netherlands. By J. W. May, Esq.

(Continued from p. 97.)

Nematus Betularius, *Hart.*

Larva and imago, *Hartig. Blatt und Holzwespen*, p. 192, No. 17.

Nematus niger, prothorace, abdomine, pedibusque aurantiacis, labro pallido, tarsis anterioribus et tibiarum posticarum apice brunneis, tarsis posticis nigricantibus, stigmate fusco.

In the month of August, during the wet summer of 1866, I was at Wort-Rhede, in Gelderland: my daily excursions about Beckhuizen, and the heath near Rhederoord, being very unproductive, I was agreeably surprised one moderately dry afternoon by finding some sawfly larvæ, which I did not then remember to have seen or read of before, although it afterwards occurred to me that I had once observed similar larvæ at Roozendaal, and on a previous occasion at Gliphoeve. I at once saw they were Nematus larvæ, recognizable, among other characteristics, by their habit of curving the abdomen over the head. They appeared to me to be

very nearly, or quite, full grown; probably on account of their having wandered away far from the spot where they were hatched, I was unable to find any trace of the eggs on the little birch tree on which the larvæ in question were. I found only four individuals; but, taking for granted there were originally more in the brood, I concluded the rest had fallen victims to the cold, or the rain and wind.

The following is a description of these larvæ, reference being made to plate 6, figs. 1, 2 and 3. Head entirely shining black; the sutures of the epistoma and of the epicranium only being of a somewhat paler tint; abdomen yellowish green and shining, as if oiled, but at the same time wrinkled. I counted ten pairs of legs, all pale green; the anterior six with brown claws. Above the second and third leg was, on either side, a rather large triangular orange spot; at the same level, on either side of the 4th segment, two smaller spots, but more oblong in form; thence from the 5th to the 11th segment on both sides, larger, nearly triangular, orange, spots. The 12th segment was mostly bluish green, in consequence of the contents of the intestine being perceptible through it, the following segment and the anal valve being yellowish green. The stigmata had narrow white margins; the skin was, however, not sufficiently thin to allow of the tracheæ being seen through it. Although the least touch, or even the act of breathing upon them, caused the larvæ to elevate the abdomen, and to retain it for some time in the position shown at fig. 2, I was unable to perceive any projecting glands between the legs, or any excretion of fluid. My larvæ took to the earth on the 26th of August, each individual spinning a cocoon of the appearance represented at fig. 4, and externally entirely covered with grains of earth. I have not noted whether the cocoon was simple or double: I imagine the former. The first imago made its appearance on the 14th of September of the same year. Hartig gives a full and accurate description of this species. Its length is 7 mm., expanding to 13 mm. Body somewhat stout; head dull black; eyes black; the clypeus, upper lip and palpi being whitish; jaws brownish. The antennæ, which are as long as the abdomen and half the thorax, are of a dull brown colour, the under surface being paler and redder. The prothorax is orange-yellow; the mesothorax entirely, and the

dorsum of the metathorax, shining black, with white cenchri; the tegulæ above the insertions of the wings are orange; the legs are yellow, excepting the tips of the anterior and middle tarsi, which, together with the apices of the posterior tibiæ, are brown; the posterior tarsi are darker, being almost black. The posterior tibiæ are broader than is usually the case in this group of Nemati, and are deeply channelled externally. The abdomen is entirely orange, the dorsum of the 1st segment being incised; the extremities of the anal projections are, however, black during the life of the insect; the ovipositor also appeared to me to be of the same tint. The wing-nervures are yellow at the insertion, then brown or black, the transparent wings themselves being strongly iridescent. The stigma is fuscous.

It appears to me as very probable that there is more than one brood of this species in the year. A female of Tryphon Vepretorum, *Grav.*, proceeded from one of the cocoons: so far as I am aware this parasite has not hitherto been considered indigenous.

One-third of the British Butterflies in a wood near Watlington. By Thomas P. Lucas, M.B.

One lovely morning, early in August last, we started from Watlington on a visit to one of the adjoining woods. The weather, which had long been unfriendly to the lover of science, had at length cleared, and we found ourselves in a blaze of sunshine, mellowed by a gentle breeze, and interrupted only at intervals by a passing cloud. Nine miles from the railway, this rural spot afforded uninterrupted seclusion for hosts of whinchats and other small birds; the turtle dove appeared to be very common. On our way we passed by the *débris* turned out of a well, which had recently been sunk in the chalk marl: this yielded a rich supply of delicately-marked white fossils,—Terebratulæ, Rhynconellus, Waldhermias, Oysters, Echini, Sponges, &c. On a higher level are quarries in the lower chalk and lower beds of the upper white chalk, each containing a few fossils to reward the diligent student. Round these quarries were crowds of thistles,—Carduus acaulis, C. nutans, C. Forsteri, Carlina

vulgaris, and others,—which, as ever, formed a certain attraction to hosts of small tortoiseshell, meadow brown and blue butterflies. Arrived at the foot of the hills—which, by-the-bye, must have taken millions of ages to build up, seeing that they are composed entirely of shells, Foraminifera and other cretaceous matter—the mind was at once impressed with the scene, and convinced that the place whereon we stood was at no distant period (geologically speaking) an extending sea-coast, the cliffs above us marking out the boundaries of the ancient ocean. Nature here has failed to leave record of the Fauna or Flora of these periods; and it is only in imagination that the young naturalist pictures the giant butterflies, with their tiers of wings, painted in blue and purple and gold; gaudy beetles, touched with every hue; the hovering Mantis; or the poised Sphinx. Maybe here, also, fluttered non-described species of fire-flies, hosts of lace-winged dragon-flies, and myriads of small fry, heedlessly fluttering in a sunbeam, sleeping on a flower, or falling a prey to the powerful mandibles of one of the numerous host of spiders,—undescribed, forgotten, unknown. Perhaps some of our brother naturalists ask us how we know that such lovely creatures ever drank honeyed nectar, and surveyed the tract on which we trod. With all due respect we ask them, how can they prove that it was not so? Most probably the sea spread its water here over the plain during the period when the London clay and other tertiaries were being laid down, the fossil contents of which most decidedly claim for these periods a tropical or semi-tropical climate. If so, and we have abundance of evidence in its favour, it is extremely unlikely that this ancient Brighton or Dover was a weary desert, a vast waste. Life was swarming in the seas; why should it not on land? Unfortunately we were not able to review the museum of the far-famed Briareus, to whom history wisely assigned his hundred arms, all of which we hope he made subservient to the study of nature. But these good old times are gone for ever; and we failed to discover the remains or tomb of the monster.

The morning was getting on, so we hastened into the wood, where we were surprised to see small plantations, so to speak, of the deadly nightshade (Atropa Belladonna): some of the plants were five or six feet high, and might in

truth be said to contain a poison and a balm,—fit emblem of all on earth. Several beds of the French willow-herb (Epilobium angustifolium), with their tall mauve-coloured flowers, forced the eye to linger. Orchids were scarce; the O. pyramidalis and Epipactis latifolia occurred sparingly; whilst the Gymnadenia conopsea grew on the hill hard by. Suddenly we came to an open space in the wood, where, within a hundred yards, more than one-third of the species of the British butterflies dwelt, each in its own particular range, or occasionally sportively fighting or chasing strangers from their borders. The silver-washed fritillaries (Paphia) appeared to keep studiously just within the shady parts of the wood, whilst Aglaia (the dark green) and Adippe (the high brown fritillary, the rarest of the three) hovered round their borders, as if determined to keep back their larger but less courageous cousins. The chalk-hill blues seemed to keep principally to the cleared paths, hovering especially over the wild thyme, rock cistus, and blue-bells; the common blue, Alexis, brown Argus blue, Agestis, were found much more sparingly: was it because they had learned that beauty shines by contrast? The holly blue (Argiolus) keeps aloof on the borders of the wood, as if conscious of a beauty of its own. The Knautia arvensis and Resedas luteola and lutea, especially attracted the 6-spotted Burnet moth (Filipendulæ), the antler (Graminis), and the skippers, three of which graced the scene,—the large skipper (Sylvanus), the small (Linea), and, best of all, the silver-spotted skipper (Comma). Among the tufts of herbage were the far-famed and ever-welcome marbled whites (Galathea), many of them, alas, much tattered and torn. The three common whites (Brassicæ, Rapæ and Napi) were all in great abundance. The small heath (Pamphilus) was tolerably plentiful; and there was now and then seen a brilliant small copper (Phlæas), with honour reflecting the rays of the sun. The ringlet (Hyperanthus) dallied among the brambles and dewberries in the wood; while the meadow brown (Janira) and the small meadow brown (Tithonus), occasionally boldly put in an appearance, but evidently preferring the companionship of the wall butterfly (Megæra) in the old Roman grass-grown lanes outside. The brimstone (Rhamni), just emerged, was most partial to the tall teasles and thistle-flowers, which

he was not wanting in courage to defend against the attacks of the small tortoiseshell (Urticæ), the peacock (Io), or the glorious red admiral (Atalanta), and in truth the pride of August.

Towards noon the sun became intensely hot, so we were glad to avail ourselves of the shadow of friendly trees, where the heat disturbed many Geometers and other moths. In the evening we again visited the spot, and were rewarded by taking Pectinitaria, Olivata (in great abundance), Bipunctata, and Sobrinata, among the juniper bushes; Emarginata, tolerably common; Rhamnata, Dubitata, Hamula, Repandata, Complanula, Amataria, Trilinea, and others. Not having sugaring apparatus with us, we took very few Noctuæ, only netting Batis, Triplasia, Tragopogonis, and a few other common ones.

Judging from our great success, it is natural to suppose that other species of butterflies must visit the wood in the earlier part of the summer; and I think it highly probable that, if I can revisit it at various seasons, I shall come across at least one-half of the British butterflies, and a very large portion of British moths,—a luxury shared by very few localities.

Thomas P. Lucas.

169, Kennington Road, Lambeth.

Scarcity of Insects at South Shields.—I have collected on the coast here for many years, but never before observed such a scarcity of insects as has been the case with the spring species, our coast having, up to the present time, been entirely barren: not a single moth has been taken either by sugar or other means. We considered the spring of 1871 a poor one, through the cold, damp, ungenial months; but we have double reason to complain this season, when our most abundant moths have been entirely wanting. There is also a great decrease of the early-feeding larvæ: for instance,—the caterpillars of Filipendulæ, having always been excessively abundant on the broken declivities of the cliffs, are to be seen in much less numbers, and are considerably smaller than I have previously observed them at this season; while the larvæ of Caja are more numerous and better fed up than last year, yet

they are far from being so plentiful as they were previously to 1871. I have generally obtained the caterpillars of Lithargyrea by cutting open the old stems of thistles and umbelliferous plants, to which they resort for concealment during the day, but have been unsuccessful in finding one. Polyodon has always been an excessively abundant larva under stones on our ballast-heaps, but this, like the other species mentioned above, has been influenced by the weather, and is considerably scarcer than usual. The Micro-Lepidoptera, I regret to say, are very sparing as yet, and many of them are late in making their appearance. Elachista rufocinerea and E. cygnipennella are fully two months later than I have generally seen them. Numerous other species could have been recorded in this paper, but I think sufficient have been noticed to show that—by comparing the remaining part of the season with the past three months—our wanderings in search of Lepidoptera will, I fear, be weary and uninteresting, as there is such a falling off of the larvæ of the commoner insects, and it is only reasonable for us to suppose that the rarer species will be sparing indeed. I make these few remarks entirely from my own experience. Probably other collectors in the north may have been more fortunate, and render a better account than I can at present.—*Christopher Eales;* 21, *Grace Street, South Shields, June* 10, 1872.

Description of the Larva of Tæniocampa cruda.—Last year, on the 2nd of April, I received from Mr. F. E. Harman, of Whitfield, near Hereford, a few eggs (or rather larvæ, as they had hatched on the way) of this insect. When just emerged the caterpillar is dirty greenish, with a rather large, shining black head. Until a length of about half an inch has been attained, it lives in a sort of retreat formed by drawing together, by means of silken threads, several leaves; and afterwards it still forms a similar retreat in which to moult. The adult larva is about $1\frac{1}{4}$ inch in length, and of moderate bulk in proportion. Head globular, about the same width as, or perhaps very slightly broader than, the 2nd segment; body cylindrical, and of uniform thickness throughout; skin smooth and soft, semi-translucent, and rather glossy. The ground colour is dark smoky green, variegated with yellowish green, in some specimens the yellowish green predominating; both the ground and markings vary in intensity in different

specimens. Head smooth and shining, gray, very thickly marked and dotted with intense black; there is a black shining plate-like mark on the 2nd, and another on the anal segment; that on the 2nd is divided by the medio-dorsal and subdorsal lines. The medio-dorsal stripe is yellowish white; the subdorsal lines narrower, white; two parallel waved lines of the same colour as the medio-dorsal stripe form the spiracular lines; these waved lines form a sort of chain-like band of oblong spaces, and in the centre of each space, just below the upper line, the black spiracles are situated; the trapezoidal dots also black. Ventral surface and claspers uniformly dull yellowish green; the legs black. Rests on a leaf, with the head bent considerably round to one side. My larvæ fed on whitethorn; and were full grown and went down May 28th.—*Geo. T. Porritt; Huddersfield, June* 8, 1872.

Description of the Larva of Acidalia imitaria.—This larva astonishes me by its extraordinary length and slimness: it rests with its four claspers attached almost close together, and its body elevated at an angle of 45 degrees, and swaying backwards and forwards with every breath of air, or with the motion of the room, or the trembling of the hand; I do not allude to the undulating movement from side to side, which is a normal habit of Geometers when not perfectly at ease. The head is semiprone, and scarcely as wide as the 2nd segment. The body is uniformly slender, with a raised lateral skinfold interrupted at the divisions of the segments; there are also two almost imperceptible ridges, one on each side, equidistant between the lateral skinfold and a median line of the back; the body is also transversely wrinkled or divided into sections, from sixteen to twenty on each segment; the number, doubtless, uniform in the species, but not in the individual; after the 9th segment these sections are manifestly fewer and wider than on the anterior and median segments; there are many short stiff scattered bristles about the head and body, more particularly about the posterior extremity of the latter. The colour of the larva is pale putty-colour, almost white, with a medio-dorsal smoke-coloured stripe, which grows gradually paler as it approaches the head; lighter and darker stripes are discernible on the sides of the body, the lowest on each side is the darkest and

is undulating; the spiracles are black, and below the skinfold, more especially on the 3rd, 4th, and 5th segments, is a vague blotch of black. The larva feeds on Stellaria media (common chickweed); and my kind friend, Mr. Doubleday, who sent it me, accompanies the insect with the following note:— "Like the larvæ of all the Acidaliæ they are difficult to keep through the winter, even upon plants growing in pots: only four out of twenty which I had survived the winter; and this morning I found three of them had gone down." It was full fed, and buried in the earth on the 18th of May.—*Edward Newman.*

Entomological Notes, Captures, &c.

Lobophora hexapterata near Limerick.—Hexapterata having made its appearance in confinement on the 10th of May, I went immediately to my hunting-ground, and found it had emerged there also. As it is probable it will be found in suitable places, I offer to collectors the experience of two seasons, thinking they may be enabled to find it. For the first eight days of its appearance it sits in the full rays of the sun, but by no means asleep, for if its capture is attempted it glides rapidly to another spot, where its colour and that of the bark more perfectly assimilate, which they do in a remarkable manner: it moves forward or laterally with equal speed, at the same time keeping its wings closely pressed to the bark. It flies after sunset; the males searching up and down the stems of the aspen, flying at a short distance from the tree, and from their close search and frequent disappointment I think they are only guided by sight in the business, a thin covering of gauze proving sufficient to conceal the females from them: they are very brave when on this errand; and if driven away by repeated strokes of the net they return again soon, even when no female is present. The coldest evening does not prevent them being out, and bats destroy great numbers of them on cold or windy evenings, when nothing else is to be had. Although other trees are numerous I have not seen them rest on any but aspen. They were over before the end of the month, only one having made its appearance after the 1st of June.—*William Talbot; Tarbert.*

Lithosia rubricollis.—On June 13th, while collecting insects for my friend Mr. Wells, I entered a fir plantation on the Coombe hills, and was surprised to see Rubricollis in profusion flying round the tops of larch firs. Although both spruce and Scotch firs grew intermixed with the larches, the insects took no notice of either of the latter, but what appeared most strange was that they only flew during the hottest sunshine, *viz.*, from 12 till 2 P.M.; after which scarcely any were to be seen on wing. On the two following days I again visited the copse, and still saw them in great plenty between the hours stated, but could not catch them by beating after 2 P.M., as my net-handle was not sufficiently long for me to reach them when on wing, except when a stray specimen condescended to visit the branches of a smaller and younger tree: they flew only round the topmost branches. This habit of flying only during the hottest sunshine seems not only entirely at variance with the habits of the rest of the Lithosiidæ, but appears also not to be noticed by the authorities I have at hand,—those of Newman and Stainton: the latter gentleman gives June as the time of appearance, while the former says August; perhaps there are two broods, or, otherwise, a succession of "hatchings." I have never bred Rubricollis, and never saw it in plenty but at one other locality, and that was also in a small plantation of larch firs. Have the larvæ ever been reared by any English entomologist, and, if so, at what season were they taken, and on what species of lichen were they fed? Or, on the other hand, have we only the authority of Ochsenheimer for what they are like, and on what they feed? The fact of their being taken at "light" may have suggested the idea that they were evening flyers. From the manner of flight of the insects I should certainly have supposed that they were depositing eggs on the younger shoots of the topmost branches of the larch firs, as they occasionally alighted apparently for that purpose, and took no notice of—or rather never pitched on—the other species of fir. I am fully aware that this is no certain rule to go by: *e.g.*, the lordly Iris frequents the topmost branches of oak trees, but the larvæ never feed on oak. Eggs of Rubricollis laid in the store-box remain of a beautiful pea-green colour.—*Henry Reeks; East Woodhay, June* 22, 1872.

Ellopia fasciaria.—On the 27th of April last I paid a visit to a pine wood, and beat out of the Scotch fir about a dozen larvæ that I could not make out. In a few days most of them spun up; and on the 4th of June the first moth made its appearance, and proved to be Fasciaria: several have since come out. In your book on moths you say the caterpillar feeds on the Scotch fir in September and October, and descends the trunk, and turns into a chrysalis amongst the fallen needles, whereas if it descends the trunk at that time it must be to hybernate till the spring.—*E. Earl; Newcastle, Staffordshire.*

Urophora solstitialis, Linn., *a Gall-maker.*—Last January I collected at Wixoe (Suffolk) some of the galled flower-heads of Serratula tinctoria, from which I have since bred Urophora solstitialis, *Linn.* (= stylata, *Fabr.*). On the 29th April I opened a gall and found it to contain *one* large white larva; but this cannot be the general number, as from five galls I have had twenty imagos of this Dipteron emerge from the 17th (June) to the present time,—eight males and twelve females: the males emerged earlier than the females.—*E. A. Fitch;* 90, *Queen's Road, Bayswater, June* 24, 1872.

Pachetra leucophæa near Canterbury.—I have searched for this insect for several years, but without success until this year. I have just taken two specimens, but both females, one of which has laid about fifty eggs. The locality in which I took them is Stanting Downs: the first I found on grass in the daytime, on Wednesday, the 12th of June, which specimen I sent alive to Mr. S. Stevens to see; then on the following night I captured a very fine specimen, also a female, at sugar; also netted one, which I lost. I believe it very early. I have sugared in the same place several years in succession, but never found it. I suppose I have been too late, as I have never looked for it until the beginning of July.—*G. Parry; Church Street, St. Pauls, Canterbury, June* 15, 1872.

Abundance of Satyrus Semele in Ireland.—With regard to the Hon. Emily Lawless's remark on the scarcity of Semele in Ireland, I took it abundantly on the top of Bray Head in 1869: I have not collected there since. I also have taken it at Howth.—*E. MacDowell Cosgrave;* 73, *Eccles Street, Dublin.*

L. Littoralis.—I have been fortunate enough to discover Littoralis in this locality. The sandy nature of the cliffs, and the abundance of the "marram," made me think that Littoralis ought to be here. After four days' careful search I obtained one larva; the next day, three; and now (April 21) I have twenty-nine. Mr. E. B. Kemp-Welch, of Bournemouth, and I, collected twenty-one of the larvæ this afternoon; making a total of fifty taken here during the last few days. I have not heard of its being taken in this district before.—[*Rev.*] *A. C. Hervey; Pokesdown.*

Immense abundance of Bibio Marci at Brighton.—On May 10th last the Kemp Town end of Brighton was caught by a cloud of large black flies, Bibio Marci: these covered the pavements, windows, &c., in great numbers. They were not so numerous as those in the famous appearance of Syrphus Pyrastri, in August, 1864, mentioned in the 'Zoologist,' 1864, vol. xxii. pp. 9254, 9273, 9333; but, like them, they followed the same course. Syrphus Pyrastri was chiefly found at the east end of Brighton, where I saw them dead in heaps.—*Geo. Dawson Rowley; Chichester House, East Cliff, Brighton, June* 14, 1872.

Entomological Nomenclature.—The following is now in course of signature:—"The undersigned, considering the confusion with which entomological nomenclature is threatened (and from which it is already to no small extent suffering) by the reinstatement of forgotten names to supersede those in universal employment, urge upon entomologists the desirability of ignoring the names so brought forward, until such time as the method of dealing with them shall be settled by a common agreement." All entomologists desirous of signing will please communicate with Mr. W. A. Lewis, 4, Crown Office Row, Temple, London, E.C.; or with Mr. Newman, 9, Devonshire Street, City.

South London Entomological Society.

The quarterly meeting of this Society was held at their room, on Wednesday, June 19th, for the purpose of electing the officers, and to hear the Report read.

Mr. J. R. Wellman was elected President.

The Report stated that the list of patrons is now complete, and contains the names of Sir John Lubbock, Bart., M.P., H. T. Stainton, Esq., Henry Doubleday, Esq., Edward Newman, Esq., R. M'Lachlan, Esq., and E. C. Rye, Esq.

Thanks were given to the patrons for their support; also to Messrs. Jarvis, Newman, and Hardwicke, for donations of books; to Mr. Norman for a loan to the library; and to those gentlemen who assist the Society as members without deriving benefit from it.

The objects of the Society have been furthered by the exhibition of more than eighty species of Lepidoptera and forty species of Coleoptera, &c., all of them having been captured or bred by the members during the present season; numerous specimens of preserved and living larvæ have been shown; and some books have been purchased. In addition to this, three papers have been read before the Society.

Exhibitions.

Mr. Wellman exhibited T. Biundularia, N. Lucina, and A. Prunaria (a magnificent and varied series), bred from eggs.

Mr. Cowley, L. Exigua. City, at light, April, 1872.

Mr. Rochfort, C. Obliquaria and C. Chamomillæ. Wanstead, early in May.

Mr. Boden, E. Lariciata, a variety of. Leith Hill, May; and others.

Mr. Barrett, Roboraria (larvæ and imagos), from Brockenhurst. N. Bella (?), a curious bred variety. R. Formosella. Lewisham, in June. A. Rusticata, bred from eggs, &c.

Mr. Davis, D. Orion, bred, from the New Forest. A. Urticæ, &c.

Mr. Marsh, Monotoma 4-foveolata. Peckham. E. Verbasci (new Hemipteron). Deal.

Mr. Chaney, B. Consortaria and S. Extersaria, &c. Chatham, May.

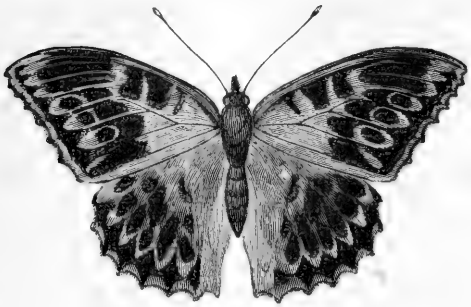
Mr. Williams, N. Lucina and others. Tilgate, in June.

Mr. Hoey, E. Debiliata (larvæ), found at Leith Hill in the spring. And many preserved larvæ.

THE ENTOMOLOGIST.

Nos. 106 & 107.] AUGUST, MDCCCLXXII. [Price 1s.

Answers to Correspondents.



ARGYNNIS PAPHIA (VARIETY).

LIPARIS MONACHA (VARIETY).

Variety of Argynnis Paphia.—This beautiful specimen has been kindly lent me by Mr. Moore especially for figuring in the 'Entomologist.' It has the usual colours of the species—fulvous and black; but their distribution, as will be seen from the figure, is very abnormal, and I cannot pronounce on the sex without hesitation: the absence of incrassated

wing-rays in the fore wings and the shape of the abdomen assimilate to the female. It was taken on the wing.

Variety of Liparis monacha.—This beautiful variety was bred by Mr. Wellman, the President of the South London Entomological Society, who has kindly lent the specimen for figuring in the 'Entomologist.' It is a female, and the principal difference in coloration between it and the typical insect is the greater preponderance of black, which forms on the fore wings a decided transverse median band, acutely toothed on the exterior margin. Like the other figures of extraordinary varieties, which have appeared in the 'Entomologist' during the present year, it is represented life-size.

Grease in Dragon-flies, &c.—I shall be much obliged if you will inform me as to the best method to be employed for preventing grease in dragon-flies, and for preserving their colours. 2. Also, if you will let me know what are the cheapest and most accurate illustrated works on British Coleoptera and Hymenoptera. Is there any intention, on the part of Mr. Newman or others, of publishing a work on Coleoptera, Hymenoptera, &c., similar in design to 'British Moths' and 'British Butterflies' already published? If so, I, for one, would be a subscriber; and I know others who would willingly do the same. 3. Would you also be so kind as to inform me what insects would be of use to breed in order to check the number of Aphides on roses.—*S. T. C.; Thiers, July* 11, 1872.

1. I have a very large collection of British dragon-flies, but have not observed that they are liable to be injured by grease: as to losing their colour, this seems inevitable. I have found it a good plan to keep them alive for several days after they are taken, as they are very apt to turn black if killed when the stomach is full of food. I kill them with laurel-leaves, and, opening the body by a longitudinal slit on the under side, introduce a slender roll of white writing-paper: the insect must then be set and thoroughly dried, but not exposed in drying. Wasps, cockroaches and mice highly appreciate insects on the setting-board. 2. I know of no intended works on Coleoptera and Hymenoptera on the plan of my 'Butterflies' and 'Moths.' Would that some competent entomologist would undertake these classes! 3. Ladybirds or Coccinellæ.

Zeuzera Æsculi.—1. Will you please tell me how to prevent

the ravages of the larvæ of Zeuzera Æsculi? I have an ash tree, the lower branches of which are quite dead from this cause. 2. I should be glad, also, if you could tell me by whom Mr. Wilkinson's work on 'Tortrices' and Mr. Stainton's on 'Tineæ' are published, and at what prices. 3. Also whether you can recommend any work on Deltoids, Pyralides, Veneers, and Plumes.—*B. N. Oakeshold; 2, Pembroke Square, Kensington, W., July* 10, 1872.

1. I regret my inability to furnish any further information about this garden-pest. I gave a very complete life-history of the leopard moth in the 'Field' newspaper of June 10th, 1872, tracing it from the egg to the imago, but suggesting no remedy beyond the very simple one of picking the moths off the trunks of the trees as they emerged from the chrysalis, at three or four o'clock in the morning: at this time of year they are exceedingly lethargic and very conspicuous objects, easily seen and easily crushed. 2. Wilkinson's 'Tortrices' is published by Mr. Van Voorst, at twenty-five shillings; and Mr. Stainton's 'Tineæ' by Messrs. Reeve & Co., also at twenty-five shillings: the latter is a valuable publication, but is out of print. Guenée's work on 'Deltoids' and 'Pyralides' is excellent; but it treats of the subject generally, and not exclusively of the British species. I am unable to recommend a work on the Veneers and Plumes.

Hybrid Smerinthus.—On looking over my cabinet memoranda I find I have a pair of hybrids, the progeny of Ocellatus and Populi: the fore wings are of a rich brown, with the markings of Populi; the hind wings are marked like those of Ocellatus, with the patch of a reddish colour, and the eye very distinctly marked, but without the pupil. Not having seen a notice of this kind, I thought it might be interesting to your readers. Are hybrid Sphingides of common occurrence? Any information of this nature would be acceptable. —*E. Chawner; Newton Valence, Alton, Hants, July* 9, 1872.

Hybrid Sphingidæ are of very rare occurrence, and collectors value them much.

Ophiodes lunaris at the Lowestoft Light.—Amongst my cabinet specimens there is one example of Ophiodes lunaris, captured at the Lowestoft Light in 1832. I conclude this is a rarity, having seen many cabinets without it.—*E. Chawner.*

Ophiodes lunaris is a great rarity: nearly all cabinets are without it.

Relaxing an Insect by Plaster of Paris.—I tried my hand at relaxing an insect (Elpenor) that had remained unset thirty years. I placed it in a tin box with plaster of Paris for two days, and on opening the box found it perfectly relaxed: I set it; and *now* I can with difficulty distinguish it from the recent specimens.—*E. Chawner.*

I shall be obliged by additional information as to how the plaster of Paris was applied.

Parasite of the Shrimp.—The tubercular complaint in shrimps, to which J. Williams alludes, is caused by the presence of a crustacean under the carapace: it belongs to the genus Bopyrus, but the species are not well made out; and it is possible that, as it is said, every animal has its peculiar louse, and every plant its peculiar plant-louse, so may every species of Palæmon and Crangon have its Bopyrus. That infesting the prawn is usually Bopyrus Squillarum, and that on the shrimp B. Crangonum. It is always found under the carapace; but whether it is parasitic on the prawn, or whether the carapace of the prawn is its home, it is difficult to say.

Scodiona Belgiaria.—What is the experience of the readers of the 'Entomologist' with regard to the occurrence of this species this season? With me it has been very rare. I have seen but one worn male up to this date (June 20th), and that was taken June 15th. The season is undoubtedly backward; but in former years I have taken Belgiaria in May. On referring to my diary I find the earliest date is May 10th (1867), when I took a male, and on the 16th of the same month I took a female. Several other things, beside the species in question, are scarce this season; but we need scarcely wonder when we recollect that we had ice in May, and frosts in the first half of June, even in the South of England. I trust that the portion of the collecting season now before us will be more beneficial to our cabinets and duplicate boxes than the past has proved.—*G. B. Corbin; Ringwood.*

Scorpion Fly (?) and C. Dominula.—Last season whilst collecting in the meadows I caught a C. Dominula, and a fly —which I believe to be the scorpion fly—had thrust its beak into the thorax of the poor "scarlet tiger," and was sucking its juices. Is such a thing of frequent occurrence? The murderer in question had beautifully veined wings, spotted

with black, and a crooked tail, which latter peculiarity induced me to suppose it was the so-called "scorpion fly." I often see the species in my rambles, so it cannot be uncommon. What is its history? It is a species which my friends who work with the microscope are very pleased to get; and this leads me to make enquiries about another insect which they call the "snipe-fly." It is a Dipterous insect, I believe, with a round hairy body, and an exceeding long, slender beak. When and where is it to be found?—*G. B. Corbin.*

I suppose Mr. Corbin's "scorpion-fly" to be an Empis, and his snipe-fly a Bombylius; but should prefer seeing specimens before I give an editorial judgment.

Pachycnemia Hippocastanaria.—This is a very peculiar species, in my opinion, with regard to the time of its appearance in the perfect state; for, like R. Cratægata, it is stumbled upon at various seasons; but possibly it resembles that species in being double- or triple-brooded. That Hippocastanaria is at least double-brooded I have no doubt, as I take it in good condition in early spring, and, again, in equally good order in September. I have taken it as early as February 22nd, and as late as the end of September, but I have also taken a few good specimens in July; in fact, I am not surprised to take a specimen on the heaths on *any* date between spring and autumn. This season I took a fine and perfect specimen at the beginning of June. It seems to me that individual specimens of the same brood often remain in the pupa state, and are developed long after their relations have passed away; and this observation is confirmed not only this season, but by experience of former years.—*Id.*

Geometra papilionaria.—Although I am not able to render Mr. Mathew the assistance he asked for in regard to searching for G. papilionaria in the winter or early spring, I send a note or two which may prove useful to those who look for the insect later in the season. Last year I procured nearly fifty eggs from two females captured in July; they hatched in August: the larvæ grew very slowly till hybernation, when they were of a reddish brown colour. They rested during the winter, either in a nearly straight position at an angle with the twig, or bent like a bow with their heads by the side of the twig, and always towards its tip. After hybernation I found eighteen alive: of these seventeen died one after the other. In the hope of saving the last I determined to place

it on a small birch tree: whilst placing it there I caught sight of another more fully grown; and a further search revealed six more. They were all just at the top of the twig on which they were resting. Whilst watching them I found they were never in the morning on the twig on which they had been the day preceding, and that they moved their position between nine and eleven in the evening: between these hours they turned their heads towards the trunk of the tree, and travelled till they arrived at a fork in the branch, when they would diverge towards a fresh position. They are always attached to the twig by their claspers, never to any portion of a leaf.—[*Rev.*] *P. H. Jennings; Longfield Rectory, Gravesend, June* 21, 1872.

Epione Apiciaria.—I have this season bred eight larvæ from eggs laid at the same time by one female: the first appeared about the middle of April; the last just a month afterwards. Is it usual for so long a time to elapse in the hatching of the eggs of this insect?—*Id.*

Entomologists will please state their experience.

Butterflies Migrating.—The notice by Mr. C. Pocklington of a butterfly falling into the sea in Boston Deeps, and rising again "apparently refreshed by its resting there," and your editorial quotation from Mr. Newman in support of this habit of voluntarily resting for a time on the water, are of considerable interest to me, as they may perhaps remove a difficulty I have long felt with respect to what I believe is a true migration of butterflies from India to Ceylon. Lepidopterists are no doubt aware of the flights of butterflies which have been observed periodically in each year working their way from the south of Ceylon towards the north. These migrations take place in different parts of the country and at different times of the year, but they have not been traced beyond the island, and their object has not been ascertained. Sir Emerson Tennent speaks of their passage in April and May, and they may be observed in the middle of November every year at Colombo, fighting their way against the strong northerly wind. Although most of these flights consist of white and yellow species, they also include (in November) a great number of the black and red swallowtail (Papilio Hector), and many of the large black and yellow P. Darsius. It is worthy of note that the migrations are always made against the wind, and that no return flights have been

observed. Yet I believe there is a regular migration of at least one species (P. Hector) from India to the north-west of Ceylon, whence it must find its way to other parts of the low country. From the middle of February to the middle of April I was usually at sea, cruising somewhere in the neighbourhood of the Pearl Banks; and during certainly three seasons I saw, at a distance of from ten to sixteen miles from the land, straggling parties of Papilio Hector flying low and steadily towards the coast of Ceylon. Their course was nearly due east; and whilst in sight from the vessel they did not deviate from that direction. It was usually at the end of February that I saw them,—at the beginning of the short, calm season between the monsoons. Now, the distance across from India to that part of Ceylon from which these hundreds of butterflies were making could not be less than sixty miles, and it has always been a puzzle to me how these delicate creatures—comparatively powerful as their flight is, undoubtedly—could yet have flown so far without rest. Had resting-places on land been needed, these butterflies might have crossed from the Continent by way of Adam's Bridge,—a long sand-bank bearing a few scattered palm trees, about sixteen miles further north; but they were a long way out of sight of it, and their course was very nearly parallel to it. They must have had full confidence in their powers and resources if they came direct from India; and, if not from that country, whence did they come? I shall be glad to hear what you or your correspondents may think of the application of the resting-on-the-water theory to this case.—*E. W. H. Holdsworth; 'Field' of June* 29.

The paragraph to which my friend Mr. Holdsworth refers is the following. A greater degree of interest attaches to the subject than appears evident on first thought. It certainly opens up the large question of the migration of Lepidopterous insects, of which I have previously recorded so many instances.

Butterflies Migrating and Settling on the Sea.—I frequently go for a sail in the Wash, or Boston Deeps, as it is commonly called, and whilst out occasionally see several large white butterflies (Pieris Brassicæ), flying about when a considerable distance from the shore. I concluded that their powers of flight were greater than generally supposed, or that they found resting-places on the passing vessels, or the buoys

and beacons placed to mark out the different channels in the deeps, though I never noticed them attempt to do so; but on Thursday last, again observing several, I watched them minutely, when one of them fell in the sea, about five miles from land; and, to my surprise, as the wave arose upon which it had alighted, the little creature mounted with it, and flew away again uninjured, and apparently refreshed by its resting there. I suppose others have noticed this; but, if not generally known, I send the information for naturalists.—*C. Pocklington; West Skirbeck, Boston.*

[The interesting facts mentioned by our correspondent are not new to us; the following passage from Mr. Newman's 'Illustrated Natural History of British Butterflies' seems to meet the case exactly. It not only corroborates, but amplifies, our correspondent's statements:—"It was a still, hot day, with scarcely a breath of air, and now and then the common Brassicæ and Rapæ (these are the common cabbage butterflies) would lazily fly in. The flood-tide set in about 3 p.m. with a gentle breeze, and then came a host of the above-named butterflies, with a few of Napi. There must have been hundreds arrived within a very short space of time; but what surprised my friend and me was their alighting or settling on the sea with expanded wings, and the ease with which they rose again. We saw the same butterfly settle and rise again as many as four or five times within a distance of less than a hundred yards, and with apparently as much ease as on land. They all came direct in from the sea, from a south-westerly direction, and seemed to aim for the entrance of the harbour between the piers, though there were plenty of them came on shore on each side of the piers. The shore was covered with a coarse sort of rye grass, on which they were resting when we returned home; and on walking through the tall grass they rose in myriads." This was at Brighton.—*Editor of the 'Field.'*]

Works on Hymenoptera.—In answer to W. D. Roebuck:—In the Hymenoptera we have no satisfactory work on the Ichneumons on Tenthredinina; Mr. Smith's Museum Catalogue of the 'Bees of Great Britain' is the best on bees. Mr. Shuckard's 'Essay on Indigenous Fossorial Hymenoptera' and Mr. Smith's Museum Catalogue of 'British Fossorial Hymenoptera' are both of them excellent.

Notice.—Having been appointed to the Flag Ship, just commissioned for the Pacific Station, I shall be unable to visit the locality for Arion, and so, I fear, unwillingly disappoint many of my friends to whom I promised the insect; and, as I am too busy to write separately to each, I take this means of informing them.—*Gervase F. Mathew; Admiralty House, Devonport, July* 8, 1872.

Annual Report of the North Staffordshire Naturalist Field-Club, 1872.—I beg to acknowledge the receipt of this interesting pamphlet, through the kindness of the Rev. Thomas W. Daltry, the Secretary. It contains several interesting papers, among which I would mention one "On the Lepidoptera of North Staffordshire," by the talented and industrious Secretary, as particularly worthy of study.

EDWARD NEWMAN.

The Genus Acentropus, as treated by Mr. Dunning.

(Trans. Ent. Soc. 1872. Part III. May.)

The Editor of the 'Entomologist' might very plausibly advance "indirect claims" to a treatise, which, if not the very best and most exhaustive that the Entomological talent of this country has ever produced, still may be said to claim a place in the foremost rank, since Mr. Dunning, its gifted author, after giving a masterly summary of the labours and opinions of entomologists on the characters and position of the genus Acentropus, proceeds as follows:—"It was no part of my plan to have given the preceding sketch, but I have been led to do so by reading the remarks of the Editor of the 'Entomologist,' which I have just quoted." Thus it is evident how good a case I might make out of "indirect claims" to the authorship of a treatise exhibiting so much research. There is one, and but one, cause for regret for the launching of this paper of Mr. Dunning's through the very narrow channel he has selected. The circulation of the 'Transactions of the Entomological Society' is very much confined to the members of that learned body, and the reading of those Transactions is yet more restricted: so much so is this the case, that I should have never known of

its publication but for Mr. Dunning's courtesy in sending me a copy.

Stripped of a certain amount of *persiflage*, which is likely to induce an erroneous estimation of the author's attainments, as well as an equally erroneous impression that the author distrusts his own case, the paper is one of sterling merit, of sound and solid teaching (which is nowhere else to be found in a collected form), on the genus Acentropus. I will cite, in support of this assertion, a brilliant but perfectly fair passage on the life-history of Acentropus:—

"Let us now bring together, as a connected narrative, the scattered observations on the habits of Acentropus.

"Olivier and Latreille say nothing about its mode of life, but, from its having been described as a Phryganea, we may infer that it was found in the neighbourhood of water. 'Found on willows,' near a canal, was Stephens' account; 'in an osier bed,' was Brown's first report. Kolenati, however, in 1846, discovered that the imago affected certain species of Potamogeton, and suspected that the pond-weeds were the food-plant of the larva. Informed by Haliday of Kolenati's observations, Brown, who in 1855 and 1856 captured the moth flying over the river Trent, was enabled to find pupæ in 1857, and in the following year to obtain both larvæ and pupæ.

"Previously to this, Curtis and Dale had found, at Glanville's Wootton, what they supposed to be the eggs of Acentropus: they were exhibited at the meeting of this Society on the 4th of September, 1854, and are described in the Proceedings as 'a large mass of white and very elongated eggs.' The oviposition was not actually seen, but the eggs were found at a spot where Acentropus abounded, and near a female specimen, which was captured, and exhibited at the same meeting; and there cannot, I think, be any reasonable doubt that they were really the eggs of Acentropus. I suppose these eggs have gone to the Antipodes with the rest of Curtis's collection; but Hagen saw them, and has described them as 'a number of white roundish eggs, lain thickly together on a Potamogeton leaf.' There is, however, a discrepancy between the two accounts as to the shape of the eggs. In 1861 Knaggs had some eggs laid on his setting-boards, by specimens captured at Hampstead: he

described them as having 'a most striking resemblance to those of Paraponyx stratiotalis.' *Herrich-Schäffer, in the same year, figured the female specimen on which Möschler based the species A. latipennis, and he depicts her with a string of eggs at her tail. M'Lachlan has shown me one of his Hampstead examples with a similar string; and Knaggs has a continental A. latipennis with eggs attached.* In these cases, the colour of the egg is dirty white, or yellowish; and the shape is 'roundish,' rather than 'very elongate.'

"The larva is of a light green colour, and like those of Hydrocampa, Paraponyx, and Cataclysta, it lives on aquatic plants below the surface; *it has gills, and lives freely in the water.* It has been figured by Brown. It appears to feed exclusively on the pond-weeds, but has been found on several species; thus Kolenati (who, however, was acquainted with the imago only) mentions Potamogeton heterophyllus and perfoliatus; Brown and Heinemann mention P. pectinatus and perfoliatus; Ritsema mentions P. crispus; and Millière mentions P. pectinatus and lucens. When fully fed, in June or July, the larvæ may be found 'in silken cocoons, which are strengthened by small pieces of the leaves incorporated longitudinally in the fabric, and which are placed in the submerged axils' of the thread-like leaves of the Potamogeton. Brown found only fully-fed larvæ, but Ritsema and Reutti found them in various stages of growth.

"The pupæ are described by Brown as 'of the masked character, and the external case enables one to see clearly which will produce males and which females;' both the male and female pupæ are figured by him, and exhibit three remarkably prominent spiracles on each side. To acquire the pupæ, Knaggs recommends dragging the stream or pond with a water-net, where Potamogeton grows, examining it on the shore for the small silken cocoons.

"The imago appears in June, July, and August; though not continuously for the whole period. During the three months mentioned, the insect may be found in all its four stages of egg, larva, pupa, and imago; and it would seem that about ten months of the year (including the winter months, as with Hydrocampa and Paraponyx) are passed in the larval state, and about one month in the pupa.

"The male imago is much more common, or more com-

monly observed, than the female; occasionally it is found in swarms. Kolenati captured forty-two specimens in the Neva, all males; Nolcken went to the same locality, and took something like 150, again all males. Zeller had it in numbers from Pomerania, but only of the male sex. Hagen had seen it in numbers, but could not remember a single female taken in Prussia. Dale, in the last letter I had from him (within three months of his death, when the veteran entomologist was over eighty), wrote 'the males were in great abundance, the females very rare.' Brown, in a recent letter, writes 'I have seen, I should almost say, hundreds of males on the wing at a time.' Ritsema took fifty specimens near Haarlem, all males.

"Unless disturbed, they are inactive by day, but fly briskly in the evening over the surface of water. Kolenati found them sitting sluggishly on the Potamogeton, close to the water, the majority on the flowers and young seeds; when active, they ran on the surface of the water. According to Dale, 'they flew nearly on the surface of the water, sporting about in various directions.' Brown found them quietly sitting on leaves, or other objects which protruded from the stream, whilst others flew slowly, or, as he elsewhere expressed it, were 'skipping over the surface' of the Trent. Reutti's observation is, that the male flies always close to and on the water, by day only involuntarily, but by night briskly. M'Lachlan records that between 8 and 9 p.m., in June, 'they began flying rather rapidly over the surface of the water, and close to it, occasionally coming on to the wet mud.' Knaggs mentions that 'it skims along the surface of the water,' but although the usual habit is to fly close to the water, he has 'occasionally seen it mount perpendicularly into the air, rising higher and higher, until lost to sight.' M'Lachlan tells me that he too saw the male thus mount into the air, but only when caught by a current of wind, so that it was an involuntary act. Boyd tells me that he observed the females to fly, as a rule, at a greater height above the water than the males. Nolcken found them, either sitting drowsily on floating pieces of Potamogeton or other objects, often two or three so close together that at first he thought they were *in coitu*, or fluttering about in small circles close to the surface, then raising themselves a few inches above it, but

descending again immediately, so that their feet were almost always touching the water. Barrett 'found some faggots sunk with stones in one corner of a pond, leaving some of the twigs above water; and on the under side of these twigs Niveus swarmed, sometimes clustered four or six in a bunch; they were very sluggish, and, if knocked off a twig, only buzzed along the surface of the water till they found another.' Ritsema describes them as sitting by day on the stems of plants close to the water, and when disturbed coming quickly to rest again; but in the evening flying nimbly in large circles over the surface, touching the water itself, and settling but rarely. Corbin describes the flight as most peculiar, 'as it never seems to leave the surface of the water, but swiftly flutters its tiny wings, and in the dusk of the evening looks almost as if it was swimming about here and there; . . . . but in the daytime it will be found settled on the under side of leaves, &c., close to the water's edge.' I have already mentioned that it was the circular flight of the insect (a male) round a lamp and over the surface of a table, which first attracted my attention to the specimen which gave rise to this paper. De Graaf captured two males which were similarly attracted to a lamp, and performed their antics on a table-cloth; and Stainton, some years ago, took a female specimen at Lewisham, which flew to a gas-light fixed outside his house. Brown, Dale, and Barrett, all mention to have seen many dead specimens floating on the pond-weed, or on the surface of the water; and during the daytime, Knaggs and M'Lachlan found that the living specimens might readily be fished out from off the Potamogeton, by means of a shallow net with a long handle."

This is all that is known of the life-history of Acentropus. The hereafter may add further details, but can detract nothing from the value of these. It will, perhaps, be expected of me that I should contest Mr. Dunning's conclusions, since he seems to regard them as antagonistic to my own; but really there is no necessity for this. I cannot doubt, and therefore will not dispute, Mr. Dunning's facts. Indeed, I have no disposition to doubt the salient points of the summary; they are in perfect harmony with my own foregone conclusions. For instance, three competent observers—Herrich-Schäffer, Mr. M'Lachlan, and Dr. Knaggs—find

that the eggs are extruded united together in a string attached to the tail of the female. I should have expected this. Again, the larva has gills, and lives freely in water. I should have supposed so. I have taken the liberty to italicise these passages in my quotation, as I think them of importance; but I must observe that they are not thus distinguished in the original.

Two points yet remain to be noticed. 1st. That Mr. Dunning, after a thorough investigation of the situation of Acentropus among the Lepidoptera, decides in placing it in the Pyralites. He says:—

"The aquatic habit of the insect, the mode of life, and the metamorphoses, are so plainly indicative of affinity to Hydrocampa, that I willingly go with the current of recent opinion, and recognize the true place of the Acentropidæ to be where Staudinger and Wocke have placed them, that is to say, in the Pyralidina, leading up to the Chelonidæ and the Crambidæ."

This seems rather accepting the prevailing opinion of lepidopterists than broaching a new one, and it is in this character that Mr. Dunning publishes his views of the affinities of Acentropus; he does not hint that it is new.

2nd. Mr. Dunning admits but one species of Acentropus. He concludes thus:—

"Nolcken himself, to whom we are indebted for the greatest amount of subdivision, admits that amongst the males of all the forms reported to be A. niveus, he could not find any trustworthy differences. In the case of forms so nearly allied, I think the *onus probandi* ought to lie upon those who assert their specific distinctness. And believing that, by simply asking an abstract question, I am less likely to provoke investigation and discussion, than by expressing an opinion which can be contradicted and disproved, I will conclude by expressing an opinion,—to which I am not wedded, and from which I shall be glad to be converted, but still an opinion founded on such evidence as I have been able to obtain,—namely, that all the forms of Acentropus heretofore attempted to be distinguished are, in fact, referable to one and the same species, for which, in the present state of our knowledge, I shall retain the name that is in vogue,—Acentropus niveus."

EDWARD NEWMAN.

Earliest and latest dates of the appearance of some of the rarer British Butterflies.

By the late J. C. Dale, Esq., F.LS.

[Knowing how much interest I felt in everything connected with British butterflies, Mr. Dale most kindly sent me the following letter, which, in addition to its utility, will be interesting as evincing the writer's zeal in the cause of Science.—*Edward Newman.*]

I have been looking over some of the extracted dates of British butterflies, especially the earliest and latest observed.

P. Acis:—

1854.	May 2nd.	*Atkinson.*
1833.	May 28th.	*J. C. Dale.*
1815.	June 10th.	,,
1813.	June 11th.	,,
1808.	June 22nd. (Female.)	,,
1808.	July 2nd.	,,
1798.	July 16th.	*Dr. Abbot.*
1819.	July 16th.	*J. C. Dale.*
1811.	July 24th.	,,
1814.	August 1st. (Bad.)	,,
1814.	Aug., end. (Much wasted.)	*Lewin.*

H. Actæon:—

1833.	May 31st.	*J. C. Dale.*
1837.	July 3rd.	,,
1834.	July 12th.	,,
1834.	August 2nd & 3rd.	,,
1832.	August 15th.	,,
1832.	August 30th. (Wasted.)	,,
1832.	September 1st.	,,

P. Arion:—

1835.	June 8th & 15th.	*Prof. Quekett.*
1798.	June 28th.	*Dr. Abbot.*
1836.	June 29th.	*J. C. Dale.*
1833.	July 3rd.	,,
1799.	July 5th & 9th.	*Dr. Abbot.*
1819.	July 14th.	*J. C. Dale.*

H. Cassiope (Epiphron):—

1809.	June 11th. (Much worn.)	*T. Stodhard.*
1827.	June 18th. - - -	*J. C. Dale.*
1827.	June 23rd to 26th. - -	„
1826.	July. - - - -	*Hutton.*
1826.	August. (Female.) -	*Marshall & Weaver.*

Blandina (Medea):—

1826.	July, beginning. - -	*J. C. Dale.*
1826.	August, middle, &c. - -	„

Davus, *Haw.*:—

1826.	June 8th. - - -	*J. C. Dale.*
1826.	July.	

Typhon:—

1826.	May 1st.	
1826.	June.	
1825.	July 12th. - - -	*J. C. Dale.*
1825.	July 30th.	

V. Io:—

1824.	January 30th. (Flying, Parley Heath.)	

A. Adippe:—

1824.	June 2nd. (Larva.) -	*J. C. Dale.*

C. Edusa:—

1824.	April. - - - -	*Morris.*
1811.	June 11th. - - -	*J. C. Dale.*
1811.	June 16th & 18th. - -	„
1811.	July 11th. - - -	„
1811.	August.	
1811.	September.	
1811.	October.	
1808.	November 4th.	

C. Hyale:—

1842.	April. - - -	*Bp. of Gibraltar.*

P. Dispar (Hippothoë):—

1841.	June 6th. (Larvæ.)	
1826.	June 25th. (Male.) - -	*J. C. Dale.*
1833.	July 3rd & 5th. - -	„
1827.	July 19th. - - -	„
1827.	July 24th. (Larvæ.) -	„

1827.	July 25th. (Pupæ.)	-	*J. C. Dale.*
1819.	August. - - -	-	*Speechly.*
1821.	August 4th. - -	-	*B. Standish.*

P. Phlæas :—

1833.	April 2nd. - -	-	*Brown.*
1833.	April 20th. (Pupæ.)		
1821.	May 1st. - - -	-	*J. C. Dale.*
1810.	May 28th. - -	-	,,
1808.	June 3rd. - -	-	,,
1808.	July 4th. - -	-	,,
1809.	August 7th. - -	-	,,
1809.	September 1st. -	-	,,
1826.	September 22nd. (Var.)	-	,,
1826.	October. - - -	-	,,
1803.	November 5th. -	-	,,

T. Rubi :—

.	April 13th. - -	-	*Albin?*
1834.	April 24th. - -	-	*J. C. Dale.*
1798.	May 10th. - -	-	*Dr. Abbot.*
1813.	August 3rd. (Faded.)	-	*J. C. Dale.*

T. Pruni :—

1841.	June 18th. - -	-	*H. Doubleday.*
1829.	June 24th. -	-	*Prof. Babington.*
1831.	June, end. - -	-	*Mr. Garnons.*
1833.	July 2nd. - -	-	*J. C. Dale.*
1837.	July 17th. - -	-	,,

T. W-Album :—

1823.	June, end. - -	-	*Stephens.*
1833.	July 9th. - -	-	*Blomer.*
1837.	July 16th, 24th & 31st.	-	*J. C. Dale.*
1833.	July 30th. - -	-	*Blomer.*
1827.	August 6th. - -	-	*Henderson.*

T. Betulæ :—

1826.	July 15th. (Bred.)	-	*J. C. Dale.*
1827.	August 5th. - -	-	,,
1809.	September 1st. -	-	,,
1809.	October 8th. - -	-	,,

J. C. Dale.

Glanville's Wootton, November 2, 1870.

Description of the Larva of Noctua triangulum.—Length, when full fed, 1 inch and 3 lines when at rest; 1 inch and 6 lines when extended. Head small, retractile. Body obese, cylindrical, distinctly attenuated in front, tapering from 6th segment to head, the 2nd segment being manifestly narrower than any of the others; the 12th segment is a little elevated behind; segmental divisions well marked; each segment is wrinkled transversely, and there is a distinct lateral skinfold; there is a semicircular corneous plate on back of 2nd segment. Colour of head wainscot-brown, reticulated with black at the sides, umber-brown in front: this latter colour is bounded by two black parallel lines, one on each side of the median suture. Dorsal surface either dull ochreous or ochreous-brown; in either case delicately reticulated with black. On each segment from 5th to 12th is a somewhat diamond-shaped mark, either dull reddish brown, dull umber-brown, or bistre-brown; this is very indistinctly marked on the 5th and 6th segments, and on the 12th is reduced to a triangle, the apex of which points forward: through this series of marks passes the slender, ochreous, medio-dorsal line, edged on each side by a fine dark line; it is usually obliterated in the centre of each segment, reappearing for a short distance on each side of the segmental division; at the division itself it is obliterated by its dark edgings becoming there united, and forming a spot—only visible, however, when the larva is in motion. The subdorsal lines are extremely indistinct, ochreous, interrupted, and only visible on the posterior segments; they are bordered above by a fine brown line, which ends on each segment in a slight curve at the lateral angle of the dorsal diamond; sometimes the pale lines are altogether absent, and their place only indicated by this fine curved line; on each of the 11th and 12th segments the place of this fine line is occupied by a conspicuous black mark, one on each side of the dorsal line; those on the 11th segment are elongated wedges in form; those on the 12th larger and more decidedly triangular, the apices of the triangles pointing forwards, and their bases united by a dark brown line forming the anterior boundary of a transverse ochreous band, occupying the posterior edge of that segment and uniting the subdorsal lines. The lateral surface is the same colour as the dorsal diamonds, and is delicately reticu-

lated with black like the back. Ventral surface and claspers dingy ochreous-gray. Legs ochreous-brown. Usual spots black, small, each accompanied by an ochreous spot. The foregoing description was taken April 28th, from larvæ found on bramble, the only plant on which I have found them at large, although they eat almost anything in confinement. They were full fed and buried at the end of April and beginning of May, and the first imago emerged June 18th.—*Bernard Lockyer.*

Description of the Larva of Noctua brunnea.—Length 1 inch when at rest, 1 inch 6 lines when extended. Head small, retractile. Body obese, cylindrical; the segmental divisions well marked, attenuated gradually in front, the 12th segment slightly elevated behind. There is a distinct lateral skinfold. Head reddish brown, with two dark marks down the front, approximating on the crown, and each bordered behind with a pale ochreous line. Colour of body variable; usually a rather pale rosy brown, but sometimes clay-brown, orange-brown, or dull olivaceous-brown. On each segment from 5th to 12th there is a very indistinct darker lozenge-shaped mark, its edges fading off into the ground colour, that on the 12th segment being reduced to a triangle; through this series of dorsal lozenges passes the slender and interrupted and somewhat indistinct medio-dorsal line, which is pale, edged indistinctly with brown, this edging forming a dark spot at the junction of each segment; the subdorsal lines are yellow and much more distinct, especially on the posterior segments, and are united on the posterior edge of the 12th segment by a conspicuous transverse yellow line, bordered in front with dark brown; they are dilated in the centre of each segment from the 6th to the 12th into a distinct yellow spot; each of these spots is the starting-point of a short, pale yellowish, and rather diffuse oblique streak, slanting backwards towards the medio-dorsal line, and each of these oblique lines is bordered above by a dark shade, which runs obliquely to the centre of the back, and is only prevented from joining the one from the opposite side of the back by the medio-dorsal line; each pair of these oblique shades thus forms a V-shaped mark, the apex of which points backwards, and each V forms the posterior boundary of one of the lozenge-shaped marks already mentioned. These oblique shades on the 11th and

12th segments have more the character of triangular spots, the bases of those on the 12th segment being seated on the yellow band across that segment, and their apices pointing forwards; they vary in intensity of colour. The spiracular line is slender, very distinct, and yellow or ochreous on the 2nd to 4th segments; on the other segments it is broad, diffuse, and of the ground colour, dotted with whitish, more thickly at the posterior than at the anterior part of each segment, and thus appearing alternately pale rosy brown and ochreous-white; the spiracles are of the ground colour, each in a delicate black ring. The ventral surface and claspers are pale grayish ochreous. The legs reddish brown. The usual spots are small, very indistinct and black; the bristles are whitish. The distinguishing characters of this larva appear to me to be the peculiar coloration of the spiracular region, and the great distinctness of the yellow band on the 12th segment. When young it is a very pretty larva. It feeds chiefly on bramble, but also on hornbeam, and (in captivity) on dock and other plants. It is full fed about the second and third weeks in April, and then buries under the earth and constructs a loose cocoon, in which it turns to a pupa of the usual Noctua form, and reddish brown and very shining. The moths emerged June 7th to 12th.—*Bernard Lockyer.*

Description of the Larva of Noctua festiva.—Eggs were laid by a female, taken at sugar, June 30th to July 2nd, 1871. They were pale lemon-yellow, which changed to grayish before the larvæ emerged, which event took place July 11th. The young larvæ were short, stout, and cylindrical, with but three pairs of claspers developed; they consequently looped in walking. They had black heads and dull grayish bodies, with the tubercular dots very distinct, black, and each emitting a slender bristle. They fed on violet till hybernation, which took place in October, they having previously undergone three changes of skin. Before hybernation they had gained the use of all their claspers, and were of a ferruginous-brown, marked with whitish, the dorsal and subdorsal lines being of that colour, very distinct, and edged with dark red. The spiracular lines were reddish ochreous, edged with white on each side, and there was a series of dark oblique streaks between the spiracular and subdorsal lines. They

recommenced feeding in February, 1872, and fed from that time to their attaining their full growth, first on foxglove, and afterwards on Pyrus japonica. They underwent two moults before they were full fed, which they were from April 4th to 12th. Subsequently I took a number of larvæ at large, feeding on bramble, sallow, and hornbeam. The following is a description of the full-fed larva:—Length, when at rest, about 1 inch; when extended, 1 inch and 4 lines to 1 inch and 6 lines. The head is very small, less than 2nd segment, and retractile thereinto. The antennal papillæ are conspicuous. The body is obese and cylindrical, attenuated in front. Each segment is full and rounded. The skin is transversely wrinkled, and there is a lateral skinfold below the spiracles. Both the head and body emit slender whitish bristles. Head wainscot-brown, with two parallel dark brown marks, one on each side of the median suture. The colour of the body varies slightly. That of the more usual type (which is the one always taken at large by me) is ferruginous or olivaceous-brown, delicately reticulated with darker; the segmental divisions usually tinged distinctly with rosy. The dark reticulations on the back form a series of somewhat indistinct lozenge-shaped marks, one on each segment from 5th to 12th, their edges shading off into the ground colour. Through the centre of this series of lozenges runs the thread-like and indistinct medio-dorsal line, which is ochreous, finely bordered with brown on each side; it is almost obliterated in the centre of each segment by the dark lozenge. On the 12th segment the lozenge is reduced to a triangle, which is usually more clearly defined than the marks on the other segments. Its apex points forwards. The subdorsal line is ochreous, and is to be traced throughout the length of the larva from 2nd to 12th segment, but is most distinct and broadest on the posterior segments; it is bordered throughout, on both sides, by a fine brown line, and surmounted on each of the 5th to 12th segments by a conspicuous velvety dark brown, almost black, spot, of somewhat triangular form, the apex of the triangle pointing forwards; the spot on the 5th segment, is, however, almost linear and indistinct; the others increase gradually in size towards the anal extremity of the larva, those on the 11th and 12th segments being the largest; on the posterior edge of the 12th segment the sub-

dorsal lines are united by an ochreous transverse band; the bases of the dark triangles on this segment rest on this line. There is, also, sometimes a transverse ochreous line on the 13th segment, but this is by no means constant. The subspiracular stripe is paler than the ground colour, but not very distinct, and is bordered above by an indistinct brown line; the spiracles are black, each in an ochreous ring; just behind each spiracle on the 5th to 12th segment is an oblique dark blotch slanting towards the subdorsal line, and varying in intensity, its lower part often forming a darker spot behind the spiracle; the obliquity of these stripes is towards the head of the larva. The ventral surface and claspers are pale grayish ochreous, the latter almost colourless; the legs are pale wainscot-brown. The ordinary dots are small, black, and indistinct; each of those on the dorsal surface is accompanied by a tolerably distinct whitish or ochreous spot. The plate on 2nd segment is brownish, with the three lines very indistinctly marked. The two following varieties were reared from the egg. *Var.* 1. Umber-brown, altogether more dingy in appearance; the segmental divisions not tinged with rosy. *Var.* 2. Ground colour of back pale wainscot-brown, reticulated minutely with darker; the dorsal lozenges much more clearly defined than in either of the preceding varieties. The triangular spots on the 12th segment are much paler than those on the other segments. The sides are purplish-brown. Rest as in the ordinary type; but the subspiracular stripe is tinged with rosy, while the segmental divisions show no trace of that colour. The 13th segment is entirely pale ochreous-brown, with a distinct dark dorsal line. The larvæ are full fed in April and May: they then bury and spin loose cocoons, in which they turn to chrysalides, which very closely resemble those of N. brunnea; they are of a shining reddish brown. The moths emerge in June. The first of my imagos, bred from the larvæ taken at large, emerged June 6th, though one, bred from the egg, came out on May 31st.—*Bernard Lockyer.*

Description of the Larva of Eupithecia pygmæata.—Long, very slender, extremely attenuated on the capital segments; ground colour pale dull yellowish green; central dorsal line pale olive, connecting a series of very distinct and well-defined urn-shaped blotches of the same colour, which

become confluent on the anal and capital segments; subdorsal and spiracular lines pale olive, sinuous, well-defined, and rather broad; belly without markings; skin rough and rugose, freely studded with short whitish hairs. In form and general appearance comes nearest to the larva of E. pulchellata. Feeds on petals and anthers of Stellaria holostea. Full fed June 20th. I am indebted to the kindness of Mr. Hodgkinson, of Preston, and Mr. Hellins, of Exeter, for an opportunity of describing this interesting and almost unknown larva. The former gentleman took a female moth on May 25th: she deposited three eggs on a daisy-flower, which, together with the parent insect, he forwarded to Mr. Hellins. The eggs hatched June 2nd. Mr. Hellins kindly sent me a larva just previous to its last moult. I had no Stellaria holostea within easy reach, but found it feed greedily on the petals and stamens of Cerastium tomentosum. Mr. Buckler has taken several life-like portraits of the interesting little stranger.—[*Rev.*] *H. Harpur Crewe; The Rectory, Drayton-Beauchamp, Tring, June* 21, 1872.

Description of the Larva of Tæniocampa opima.—It rests in nearly a straight position on its food-plant, and when disturbed appears rather flaccid and falls to the ground: I was unable to induce them by handling to roll in a ring. The head is of the same width as the 2nd segment, highly glabrous, and bears a few slender scattered hairs, which are directed forward; the lobes are rather prominent and distinct. The body is almost uniformly cylindrical, velvetty, and bears a few scattered hairs, more particularly on the 12th and 13th segments; it has a manifest lateral skinfold below the spiracles. The colour of the head is testaceous-brown, reticulated with darker brown. The body is divided distinctly into two areas: the dorsal, dark and varied; the ventral, pale and uniform clear green, sometimes yellow-green; the dorsal area has the 1st segment green, the 2nd and 3rd partially so, that is to say, the green colour seems to gleam through the reticulated markings; these markings are purple-brown, and longitudinally intersected by a narrow medio-dorsal stripe and a broad lateral stripe, both of a subdued green colour; the lateral stripe gradually shades off to a black, which colour is due to the presence of black reticulations, minute and separate, towards the back, but crowded on the ventral

margin, and forming an abrupt and distinct boundary to the dorsal area; intermediate between the medio-dorsal and lateral stripes are three minute pale circular spots, inconspicuous until magnified; the green ventral area is without markings; it includes the spiracles, which are oval and pale testaceous, surrounded by a delicate black circumscription. I am indebted to Mr. Bryant for a liberal supply of this interesting larva, which I had not seen when I published the species in my 'British Moths.' He informs me that the eggs were laid on the 5th of April, the larvæ hatched about the 24th, and were full fed and went to pupæ on the 1st of June. —*Edward Newman.*

Life-history of Iodis vernaria.—The eggs are laid in July in a very singular manner, as first pointed out to me by Mr. Wright. The female selects a twig of the food-plant, Clematis vitalba (wild clematis or traveller's-joy), and standing lengthwise on a twig deposits an egg on the rind, never on a leaf: the egg is somewhat longer than broad, and very flat; after a short interval a second egg is laid on the top of this, and again, after another interval, a third, a fourth, and so on, until a little pile of twelve or fourteen stand out at right angles with the twig, like a lateral twig or thorn. Under a lens of moderate power, this pile of eggs exactly resembles a stack of oblong cheeses, symmetrically arranged one on the other. In some instances, when the parent has been restless, or disturbed in mind, or dissatisfied with the spot she had first selected, she has abandoned her egg-tower when only three-stories high; but this is not usual; she generally continues her labours until a dozen eggs are thus carefully adjusted in a pile: the lowest number yet observed in this columnal structure is three, and the highest fourteen; the eggs are not angular as in a column of basalt, but the arrangement is precisely similar. In one instance that came under the notice of Mr. Jennings the pile of eggs was branched, thus assuming the form of the letter V. The eggs usually hatch during the first week in July, and the young larvæ disappear, after feeding a little, with the leaves of the food-plant, and reappear after hybernation, as soon as the leaves of another season are ready for them in the spring. The most likely spots for finding these larvæ are on the shoots trailing on the ground, or at a very slight elevation. When the larvæ leave the egg they are very interesting little objects: they stand on

the general or partial leaf-stalks, or sometimes on the edge of the leaf, in a variety of attitudes; some parallel with the object on which they are resting; others forming an obtuse angle with it; others erect; and others looped, after the ordinary manner of geometers when travelling: the 2nd segment has two pointed horn-like projections directed forwards, and concealing the head if viewed from above; they are of a pale green colour, the surface of the skin frosted with white, the tips of the horn-like projections tinged with red, brown, or purple, and the head deep purple, contrasting strongly with the almost colourless body. About the middle of last June the Rev. P. H. Jennings most kindly supplied me with a number of the larvæ of Vernaria; and, when quite full grown, I described one as follows:—Rests in nearly a straight position, firmly attached by its anal and ventral claspers to a twig or leaf-stalk of its food-plant, from which it projects with the rigidity of a stick at an angle of about 45 degrees: the head is prone, deeply divided on the crown, and the two divisions are produced into acute points, directed forwards like ears; the face is flat, and the mouth bent under and brought into contact with the legs, which are massed together, forming a lump beneath the head; the body is dilated on the sides by the presence of a rigid skinfold, almost resembling a lateral keel; the 2nd segment is produced dorsally into two acute points, similar to those of the head, but rather longer, and, like these, directed forwards; the 9th, 10th and 11th segments are incrassated; the anal flap is triangular and pointed, it is equal in length to the anal claspers; the body is transversely wrinkled, and every part of the head and body is finely shagreened. The colour of the head and legs is purple-brown; the body is green, exactly of the same tint as the twigs of the clematis on which it feeds; and the frosted appearance of the surface (each point of the shagreen being tipped with white) makes the resemblance to a growing and succulent twig still more exact; the spiracles are ochreous. On the 26th of June the first larva changed to a pupa, and on the 8th of July to an imago: the thorax of the pupa is smooth but not glabrous, being coarsely punctured; it is suspended by the tail, which is furnished with minute hooks adapted for the purpose, as in the *Suspensi* among the butterflies; the colour is green, excepting the eyes and antennæ, which are tinged with purple.—*Edward Newman.*

Entomological Notes, Captures, &c.

Sesia Chrysidiformis.—I have of late been in the habit of paying a visit to the Warren, near Folkestone, in search of the larvæ of S. Chrysidiformis. On Monday, the 1st of April, I repaired to the spot accompanied by my brother, and met with a fair share of success, taking a good supply of full-fed larvæ of the beautiful clearwing I have just mentioned. There seems to be every prospect of a good season for collecting the imagos, as some of the roots we obtained contained from four to six larvæ each; singularly enough we found the roots we had disturbed and replanted the previous year the most productive. The following account of the method I employ in rearing the larvæ may interest your readers. Proceeding along the slopes on the sea-face of the cliffs, I select those plants of dock or sorrel which have a sickly appearance or stunted growth; I then dig up the roots and gently remove the surrounding mould, being very careful not to damage the larvæ, whose presence is easily discovered by the mines and frass. If the root selected does not contain any larvæ I replant it, in anticipation of a future visit. Before leaving the spot I collect a small portion of chalky soil for future use. On arriving home I transfer the roots containing the larvæ to the breeding-cage. This latter greatly resembles a fern-case: it has glass sides and ends, and the top is covered with a sheet of perforated zinc; the bottom is loosely filled with a mixture of silver-sand and the calcareous soil of the Warren: in this the roots are planted, watered from time to time, and freely exposed to the rays of the sun. Early in May, if matters are progressing favourably, each larva sends up a case from the roots composed of small particles of the fibres: these cases vary in length from an inch to an inch and a half, and are of a conical form. At the end of May or the beginning of June the imagos appear, leaving the pupæ cases projecting from the top of the tubes sent up by the larvæ. I have not obtained any more moths in the second season from the same plants. I may mention that the cliff which furnishes the best hunting-ground is being rapidly destroyed by repeated land-slips, one of which occurred at the time of our visit: a mass of chalk, weighing some hundreds of tons, fell violently to the beach, and was followed

by two smaller falls. I need hardly say that our departure from the spot was greatly accelerated by the occurrence. Before leaving the Warren I secured a quantity of the larvæ of L. Chrysorrhœa: they are not so plentiful as in the last three years.—*J. Russell;* 18, *Mount Pleasant Road.*

Variety of Limenitis Sibylla.—While collecting this species at Doles Wood, in company with my friend Mr. W. H. Herbert, on Wednesday, July 10th, I saw a very unusual variety. The whole of the upper surface of the wings was black, with the exception of two minute white dots, one on each fore wing near the costa; the under side of all the wings appeared to be normally marked. The insect persisted in pitching on some blackberry blooms, where it was just impossible to take it with the net: three times I struck at it, and twice had it in the net, but the net was so entangled each time that the butterfly readily escaped. Mr. Herbert was equally unsuccessful, although both of us could have caught it in our hands, but that would have spoiled it for any collection. One beautiful female of A. Iris condescended to alight on a bunch of blackberry blooms not five yards from Dr. Stevens, Mr. Herbert, and myself; but the instant I moved in that direction she re-ascended to her lofty throne, and we had, very reluctantly, to leave both it and Sibylla, in order to reach our friend's house in time for dinner.—*Henry Reeks; East Woodhay, July* 15, 1872.

Scarcity of Insects generally; abundance of Hybernated Specimens of Pyrameis Cardui.—As early as last February I predicted that it would be a bad Entomological summer, for I have for many years noted that mild wet winters prove far more destructive to insect-life than dry ones with any amount of severe frosts. When collecting Sibylla on the 10th inst., I was struck with not only the scarcity of that species, but also of all the Argynnidæ,—Paphia, Adippe, Selene, &c.; in fact the rides in Doles Wood (1500 acres in extent) seemed quite devoid of insect life. Caterpillars have also been most scarce; but I never remember breeding so few Ichneumonidæ; almost every larva obtained in the spring produced an imago of that tribe, although a very great proportion of the larvæ were infested with tape-worms: larvæ not more than half an inch long would pass thread-like tape-worms six inches in length! I feel convinced that these are taken into the larval

system by feeding on leaves over which snails and slugs have crawled and fed: these latter pests have almost defoliated some trees and shrubs, and done more harm than ten times the amount of caterpillars; still a seasonable check on the latter is very beneficial. P. Cardui is almost the only insect that appears more abundant than usual, and it remains to see whether this year's brood will equal in numbers the hybernating insects of last year.—*Henry Reeks.*

Difficulty of discovering the Larva of Argynnis Euphrosyne.—Some have doubted the assertion that "leaves of the violet may be turned over by thousands" without obtaining this larva; and Mr. Mathew has thrown a new light upon the matter by informing us that it frequently reposes on some object near the food-plant. But, even if this fact is kept in view, it is hard to detect; and I have a vivid recollection of a morning in April, about the middle of that month, when what was to have been "a morning with the larvæ of Euphrosyne," turned out to be a morning with spiders and ants, with an occasional Cimex. The work is all the more laborious, because violets rarely grow in considerable patches; and as the search must be made stooping, it is a back-breaking task. From the circumstance that A. Euphrosyne is sometimes plentiful in a place where there are few violets of any species, it seems at least possible that other plants may yield it food. At the suggestion of a friend I have searched for it on the primrose, but without success.—*J. R. S. Clifford;* 59, *Robert Street, Chelsea.*

Larva of Abraxas Grossulariata feeding on Rose.—It is curious to note how the food-plants which an insect has adopted as its own, when it has become semi-domesticated, is rigidly adhered to year after year, despite the temptations which surrounding plants may offer. Thus, as we know, the larva of the above-named species is found in nature on a variety of plants, though most frequently on oak and blackthorn; but in our gardens gooseberry and currant bushes are its exclusive food in ordinary seasons. This spring, however, the mild weather early in the year brought into sudden activity the larvæ of Grossulariata in our London suburbs, and probably elsewhere. The leaves showed signs of premature expansion, but received a sudden check; and, in consequence of that, as the larvæ did not return to a state of

torpidity, they had soon exhausted, in many cases, their supply of leaves, and in some gardens they then devoured the buds and blossoms, necessitating hand-picking. In one case a party of them transferred themselves to a rose tree,—not an unlikely selection if the blackthorn be, as suggested by Mr. Newman, its natural food: therein the species showed itself as the enemy of the gardener in another guise. Others, in smaller numbers, settled down upon a peach tree. It was remarkable that some of the larvæ did not attempt to migrate in search of food, but died on the stems of the bushes which they had stripped, seemingly from starvation, for I have rarely observed the larva of Grossulariata affected by any ichneumonideous parasite.—*J. R. S. Clifford.*

Early Hatching of the Eggs of Ptilophora plumigera.—Most of us who have dabbled in insect-breeding have experienced the mortification, at some time, of opening a box containing the eggs of a choice species, and finding that, through too hasty emergence, the young larvæ have sentenced themselves to death by starvation. In certain cases, indeed, it does not make much difference whether we do or do not open the receptacle, as it may be quite out of our power to get the fitting food. At an early date in March, eggs of P. plumigera which I had, began to hatch, and there was no foliage upon the maple, though the mildness of the preceding February had accelerated the larval development. It has been found in some species that when eggs have once shown indications of hatching they cannot be retarded, or should they be checked then the result is the death of the enclosed brood. However, by placing the remainder of the above eggs in a cool spot, enclosed in a tin box, I delayed the appearance of the larvæ until the maple buds were expanding. This species is most obstinate in its determination to confine itself to the one food-plant, refusing nearly-allied species, and even willow,—so general an aliment in spring. The young larvæ would slightly nibble the leaves of plum, but invavariably died unless transferred to maple.—*Id.*

Lepidoptera captured in Surrey.—I have taken during April, May, and commencement of June, the following in Surrey:—Omicronaria, Orbicularia, Genistæ, Dolobraria, Alveolus, Porata, Pendularia, Consignata, Decolorata, Lactearia, Lunaria, Punctaria, Arbuti, Temerata, Taminata, Aureola,

Tiliæ, Bidentata, Prasinana, Strigilis, Marginata, Obeliscata, Chærophyllata, Pulveraria, Punctaria, Silaceata, Abruptaria, Strigillaria, Falcula, Unguicula, Spinula, Derivata. In March: —Polychloros, Satellitia, Badiata, Croceago, Gracilis, Munda, Pilosaria; pupæ of Prodromaria and Miata. *Addenda* in June:—Extersaria, Ænea, Mi, Piniaria, T. Rubi, Tages, Arbuti. I have also taken the variety called Lavateræ in Surrey, where the type of Malvæ is very plentiful; also Piniaria and Undulata.—*W. Thomas; Ray Lodge, Lingfield, East Grinstead, June* 13, 1872.

Larvæ of C. Villica on Furze.—Referring to the remarks on this subject in June 'Entomologist' (Entom. vi. 105), I have also taken this season a considerable number of this larvæ on the furze itself, and also on the grass, &c., growing round the furze bushes on Dartford Brent. I think, however, that the Rev. A. C. Hervey is wrong in saying that they *feed* on the furze. My idea is that they simply crawl upon it, as being a convenient place to bask on, their food being grass and other plants surrounding the bushes.—*Geo. W. Bird;* 27, *Hamilton Terrace, St. John's Wood, N.W., June* 6, 1872.

Eupithecia pusillata near Newcastle.—As it is not generally known that this pug is a northern species, I have much pleasure in stating that I took a pair in May, 1871, near Newcastle-on-Tyne.—*C. Eales.*

Aporia Cratægi Larvæ.—I took a web of A. Cratægi larvæ in the winter off a young pear tree, and have just taken two nests off young damson trees in our orchard, and one off a hedge-row near.—*W. J. Skelton.*

Stauropus Fagi.—I had the pleasure of taking a very fair specimen of S. Fagi at Leith Hill, on the 9th of June. It was at rest on the trunk of a pine tree, about six feet from the ground.—*E. Munday;* 54, *Driffield Road, Old Ford, Bow, E., June* 12, 1872.

Grapta C-Album bred in July.—During the third week of June I found a larva of Grapta C-Album nearly full fed, on elm, in our garden hedge-row, which changed to the chrysalis state the following week, and appeared in the imago yesterday morning, July 10th. This specimen is of the second variety mentioned in your 'British Butterflies.'—*Charles J. Watkins; King's Mills, Painswick, Gloucestershire, July* 11, 1872.

Rhodocera Rhamni near Carlisle.—I enclose you a specimen of G. Rhamni I took this morning near Orton, by Carlisle. I think it is a new species here, for I have never heard of its appearance before. I have found M. Artemis larva very common here; and Orgyia Fascelina I have taken about twenty of, on the heaths and on birch: it feeds well on the hawthorn.—*George Dawson; 6, English Street, Carlisle, May* 20, 1872.

Deilephila Livornica at Worcester.—Last week, when looking through the cabinet of a friend of mine residing in Worcester, I noticed a fine specimen of Deilephila Livornica, which was taken in a garden in that town in the month of September, 1870. As he was unaware of your publication, and quite an amateur collector, he failed to make known the capture of so rare an insect, which I hope may now prove interesting to you and the readers of your valuable little work.—*H. Stafford Gustard; Newport, Monmouthshire, May* 20, 1872.

Lithosia quadra near Newcastle-on-Tyne.—It may be interesting to your readers to hear that a fine male specimen of Lithosia quadra was taken on the town moor about a week ago, and is now in my collection. It has, I believe, occurred once before in this district, a specimen having been taken not far from Sunderland.—*J. C. Wassermann; 20, Summerhill Terrace, Newcastle-on-Tyne.*

Saturnia Carpini and Cucullia Scrophulariæ two seasons in Pupa.—Noticing in the July number of the 'Entomologist' (Entom. vi. 130) the fact of Saturnia Carpini remaining in the pupa state until the second season, I can myself vouch for it, as I had six pupæ in the season of 1870, four of which emerged at the usual period; the other two produced fine specimens the following season. They were thrown aside as useless with a number of other pupæ, amongst which were some discarded cocoons of Cucullia Scrophulariæ, which, to my astonishment, also produced four perfect insects the second season.—*W. G. Colbourne; Bridge Street, Stratford-upon-Avon, July* 4, 1872.

Acronycta Alni bred.—Last autumn I recorded the capture of two larvæ of A. Alni in the 'Entomologist.' I now write to say a most lovely specimen emerged from the pupa yesterday afternoon, and is now displayed on my setting-board. I

thought this might be worthy of notice, as in your 'British Moths' you state the time of the appearance of the moth to be June.—*Samuel James Capper; Huyton Park, near Liverpool, May* 17, 1872.

Orthosia Ypsilon.—Having reared a considerable number of this insect this year, and being too busy to kill them all as they emerged, I had left some in a large cage together one evening, and on going to see what was out, after dusk, was surprised to see a pair *in copulâ:* this has occurred three times since, and I have obtained a few eggs. Is it not unusual for Noctuæ to pair so readily in confinement? There was no sponge of sugar or twig of the food-plant in the cage. The eggs are laid under a transparent coating, like those of S. Salicis, but differing in being orange in colour and not white.—*Bernard Lockyer.*

Reproduction of Aphides in equable Warm Climates.—Has this subject ever been attended to? In temperate climates, with alternation of seasons warm and cold, it is well known that the viviparous broods of Aphides succeed each other so long as food continues plentiful and the temperature permits of it; but the organic mode of reproduction is brought to a stop by the scarcity of food and accession of cold, when sexual individuals appear and eggs are again laid. By means of artificial heat, however, Kyber kept up the viviparous generations of Aphides for four years, when organic reproduction seemed to be as active as at any previous period; and hence what some consider to be the repetitive prolongation of individual life would seem to be capable of indefinite continuation, as with plants multiplied by layers or cuttings. Under the equable climate of at least some equatorial regions, the conditions artificially applied by Kyber might occur naturally, and I am unaware that any observations have been made on the Aphides under such circumstances.—*Edward Blyth.*

Calosoma Sychophanta near Penzance.—This rare British beetle was reported to the 'Zoologist' some years ago as having occurred close by Penzance: that specimen was found dead in a pathway. I have just seen a specimen alive, which Mr. Vingoe's son found yesterday near this place, rather less in size than the first, but exactly resembling it.—*Edward Hearle Rodd; Penzance, July* 11, 1872.

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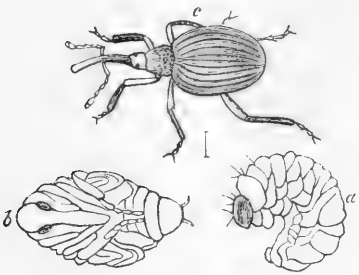
Correspondence, Notes, Captures, &c.



CLOVER-SEED WEEVIL.

a. Larva. *b*. Pupa. *c*. The perfect weevil: the short line between the figures shows the length of the insect.

Clover-seed Weevil.—I forward you some heads of cow-grass seed. Will you kindly tell me the name of the insect that produces the maggot you will find in each head? The mischief caused by it is very great; it will totally spoil the crop of seed. I lost more than £100 by it last year, and now find this year's crop as bad; eight out of every ten heads I believe are infected, consequently the loss this year will be worse than last.—*W. Herbert; Wyfield Manor, Newbury.*

[The "clover-seed weevil" appears but little known to agriculturists, although the injurious character of its depredations is perhaps better known than that of any other of our agricultural pests, the turnip-fly not excepted. It is a singular-looking and extremely minute weevil, of the form represented in the figure, which I have copied from Curtis's 'Farm Insects,' p. 476: *a*, represents the larva; *b*, the pupa; and *c*, the perfect insect or weevil. The earliest description with

which I am acquainted is that published by Messrs. Markwick, Marsham, and Kirby, at page 142 of the sixth volume of the Linnean Transactions, in 1800. This account is so complete that it leaves nothing to be desired. Mr. Kirby calls it Apion flavifemoratum; but the older name of Apion apricans of Herbst was adopted by the late Mr. Walton. I may here mention, although perhaps rather a little digressing from Mr. Herbert's enquiry, that there are three species of Apion which feed on the seed-pods of three species of clover, each, so far as I have ascertained, confining its destructive labours to a single species: Apion apricans or flavifemoratum to the cultivated red clover, mentioned by Mr. Herbert (Trifolium pratense); Apion flavipes to the white Dutch clover, so common in pastures and on lawns (Trifolium repens); and Apion assimile to the sulphur-coloured trefoil (Trifolium ochroleucum), a species common in pastures on cretaceous soil, but not of much repute among farmers: the last clover is rather conspicuous, occasionally by waysides, from the persistency of its flowers, which turn brown. In the collection of insects under my care are specimens of all these insects, named by Walton, purposely for the information of enquirers. With regard to the life-history of Apion apricans, I fancy there are mistakes in its book-history, which it may be desirable to point out as a caution against repetition: for instance, it is commonly said to breed during the whole year; others confine its injurious proceedings to the summer months; and some mention four months,—August, September, October, and November. I believe this insect is very nearly akin to man in its proceedings, and rather follows circumstances than rules, times or seasons: thus, as boys gather nuts, and farmers cut their wheat, when nuts and wheat are ripe, so do these little weevils attack the clover-seed when it is ready for them, without referring to the almanack. Another statement is made by the older authors, and repeated on his own authority by Mr. Curtis, which I am unable in any respect to confirm, namely, that the grub producing this weevil has legs. Mr. Curtis says:—"In the middle of November I again examined the clover-heads, and found two larvæ curled up, like those of the Melolonthidæ, with six distinct pectoral legs." If these larvæ had legs at all they would certainly be thoracic, which Mr. Curtis evidently means by the term

pectoral; and they certainly would be six in number, as in all insects that possess legs; but I have failed to find them in any of the larvæ I have examined: they are all little white maggots, without even the rudiments of limbs of any kind. Having referred to Mr. Curtis's work,—and I consider it an imperative duty to mention every author who has preceded me,—I am under the necessity of eliminating, from the account he has given of this minute insect, the following statement, which he received from a Mr. William Trenchard, of Sherborne. "I have a field of clover which has been twice mown, and there is now a fine after-math. The part of the field near the stack has been lately attacked by a small black weevil, which advances in a semicircle, totally destroying every leaf, leaving only the fibre. I think there are on some of the leaves as many as 100 or 150. Since last night they have eaten nearly as much as would keep a sheep." This startling account I think can hardly apply to Apion apricans, which is not black, and does not go to work in the way described. It is no uncommon thing for authors thus to intersperse in their works passages from previous writers, which do not apply to the same insect. Mr. Curtis has, however, done us good service by giving translations of M. Guérin-Méneville's valuable researches on the life-history of Apion apricans, published in French, in 1842; and the following passage, from M. Herpin's 'Memoir on Insects injurious to Agriculture,' indicates probable remedies. "Although it be not always in our power to arrest the multiplication of noxious insects, to destroy them, or to combat them with success, the knowledge of the effects which they produce on vegetation is, nevertheless, very important, since it teaches us the true cause of an injury, which may be attributed, but very incorrectly, to vague and inappreciable circumstances, to deleterious conditions of the atmosphere, or other inexplicable occurrences in vegetation. It shows us the enemy we must attack, and of which we must carefully study its habits, economy, and metamorphoses," &c. Years previously, a writer in the 'Entomological Magazine,' vol. i. p. 33, had pointed out the necessity of this study almost in the same words. M. Herpin has excellent observations on the importance of encouraging the natural enemies of injurious insects,—the minute parasitic Hymenoptera and Diptera;

but he fails entirely in showing us how this most desirable object may be accomplished; nevertheless he adds the following rational suggestions:—

"1st. Cut early, and feed-off while green, the clover crops which are known or supposed to be much infested by the Apion.

"2nd. Carefully avoid allowing the clover crops to remain more than two or three years in succession on the same ground.

"3rd. Avoid also allowing the clover, which is much infested by the weevil, to ripen or run to seed.

"4th. Alternate and vary the culture, as previously pointed out.

"5th and lastly. We can produce the drying of the clover by the German method, *viz.* fermentation, by making brown hay (foin brun). The alcoholic vapours, the deleterious gases which are formed during the fermentation of clover stacked when green, the high temperature produced in the stack, suffice to destroy the thousands of larvæ of the Apion, which cannot endure so great a heat."

In conclusion, I earnestly entreat those scientific farmers—who are now so numerous, but who were hardly known and totally unappreciated when, in 1832, I began my investigations of "blight" so-called—to assist me in publishing in this journal the result of their observations.]

Gall of a Cecidomyia on Ground Ivy.—Will you kindly oblige me by sending the name of the enclosed galls? They are on the leaves of ground ivy, and, besides their general interest, have a curious propensity of falling off when touched, leaving a hole through the leaf.—*Walter W. Reeves; Royal Microscopical Society, King's College, July* 22, 1872.

[Not recognizing these interesting productions, I forwarded them to Mr. Albert Müller, who has paid much attention to these and similar productions, and he has kindly supplied the following interesting information:—

"The enclosed little tubular bodies on Glechoma hederacea are galls, and produced by Cecidomyia bursaria of Bremi. Each of these tubes is inhabited by one pale yellow larva: when the larva is full fed the tube becomes detached and drops to the ground, leaving in the leaf the well-defined,

rounded hole, which you will notice. The gall-midge escapes from the fallen tube within a few weeks, according to the weather, and the female soon afterwards deposits her eggs in the leaf. There are several generations each summer; the last autumnal brood winters as larva in the fallen tube, the fly appearing in April.—*Albert Müller; Eaton Cottage, South Norwood, S.E., July* 27, 1872."]

Slug Larva of the Cherry.—Can you give me any information as to the species and habits of the enclosed larvæ? They literally occur by millions on all the cherry and plum trees in a garden belonging to a friend of mine, and are fast reducing them to a state of nudity. I shall be very much obliged to you if you can suggest any method of getting rid of them.—*R. E. Brameld; Nottingham and Notts Bank, Retford, August* 8, 1872.

[It is the larva of Blennocampa Cerasi, a small sawfly. During last summer, as well as the present, this pest has been almost universal; and in answer to many inquiries and complaints that have appeared in the 'Field' newspaper, "powdered hellebore" has been recommended as a cure; but I am not quite certain what is meant by this term; and although chemists generally are willing to supply something under the name, I think it is not always the same article. Further, I would observe that the mode of application of this or any other powder to a cherry-tree or a pear-tree (pears are equally infested with these little slugs), requires practical instructions, which have not hitherto been published, and I confess I should not know how to commence operations.]

Gooseberry Grubs.—The Rev. H. A. is referred to the preceding paragraph; and also to my paper on this insect in the first volume of the 'Entomologist.'—*Edward Newman.*

Larvæ of Acronycta Aceris, &c.—The hairy larvæ, from Christchurch, are those of Acronycta Aceris, described at p. 251 of 'British Moths:' the difference in colour is very common; the variety with reddish fascicles is the usual form. The green larva with yellow warts is that of the emperor moth, Saturnia Carpini.—*Id.*

Preservation of Colour in Dragon-flies (Entom. vi. p. 46). —Many years ago I preserved the colour very fairly in such dragon-flies as Libellula Virgo, as well as in grasshoppers, by placing them in a tolerably hot oven immediately after they

had been set, the abdomen having been carefully emptied of its contents, and filled with a slight roll of tissue-paper or cotton-wool. Rapid desiccation appears to be *the* point in treating all specimens of insects, &c., whose colours are difficult to preserve.—[*Rev.*] *O. Pickard-Cambridge; Bloxworth Rectory, Blandford, August* 8, 1872.

Are there naturally Two Broods of Notodonta dictæa?—Do you think that naturally there can be two broods of N. dictæa in the year? I had some larvæ in June, which changed to pupæ early this month, and are now coming out as imagos. In your book you say they are full fed in September.—[*Miss*] *E. Bethell;* 54, *High Street, Croydon, July* 29, 1872.

[This question was fully discussed in the 'Zoologist' some years back, without attaining any satisfactory solution.]

Notodonta dictæa at the end of July.—Is it anything out of the common way for Dictæa to be coming out now? About three weeks ago I received the larvæ from Miss Bethell, which turned in a few days, and the moths began to come out yesterday, the 27th July. I see there is another out this morning. I expected them to have been in pupæ all the winter.—*W. J. Skelton.*

Dipterous Parasites.—I shall be glad if you will name the enclosed Dipterous fly and pupa-case, which I have found to be parasitic upon Saturnia Carpini; and also state if at all unusual for Dipterous flies to be parasitic upon Lepidoptera. I found the pupa by cutting open the cocoons of the emperors which had not emerged in due time, and myself and a friend have met with several this season.—*W. D. Roebuck;* 81 & 82, *Briggate, Leeds, July* 5, 1872.

[The flies are Anthomyia Larvarum. Dipterous parasites onLepidopterous larvæ are very common.]

Sphinx Ligustri Feeding on Holly.—On Monday last I had brought to me six of the above larvæ feeding on variegated holly. Is not this unusual? I have found them on privet, lilac, and ash, but never before on holly.—*Arthur W. Paul; Waltham Cross, August* 14, 1872.

[I have received no less than five other notes to the same purport this year, all of which have been published, because I think it unusual; no similar instances having come under my notice during my experience in former years.]

Abraxas Grossulariata Infested by Parasites.—I notice in this month's 'Entomologist' (Entom. vi. p. 172), Mr. J. R. S. Clifford observes that the larvæ of Grossulariata are rarely affected by any ichneumonideous parasite. My experience with this species is just the opposite. I collected a large number of both larvæ and pupæ this year, bred fourteen hundred imagos, and a host of ichneumons (of which latter there were two kinds); of the larger size, but one emerged from a larva, and formed into a burnt-brown chrysalis; of the latter I obtained three fair varieties.—*Edward F. Bisshopp; Museum Street, Ipswich, August* 13, 1872.

Variety of Chelonia caja.—I had the good fortune to breed a nice variety of Caja on the 15th July: all the parts usually coloured red are of a bright yellow. Do you consider this the commonest variety?—*Id.*

[I have seen specimens of Caja with yellow hind wings; but they are certainly uncommon.]

Variety of Limacodes Testudo.—I have a curious variety of Testudo, a male, in which the colouring of the fore wings is nearly as dark as the hind wings, consequently the lines across the fore wings are scarcely perceptible; there is one conspicuous yellow-brown mark on the inner margins of the fore wings. I shall be very happy to lend you this specimen for figuring in the 'Entomologist,' if you think it worth doing so.—*Id.*

[I am much obliged, but will not trouble you to send the specimen; the insect is too small to make a good figure.]

Musquitoes.—As usual at this period of the year I am assailed with specimens and enquiries whether they are not "true musquitoes." It is not only my pleasure, but my duty, to give a courteous reply to every question. This is one of the objects for which the 'Entomologist' was established; but there are some subjects, for instance, "true musquitoes" and "poisonous caterpillars," would become—like Mrs. Wilfer, in 'Our Mutual Friend'—a little wearing. In the first place, I would remark that a "true musquito" is a nonentity: there is no such thing. Englishmen, whether travelling or residing abroad, provide in their own persons a grateful banquet to the nocturnal Diptera,—Culicidæ and Simuliidæ, which are indigenous to the country through which they pass, or in which they pitch their tents. The bite of such

nocturnal Diptera, of whatever genus or species, is always irritating, often painful, producing unsightly swellings, and occasionally sore places. Englishmen call these musquito-bites. Almost all European nations have their own vernacular name for them.—*Edward Newman.*

South American Wasp.—I send a few Hymenopterous insects, which I got on the banks of the Rio San Pedro, a tributary of the Rio de la Plata, and which I should be glad to have the name of. They had a globular nest, which was covered with blunt tubercles, and was of a bluish gray colour, and of a texture resembling pasteboard. It was fastened on a branch of a tree, the entrance to the nest being underneath.—*John M. Campbell;* 6, *Carrick Street, Glasgow, July* 23, 1872.

[I am kindly informed by Mr. E. Smith that the little wasps which accompanied this are Polybia scutellaris of White; also that the species has been described, and a full account of its economy given in the 'Annals and Magazine of Natural History.']

Variety of the Larva of Smerinthus Populi.—As the other day I obtained a larva of S. Populi that is not the same in its markings as the common kind, I shall be much obliged if you will kindly give me your opinion in the 'Entomologist.' As far as the shagreen-like skin sprinkled with yellow, the seven oblique yellowish stripes on each side, and the row of red dots at the spiracles, are concerned, your description agrees very well with it; but it has, in addition, eight rosy spots on the back at each side: they are on the 2nd, 3rd, 5th, 6th, 7th, 8th, 9th, and 11th segments. The horn is also rosy above and below. Is it a variety? or will it produce *a moth* of the common kind? Any information you can give me will be very welcome.—*George R. Dawson; Poundsworth, Driffield, August* 13, 1872.

[I am perfectly familiar with the variety of Smerinthus Populi which Mr. Dawson describes. Occasionally the rosy spots, both in the upper series and those at the spiracles, are very large, and might be called "blotches:" such larvæ have a most beautiful and abnormal appearance. I am not aware that the moths produced from them exhibit any departure from the ordinary colouring.]

Zygæna Meliloti, &c., in the New Forest.—When at

Brockenhurst, last July, I was looking over some specimens that had been captured by Mr. J. Gulliver, and specially noticed a few very small burnets that I did not know, and found they had been taken some two weeks before,—*that would have been the last week in June.* A few days after I took the species myself *in cop.*, and then felt certain that it was a stranger to our list, and proves to be Zygæna Meliloti. Unfortunately I was too late to get good specimens, and only secured three, and those not fine. I also took during my stay,—Paphia *var.* Valezina, T. subsequa, "I. V. I." *var.* of Irrorella, Monacha, Cribrum, Mesomella, Strigula, Cristulalis, Dipsacea, Oo, Turca, L. Comma, Plumaria, Immutata, Bajularia, Straminata, Emutaria (female, and have a few larvæ feeding), and others of general distribution. The season was a bad one, and sugar useless the last fortnight.—*W. H. Tugwell;* 3, *Lewisham Road, Greenwich, S.E., Aug.* 12, 1872.

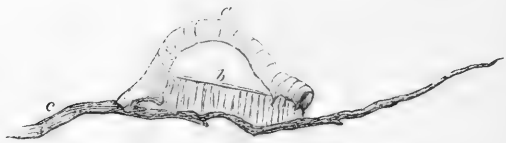
Zygæna Meliloti, &c., in the New Forest.—At the meeting of the South London Entomological Society, held on Wednesday, August 7th, Mr. Boden, of 127, Tooley Street, exhibited two specimens of this species, which had been captured (with others) by himself in the New Forest during the present season. I find that I have two examples amongst my series of Trifolii. I captured them on the 29th of June, 1871, when searching for A. caliginosa in its particular locality,—Stubby Coppice,—and at the time considered them merely diminutive specimens of Trifolii.—*J. P. Barrett, Hon. Sec., South London Entomological Society.*

Zygæna Meliloti, a species new to Britain, discovered in the New Forest, Hampshire.—While on an Entomological visit to the New Forest, early in July, I took what I at first thought might be a diminutive specimen of Z. Trifolii; but on the next day, taking two others exactly the same as the one on the day preceding, I thought they might possibly be something new. I have taken in all nine; and having (through a friend) submitted them to Mr. Doubleday, of Epping, for his judgment on them, he, without hesitation, pronounced them to be Z. Meliloti,—a continental species, but new to Britain.—*E. Harper;* 37, *Mansfield Street, Kingsland Road.*

[At my request Mr. Doubleday has kindly added the particulars which follow:—

"The Zygæna taken by Mr. Harper is certainly Meliloti, a species which I always thought would occur in this country. I have seen five specimens—four males and one female. This species is smaller than Trifolii, and much more slender, especially the antennæ: the wings are more transparent and more pointed; the black border of the inferior wings is narrower; and the red spot in the centre of the superior wings, near the costa, is always *oval or oblong, not round as in Trifolii*, and it is rarely, if ever, united to the spot below it. According to Esper, the larva feeds upon various species of trefoil, and other small leguminous plants: it is of a glaucous-green, pubescent, with the head and anterior feet of a brownish black, the others are of the same colour as the body; there is a longitudinal white line upon the back, and each incision is marked with a yellow spot, surmounted by a small black dot. The cocoon is elongated, and of a pale yellow; the pupa yellowish white, with the back and wing-cases brownish black.—*Henry Doubleday.*"]

Microgaster alvearius.—Last evening, as a great-nephew of mine, Thomas Bell Salter, was looking into a dense shrub of Thuja aurea, he found, on a dry twig in the middle of the shrub, a caterpillar of one of the Geometridæ, placed over a bunch of eggs fixed to the twig, in the position shown



a. Geometer larva. *b.* Mass of parasites in pupa. *c.* Twig to which the mass is attached.

in the enclosed drawing. On looking further we found numbers of similar larvæ, every one placed, in the same position, over a similar bunch of eggs. As the claspers were in every case firmly fixed on to the twig, and the head invariably bent down in contact with the covering of the eggs, I imagined that they were eating them, but I cannot

positively say that I saw them in the act of doing so. I send you several specimens; and if in the transit by post the caterpillars may be displaced, I doubt not they will soon resume their position, when left at liberty and rest. Should the fact be either new or interesting, perhaps you will give it a place in the 'Entomologist;" and will you kindly inform me of the names, both of the caterpillar and of the insect to which the eggs belong.—*Thomas Bell; The Wakes, Selborne, Alton, Hants, July* 26, 1872.

[The supposed eggs are the pupæ of Microgaster alvearius, a minute ichneumonideous insect, so named from the extreme similarity to a honey-comb of the compactly agglutinated mass of pupæ: after a few days the perfect ichneumons made their appearance; most of them escaped, and a few only have been preserved. It is rather singular that every one of the larvæ should have been thus attacked: not one was found which had escaped the parasite; and the larvæ found in connexion with the mass of parasites, in the position Mr. Bell has indicated in the pencil-sketch given opposite, were so shrivelled that I could not decide upon the species. In this difficulty,—and seeing, moreover, that I was unacquainted with any Lepidopteron feeding on Thuja aurea—I sent two of them to Mr. Doubleday, who is unable to help me. Mr. Buckler has also seen them, and suggests they may be the larvæ of Odontoptera bidentata, although he finds no trace of the supplementary claspers which characterize that species. The name of the larva must, therefore, stand over for future investigation. It is possibly a species new to this country, introduced with the beautiful Thuja, now so great a favourite.]

Captures during April, May, and June, 1872:—E. versicolor. March 16th and April 16th and 18th. Bred three females from larvæ reared from eggs.

A. pictaria. March 27th, 28th and 30th. Bred three from larvæ, on blackthorn, in July, at Loughton.

C. temeraria. April 15th to May 5th. Bred thirteen beautiful specimens from larvæ, on blackthorn, at Loughton.

N. pulveraria. April 22nd to 27th. Three very fine from larvæ, on hawthorn, at Loughton, in September.

N. chaonia. April 22nd and 30th. Bred two, from larvæ obtained at Loughton in 1870.

N. trepida. May 5th. Bred one fine male from an egg, found on an oak at Loughton in May.

S. lunaria. May 12th. Bred one from a larva obtained at Loughton.

At Loughton, on the 15th of June, I met with G. obtusana, S. puncticostana and Redimitana, and a few larvæ of S. Achatana; one larva of A. flexula was beat out of Prunus spinosa, bred on the 1st of July; and the larvæ of P. cytisaria, G. albipalpella, and C. genistæcolella, were comparatively common on Genista tinctoria.

At Crohamhurst, near Croydon, in the evening of the 18th of June, I took P. rugosana and E. lobella, and P. derasana were common amongst Rhamnus catharticus, and the pretty little Æ. trisignella were flying in numbers along the hedges, as were also E. cygnipennella. Gelechia tricolorella and maculella, and Coleophora solitariella: I have bred these three species from Stellaria holostea, the latter in some numbers.

Eupœcilia udana. I have great pleasure in recording the capture of thirty specimens of this local insect on Hackney Marsh, flying in the evening, at the end of May, over the water plantain (Alisma plantago), in the stems of which the larvæ feed.

Ephippiphora nigricostana. On the 20th of June I took several of this insect, at Loughton, flying round some bushes, amongst which its food-plants (Stachys sylvatica) were growing.

Carpocapsa splendana. I bred this on the 6th of June, from larvæ collected in 1870.—*W. Machin.*

L. Littoralis.—I had an idea that the occurrence of this species on the coast of Hampshire in suitable localities was a well-known fact. I do not take the insect, for the simple reason that I seldom visit the localities where it is to be met with. Several years ago I recollect taking it in numbers in the neighbourhood of Mudeford, when on an Entomological trip thither with my lamented friend the late Captain W. T. Russell; and on a subsequent visit to his house I saw rows of the insect in his duplicate-box, so I suspect he found it somewhat commonly. My friends, Messrs. Taylor and Stock, have also taken the species in the same neighbourhood at a much more recent date.—*G. B. Corbin.*

Hemp Agrimony (*Eupatorium cannabinum*) *and Lepidoptera.*—I trust it will not be deemed superfluous if I remind the readers of the 'Entomologist,' that the blossoms of this plant are not to be despised. If visited in the daytime a vast number of insects of several different orders will be found frequenting it, especially hive-bees. A few seasons ago I remember counting upwards of a dozen different species of butterflies upon a hedge of hemp agrimony in full bloom; and in the evening a number of moths visited the same flowers; and, amongst others, I took the following species:—M. rubiginata, G. papilionaria, L. griseola, L. stramineola, C. graminis, and E. crocealis. There is nothing very rare, I own, in the foregoing short list of captures, but their occurrence is a sufficient guarantee of the attractive qualities of the plant in question, and a proof that an inspection of it is not altogether a waste of time.—*G. B. Corbin.*

Tæniocampa opima.—Through the kindness of my friends, the Rev. T. W. Daltry and Mr. Porritt, I became the possessor of eggs of this species, with a recommendation to feed the larvæ on Rosa spinosissima. That plant, however, is not found in this immediate neighbourhood, so I put the young larvæ upon sallow, and they throve wonderfully well and rapidly, spinning the leaves together, and feeding in company in the web during the earlier part of their life, in accordance, I believe, with the habits of the genus to which it belongs. I also tried the larvæ on ragwort, which they ate, but not so readily as sallow. I cannot recollect rearing any species from the egg which throve better or looked healthier than these Opima larvæ did; and it was a very interesting sight to see numbers of the almost full-grown larvæ either feeding upon the sallow or stretched along the mid-rib of the leaf. A change, however, came over the whole—hitherto prosperous—community at this particular stage of their existence, and numbers died without the least apparent cause. I tried change of food, and even obtained the recommended Rosa spinosissima from a distance, but all without success; the larvæ still died off most miserably as they attained maturity, and I believe I have not a half dozen pupæ from the whole number of larvæ which fed up. What is the experience of other collectors with regard to this

species? Early in June I found a "nest" of young larvæ of T. miniosa, on an oak branch in the New Forest, and fed them up, but quite nine-tenths of them were ichneumoned; that, however, could not have been the case with Opima. Possibly the removal of Opima from its home in the north, to a more southern latitude, might have had an effect upon its development. I have often found that insects are difficult to rear if removed far from their birthplace; but in no previous case has it been more fully illustrated than with the species now under consideration. The subject of the so-called localization of insects is, I think, often overlooked by a majority of us.—*G. B. Corbin.*

Imago of Smerinthus Populi emerging in July.—On the 27th of April last I captured a pair of the Smerinthus Populi, and from eggs laid by the female I reared some very fine larvæ. The latter went down from about the 17th to 24th ult., and, from the pupæ, two perfect insects emerged on the 8th inst., since followed by some thirty more, most of them being fine specimens. I do not know whether this is unusual, but should be glad to learn, as I have hitherto always found these moths remain in the pupa state during the winter.—*H. W. Craik; 3, Queen's Terrace, Surbiton, July* 15, 1872.

Ptinus Fur settling on Water.—Observing the peculiar colour and flight of an insect in the bright early sun, in my bedroom, I approached it with a glass of water, and as it made one of its rapid falls I placed the glass in the line, and caught the creature in the water. It did not seem to be alarmed; and in the course of a minute or so, standing on the surface of the water, it raised its wing-coverts, spread its wings, and rose from the water, master of the situation. It was the small brown beetle which is too often bred in old furniture, in the inferior wood used out of sight.—*W. H. Wayne; Much Wenlock, July* 16, 1872.

Liparis dispar: Larva feeding at large.—Considerable doubts having, I believe, been lately expressed as to the right of Liparis dispar to be still considered a British insect, a record of the capture of the larva feeding at large may be of value. I took one on a fruit-tree in my garden here, in June: the moth (a female) emerged on the 25th of July.—*Henry D. Greville; Southfields, Wandsworth, July* 27, 1872.

Epione vespertaria near York.—I took fifty specimens of E. vespertaria the other day at the locale, six miles from York. It flies only on a small piece of common amongst dwarf sallow, on which *alone* the larva feeds.—*J. S. Wesley; Wetherby, Tadcaster.*

Heliothis dipsaceus in Somersetshire.—Having read the description of Heliothis dipsaceus in your 'Illustrated British Moths,' and finding that only the counties of Dorsetshire, Hampshire, Surrey, Kent, and Suffolk, are mentioned as localities where it has been captured, I thought it might interest you to know that I took a very fair specimen at light, at about 11 P.M. on Tuesday last, July 23rd. I have carefully read your description of it, and have no doubt that I am correct, as the insect is very striking and unusual. Somersetshire may now, I hope, be included in the list of localities. —*H. W. P. Hoskins; Hinton St. George, Somerset, July* 25, 1872.

Chortodes Bondii.—Having spent a few weeks in the neighbourhood of Folkestone, and having had an opportunity of capturing the above obscure species, I think I may venture to give a short account of its habits, localities, &c. The place where they are caught is a very singular one for a moth, being a small piece of the side of the path leading from the town up to the promenades called the Lees. About half-way up this path there is an indenture with a seat placed, and on this spot they abound. They flew exclusively between half-past eight and nine o'clock, and their flight was rapid, threading their way amongst the grass, something like the way I should fancy Charæas Graminis would fly. There were a few brambles about the spot, and a great quantity of what looked like cabbages run to seed, with yellow flowers; but the most likely thing on which the caterpillar might have fed was a little bed of wild rhubarb just on the spot. A person might, by just standing in one place, catch any number as they flew past. The moth was very like the figure at page 276 of 'British Moths;' but the black spots on the hind margin were, in many specimens, much fainter, and in some entirely wanting. The locality above mentioned was a most public one, both on account of its being the most convenient way to the town, and also to the beach, *without* going down the one hundred and thirty steps.—*Edward B. Poulton; Victoria Villa, Reading.*

Epithecia Fraxinata.—I have taken E. Fraxinata this year. I believe this is the first record of its occurring here. —*E. F. Bisshopp; Museum Street, Ipswich.*

Argynnis Lathonia at Canterbury.—I have sent a specimen of Lathonia alive for you to see, one of four which I took yesterday, August 4th, at Swarling Downs, the same place where I took the species in 1868, which appeared to have been doubted by many. I took the four specimens off the viper's bugloss, all in about five minutes: it was mizzling rain at the time. There are three very fine ones out of the four.—*G. Parry; Church Street, St. Paul's, Canterbury, August* 5, 1872.

Argynnis Lathonia at Felixstow.—Whilst walking along the coast of Suffolk, at Felixstow, a few miles north of Harwich, on Friday, the 26th inst., I found lying dead on the shore a specimen of the Queen of Spain fritillary (Argynnis Lathonia). It is perfect in shape, and had antennæ and legs complete, but is slightly rubbed on the upper side. There had been a strong east wind all night, so probably it was blown across from the Continent.—*Edward Grubb; Sudbury, July* 31, 1872.

Vanessa Antiopa near Cosham.—I had the pleasure of seeing a fine specimen of Vanessa Antiopa, taken near here, on July 29th, 1372, by a Mr. Tranter, a collector, from Portsmouth.—*George Taylor; Broomfield, near Cosham, Hants.*

Vanessa Antiopa at Scarborough.—A fine specimen of Vanessa Antiopa was captured here this morning. It is a little rubbed at the edges of the wings, but otherwise in perfect condition. The marginal band is of the pale cream-colour, usually considered typical of British specimens.—*J. H. Rowntree; Scarborough, August* 22, 1872.

Vanessa Antiopa in London.—I had the pleasure to exhibit at our Society, the Haggerstone, last night, a splendid specimen of Antiopa, caught the day before: it flew in at an open window near Euston Square.—*J. Moore;* 51, *Chapel Street, Pentonville, August* 23, 1872.

Vanessa Antiopa at Stamford.—On the 23rd August I saw a fine specimen of this rare butterfly, about a mile from the town of Stamford, just outside the boundary of Burleigh Park. I had an excellent view of the beautiful insect, which

was only flying a few feet above the ground, and was thus able to identify it with certainty.—*J. H. Gurney.*

Vanessa Antiopa at Barnsley.—On Wednesday, the 21st inst., a friend of mine took a beautiful fresh specimen of V. Antiopa at rest on a manure heap. It has never occurred here before, so I thought it worth recording in the 'Entomologist.'—*John Harrison; 7, Victoria Bridge, Barnsley, August* 23, 1872.

Vanessa Antiopa in Essex.—I had the pleasure of seeing a fine specimen of Antiopa this morning, at Hockley: there can be no mistake as to its identity, as twice it flew quite close to me.—*E. A. Fitch; Down Hall, Rayleigh, August* 24, 1872.

Vanessa Antiopa at Sheerness.—Mr. Joseph West, shipwright, of Mile Town, Sheerness, captured yesterday (August 25th), in a wood near Rochester, a very fine specimen of Vanessa Antiopa, which is now in my possession.—*A. B. Farn; 3, Parliament Street, London, S.W., Aug.* 26, 1872.

Vanessa Antiopa at Tunbridge Wells.—Our boys have seen two specimens of Vanessa Antiopa: they had no net; and although one of the butterflies was three times under a net it eventually escaped.—*S. Tindall; Hollyshaw, Tunbridge Wells, August* 26, 1872.

Vanessa Antiopa at Newcastle.—Mr. Matthew Bowman had a very fair specimen of this butterfly brought to him on the 24th August. It was taken two miles east of Gateshead. V. Io, which rarely occurs here, has also been taken.—*W. Johnston; August* 26, 1872.

Vanessa Antiopa at Shirley.—A number of Vanessa Antiopa were seen at Shirley, on Sunday, 25th August: Mr. C. J. Biggs took one, Mr. Laite one, and Mr. J. Moore one; Mr. Bryant saw three; and others were observed on the wing. Mr. Biggs kindly showed me his capture, while still alive.—*Edward Newman.*

Pieris Daplidice near Christchurch.—I had the gratification of taking a female specimen of Daplidice, at Hengisbury Head, near Christchurch, on the 13th of August. The margins of the wings are perfect, but the insect has a washed-out look, which is probably owing to its having made the passage during the south-westerly storms prevalent at that time.—[*Rev.*] *A. C. Hervey; Pokesdown.*

Pieris Daplidice near Faversham.—I have great pleasure in reporting the capture, by my daughter, of a male Daplidice, on 10th July, at a quarter to 4 P.M., at the edge of a saintfoin field, just outside Badging Wood, about half a mile from my vicarage.—[*Rev.*] *B. S. Malden; Sheldwich Vicarage, Faversham, August* 12, 1872.

Pieris Daplidice at Eastbourne.—On Friday, 16th August, I caught here, on some slopes under Beachy Head, seven specimens of Pieris Daplidice; on the day following, Saturday, I caught one more: all but one of them are perfect specimens. I should feel much obliged if you would give me your opinion as to whether they breed here, or have been blown across the Channel. I have never heard of so many as eight of these butterflies being caught at one spot on the English coast: they were all caught within a hundred yards of each other. One peculiar part of it is, that the whole eight are males. For some days before I caught them the wind had been blowing strongly from the north-east: I think the specimens are too perfect to have gone through such a rough passage.—*E. Simpson;* 28, *Marine Parade, Eastbourne, August* 18, 1872.

[I have already expressed such grave doubts as to Daplidice breeding in this country, that I think it best to refer my correspondent to my last published observations, 'British Butterflies,' p. 159.]

Pieris Daplidice on Portsdown Hill.—I have taken to-day, August 24, 1872, a nice specimen of Pieris Daplidice, by appearance only just out, on Portsdown Hill, near the Southwick Fort. The food-plant, the wild mignonette, grows near there; and I should not think it is a blown-over specimen from the other side of the Channel.—*George Taylor; Broomfield, near Cosham, Hants, August* 24, 1872.

Sphinx Ligustri feeding on Holly.—Is not holly rather an unusual food for S. Ligustri? I took a few of the larvæ last week feeding on a holly-hedge, and have put them on a tree of the same kind in the garden, on which they continue to feed. I have frequently taken them off Laurustinus.—*W. J. Skelton; The Bounds, Herne Hill, near Faversham, Kent, July* 29, 1872.

Zeuzera Æsculi.—A short time since I destroyed some of the larvæ of the above, feeding in some apple and pear trees

in a friend's garden, by inserting a piece of wire in the holes made by them; a strip of whalebone would do better.—*J. Russell.*

Is the Larva of Cossus a Cannibal?—I shall be much obliged if you will inform me, through the 'Entomologist,' if it is usual for larvæ of C. Ligniperda to devour one another when in captivity. I had fifteen, found in willow, which I kept all together in a tin box: twelve were about three-parts grown; the others much smaller. I have now three remaining, nothing but the heads of the others being left. Seven large beetle-grubs, kept in the wood with them, were also eaten.—[*Miss*] *F. H. Woolward; Belton Rectory, Grantham, July* 20, 1872.

[I am not aware of any similar instance of cannibalism in Cossus having been recorded.]

Lithosia quadra at Newcastle.—Since I wrote to you mentioning the capture of L. quadra, near the town, I have myself had the luck to capture a fine male close to my garden-gate. As I live near a square, fully a quarter of a mile inside the town, I am rather astonished at finding it there, particularly as no one has caught any more in this neighbourhood.—*J. C. Wassermann; 20, Summerhill Terrace, Newcastle-on-Tyne.*

Lithosia quadra.—Three specimens of L. quadra were taken at Highgate the last week in July. My brother secured one, a fine male: it flew into the 'Whittington Stone' public-house, on Highgate Hill. The others were taken on a wall near the Archway.—*J. Russell.*

C. Villica.—As a correspondent in the July number seems to doubt my statement in the June number, relative to Villica feeding on furze, I beg to assure him that I was not mistaken. I bred a quantity of Villica this year, and fed them on nothing but young shoots of furze. They throve on it so well that I had imagos out, before some Villica larvæ a friend had, and was giving the ordinary food-plant to, underwent pupation.—[*Rev.*] *A. C. Hervey; Pokesdown.*

Glabraria, Sinuata and Scolopacina at West Looe, Cornwall.—Within the last month I have taken in this neighbourhood single specimens of Glabraria, Sinuata and Scolopacina.—*Nathaniel Hearle; West Looe, Cornwall, August* 19, 1872.

Captures in the New Forest, July 14th to 21st.—Encouraged by the success of last season, I visited this well-known locality for Lepidoptera; but how different would have been my impression if this had been my first visit! The swarms of Diurni which made the day-collecting of last season so pleasant were reduced to individuals; the perseveringly applied and cunningly concocted sugar "wasted its fragrance on the desert air;" so that the day had to be devoted to the more remunerative pursuit of A. caliginosa, A. immutata, H. auroraria, and other less local species, the evening's mothing being perhaps the most interesting, the following flying on heath at dusk:—A. plumaria, though more freely in the sun; G. obscurata, larger and darker than usual; A. straminata, a few in fine condition occurring at wide distances apart. A small tract of swamp produced A. emutaria flying over rushes, L. straminea, N. despecta, and many commoner species, but nothing to make up for the absence of last year's splendid sugaring.—*W. England Davis.*

Phycis Davisellus.—I obtained this species again in its habitat of last year (the Isle of Wight), on the 18th of July: a search for the food resulted in the discovery of the larva with its parasite. I have since bred a few specimens of both species.—*Id.*

Melanthia ocellata double-brooded.—On the 12th of June, 1872, I captured a female of this insect, and obtained from her several eggs: these hatched on the 26th June, fed up on Galium verum, and changed about the 27th July. The perfect insect emerged on the 6th of August, and from a female I have another supply of eggs. I shall be glad to know from any of your correspondents if they have noted this insect to be double-brooded.—*W. D. Cansdale; White House, Witham, August* 12, 1872.

Melanthia albicillata at Darenth: Deilephila livornica at Sydenham.—I took Melanthia albicillata in Darenth Wood last week. In August, 1870, I also took Deilephila livornica flying in our garden at Sydenham.—*R. D. Etheridge; 59, Sydenham Park, Sydenham, S.E., August* 9, 1872.

Ptilophora plumigera fed on Sycamore.—It may interest your correspondent Mr. J. R. S. Clifford (Entom. p. 173) to know that this season I reared the larvæ of Ptilophora plumigera, from the egg to full growth, on sycamore.—*G. T. Porritt; Huddersfield, August* 16, 1872.

Dicranura furcula double-brooded.—Last month I sent you a paper concerning Dictæa coming out now from this year's larvæ; I have now to record the same thing with D. furcula. I obtained eggs from moths bred in-doors this spring, which hatched a full month sooner than they do in their wild state. The larvæ fed up rather fast, and yesterday (August 18th) a male moth came out, and of the wild larvæ the first went to pupa yesterday. Have you ever known them to be double-brooded?—*W. J. Skelton; The Bounds, Herne Hill, Faversham.*

Egg Parasites.—I enclose you a leaf of sallow, on which you will find the remains of a batch of eggs of some moth, I believe. I also enclose a lot of small flies which came out of them. I suppose them to be egg-ichneumons. Are they very common, and what are they?—*Id.*

[They are minute egg-parasites, I believe of the genus Mymar.]

Acronycta Alni and Stauropus Fagi.—On the 29th July last I had the pleasure of taking a full-fed larva of Acronycta Alni on a fence at Lyndhurst, and the day previous I beat two larvæ of S. Fagi, one off sallow and the other off oak.—*J. E. Wilbey;* 49, *Downshire Hill, Hampstead, N.W., July* 17, 1872.

Acronycta Alni.—While on a visit, two years ago, to a relative in Warwickshire, whose place is on the banks of the Stour, and where alder is pretty abundant, I found a larva of Acronycta Alni, which duly appeared at the end of May, the next year. Last month I was again visiting my relation, and I was fortunate in taking another larva, not thirty yards from the place where I took the former. But apart from registering the capture, I wish to bear tribute to the valuable hint given in your 'British Moths' as to the habit of this larva of burrowing, for "turning" purposes, into a pithy stem. My larva was very disquieted for two days, walking apparently purposely about, and getting somewhat thinner with the exercise; but in an hour after an old bit of elder-stem was introduced to his notice, he availed himself of the opportunity, and quickly disappeared therein, where he now lies, in great hopes, on my part, of his resurrection in June or thereabouts next year. I cannot but make a remark on your statement ('British Moths,' p. 254) that "The cater-

pillar does not exhibit any symptoms of uneasiness when handled," whereas I never saw in any caterpillars such pettish, jerking, affronted manners as in the only two (as above) I have ever taken.—[*Rev.*] *Windsor Hambrough; Great Malvern, August* 1, 1872.

Acronycta Alni.—On the 29th of last month (July) I found the caterpillar of Acronycta Alni feeding on an alder in a meadow near here: the dorsal markings are very fully developed on all the segments, being of a rich yellow colour, bordered with pale canary.—[*Miss*] *Ada Steele Perkins; Ashgrove, Overton, Flintshire, August* 2, 1872.

Cucullia Lychnitis and C. Asteris.—In the month of July, 1870, I collected a few larvæ of Cucullia Lychnitis, at Boxhill, and also at Riddlesdown. Several specimens emerged the early part of June, 1871; and in May, 1872, *one* specimen emerged from pupa; and on examining some other cocoons, I found several pupæ with the imago perfectly formed,—but *dead.* I have now Cucullia Asteris lying over apparently in the same way, having bred seven specimens early in June, 1872, from larvæ collected at Darenth in August, 1871. I believe it is not uncommon for the species of Cucullia to so lay over.—*James Bryant;* 63, *Old Broad Street, Aug.* 1872.

Larvæ of Mamestra Persicariæ.—M. Persicariæ is again abundant in the larva state this autumn; almost more so than it was last season. I have noticed one or two points in the habits of this larva which I think may be of interest to some of the readers of this journal. This year I began to search for them early, as I found last autumn that a large proportion of full-fed ones were ichneumoned. I find them especially attached to mint, off two or three plants of which, in our garden, I have taken about fifty or sixty. They rest by day, always on the under side of the leaves, generally along the midrib, extended at full length. When disturbed they first elevate their anterior segments into an arched form; and if the annoyance be continued let go their hold, and hang suspended by a thread (a habit I do not recollect noticing in any other Noctua larva). The position they hang in is rather peculiar, their bodies being rolled into a ring, but the head not held on the same plane as the rest of the body, but elevated in the centre of the coil. In this position they hang till the disturbance is over, when they quickly draw them-

selves up. If they are shaken to the ground they almost immediately unroll themselves, and begin crawling with some rapidity up the nearest stem of the food-plant. I have only noticed these habits in the young larva; the habits of the full-fed larva are much the same as those of other Noctuæ. I think that it naturally *only feeds by night*, and it is then that the greatest number can be taken. The larvæ hold very tightly with their claspers, and it requires a good hard shake to dislodge them.—*B. Lockyer;* 179, *Camden Road, London, N.W., August* 18, 1872.

Eremobia ochroleuca at Ramsgate.—I have the pleasure to inform you that during a short stay at Ramsgate, this month, I have taken about thirty specimens (the majority in excellent condition) of Eremobia ochroleuca. They were all taken at rest on a species of cornflower, growing at the edge of the cliff at Pegwell Bay. This locality is not mentioned in your 'British Moths.'—*H. Wittich;* 6, *Lansdown Cottages, Dalston, August* 15, 1872.

Phycis Davisellus in the New Forest.—I took a very fine male specimen of Davisellus in the New Forest, at the eve of coming away. I have no doubt it will turn up plentifully if looked for on heaths.—*John Moore;* 51, *Chapel Street, Pentonville.*

Acentropus niveus.—A specimen of this insect was captured by Mr. Cowley in the Asylum Road, Peckham, at the end of July, and exhibited by him at the South London Entomological Society. It was seen flying round a lamp in the window of a public-house, and attracted attention by its rapid and curious flight. The specimen died soon after its capture; and as this agrees with the limited experience I have had of Niveus, I am induced to ask the question: "How long will Niveus survive away from its native pond?"—*J. P. Barrett, Hon. Sec. South London Entomological Society.*

Abundance of Adela Degeerella.—This species was particularly plentiful this year in the woods and copses near Gravesend and Dartford, in Kent, and continued upon the wing for a longer time than usual, for it is a species which soon gets injured, and, being thus deprived of its power of flight, it falls a prey to spiders, and other destroyers of the smaller moths. I attribute this speedy injury to the circumstance that Degeerella flies about by day in all weathers:

at the beginning of June, on days when smart showers fell and a keen north-east wind blew in gusts, these insects were about, when most of the Lepidoptera were hidden under the leaves or amongst the grass. Some imagos were out the last week in May, and fresh specimens were still appearing up to the 15th of June, when the species ceased to be under my observation. Venilia maculata, which was later in emergence than its average, was numerous about the same time as Degeerella; but this Geometer had finished its career by the middle of June.—*J. R. S. Clifford; 59, Robert Street, Chelsea, July* 18, 1872.

Habits of Bombyx neustria.—The larvæ of this species can hardly be said to be more than semi-gregarious in their habits. From one batch of eggs it will often be found that several parties have originated, and these are not united by any close band of connexion, for stragglers will be found of various ages, though they seem to prefer to form a web in common until they have undergone the last ecdysis. No irritating effect is produced by the hairs of these larvæ, so far as I can ascertain, nor does the pulverulent matter interwoven in the cocoon affect the human skin. B. neustria has gradually become more common in various places near London; and it is very noticeable that wherever this species is pretty plentiful Liparis auriflua is less abundant on the hawthorn.—*Id.*

On Hunting for Larvæ.—It is no wonder that some entomologists do not care to pursue the plan of obtaining larvæ by beating or sweeping the foliage, for though it yields an abundant, but very miscellaneous, return, it cuts us off from observing the habits of the species we thus obtain, and many objects of interest we entirely miss. Moreover, it is not a pleasant reflection that, as the inevitable result of the application of the beating-stick, you leave behind, as you pass along the hedges or wood "ridings," a trail of "squashed" insects of all sorts. To those who hunt by eye and hand, it is some assistance to watch the proceedings of parasitic Ichneumons belonging to the Hymenopterous order, for wherever these are seen running rapidly upon the leaves, or along the twigs, it is most probable that Lepidopterous larvæ are not far off. The Diptera which attack larvæ are not so frequently to be noticed in their operations, as they usually poise themselves in the air until they descend to oviposit on a victim.—*Id.*

THE ENTOMOLOGIST.

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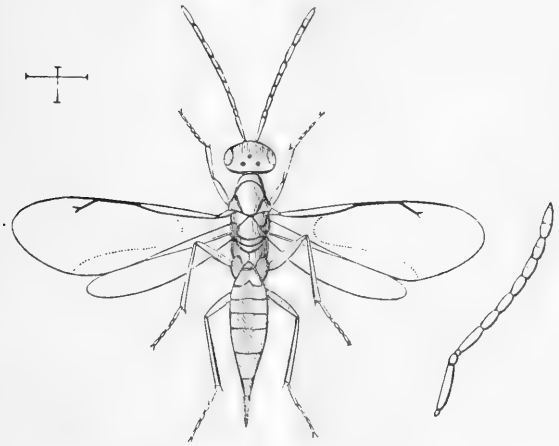
Economy of Chalcidiæ. By FRANCIS WALKER, Esq., F.L.S.

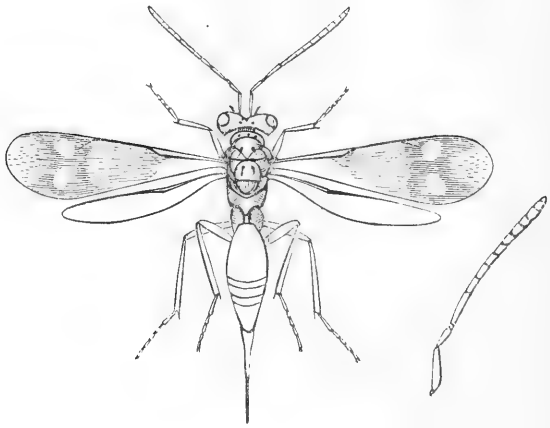
(Continued from p. 132.)



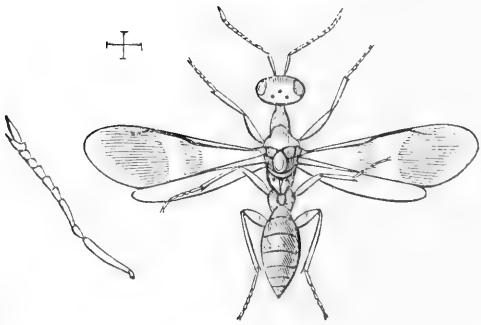
TRIGONODERUS OBSCURUS.

Trigonoderus obscurus, Lelaps Sadales, and Notanisus versicolor, are here represented, and illustrate the two nearly-allied families Cleonymidæ and Eupelmidæ, which are remarkable by the comparative great size of some of the species, and by their occasionally having characters which especially belong to other families of Chalcidiæ. In fewness of species and less frequent occurrence they contrast strongly with the Pteromalidæ and the Encyrtidæ, between which they are the transition. Several species of Trigonoderus inhabit England: they may be found beneath trees, and it is probable that they, like Cleonymus and Calosoter, are

parasites of wood-eating insects. Lelaps is an exotic genus. Notanisus versicolor is distinguished by the elegance of its



LELAPS SADALES.



NOTANISUS VERSICOLOR.

form and by its several bright colours: it is the only known species of the genus, and I have seen only one specimen, which I found near the Mediterranean in South France.

FRANCIS WALKER.

Entomological Notes from South Australia.

By H. Ramsay Cox, Esq.

When I sailed for South Australia in the autumn of 1869, I was in hopes that by devoting all my time to Entomology I should be rewarded by some fine butterflies, notwithstanding the advice of many friends, that "no butterflies in South Australia were worth going for." I have worked hard all the time, and dear experience has proved my friends' advice to be correct, and that my sanguine hopes were not to be realized. So many times in England collectors have spoken most disparagingly of various localities, which, when well worked by me, have yielded many good species, but the case of South Australia is sadly different.

During my stay there I only observed sixteen or seventeen different species. Of those occurring in Europe, Danais Chrysippus was pretty common (when I first landed) in the streets of Adelaide, also in the suburbs, and as far as fifteen miles up the country. My nets, &c., being still on board the "Collingrove," I could only capture two or three poor specimens; feeling confident of seeing it the following season, this did not much trouble me. Imagine my disappointment at only seeing *one specimen* during the whole of that next season, although I rode many hundred miles in search of Chrysippus. Fortunately, on the homeward route, we put in at St. Helena, where we found it in profusion, and of course made the best use of the few hours we were allowed ashore in the way of capturing a few specimens. These were all larger than the South Australian ones, and darker in colour. The herbage of the island consists chiefly of cactus, which grow by thousands: it is on these that Chrysippus delights to sport, making their capture very often painful, on account of the spiteful thorns with which the plants are covered. P. Cardui (smaller than the English type) and Lampides Bœtica were abundant; the latter, especially, in lanes, near Napoleon's tomb. These, and one other species I missed, being all the butterflies I saw, it being early winter when we were on the island.

But to return to Australia. P. Cardui was abundant everywhere: in fact, after hybernation, it becomes as great a pest to the collector as Camptogramma bilineata is in England.

It is somewhat redder and smaller than the English type, and the central row of black spots in the hind wing has very large purple centres; its habits are also different: instead of delighting in "waste places," it prefers shady spots, flying among trees, often resembling Apatura Iris in its habits.

Not including Micro-Lepidoptera, we only captured about twenty species of Heterocera, mostly very dingy, insignificant-looking things. The English species were Orgyia auriflua, S. hybridalis, A. pinguinalis and farinalis; also one specimen of Crambus hortuellus, captured by my friend Mr. Timms, of Blakiston. Experience has proved to me that in England the notion of Noctuæ not coming well to sugar when the moon is shining is a delusion; but in South Australia the theory holds very good, doubtless owing to the intensely dazzling brilliancy with which she shines there.

Of Coleoptera I took very few species. Of scorpions, snakes, and centipedes, there was no lack, the latter being unpleasantly common, frequently finding their way into one's bed, boots, &c. Three dragon-flies and a few large Mantis made up my miserable list. If I had, as originally intended, worked on to Port Darwin and Carpentaria, the list would, doubtless, have been better; but the great expense of travelling, and much family illness, prevented me.

At the end of May insects begin hybernating, coming out again the end of August,—the winter, or more properly the "wet season," being then nearly over.

The fatigue one suffers while collecting is at times very painful, especially during a sand-storm, with a burning "hot wind" from the North, bush-fires burning on various ranges of scrub around you, and the thermometer standing at 149° in the sun, and 102° in the shade, as I *frequently* experienced it. It occasionally rises fifteen or twenty degrees higher: the highest I experienced being 160° in the sun, and 116° in the shade; on the river Darling it stood at 118° in the shade.

A few remarks on the manner of operation (though, perhaps, uninteresting to the majority of readers) may possibly be useful to anyone meditating collecting in a tropical or sub-tropical country.

My apparatus I adapted from an article, by Mr. W. B. Tegetmeier and Mr. Janson, in the 'Field' of August

27th, 1870; and consisted of the usual butterfly apparatus, and cyanide bottle we use at home; also a wide-mouthed bottle, one-third filled with sawdust, containing a very small piece of cyanide of potassium, for beetles, scorpions, &c., which is emptied into a sheet of paper on returning home, the insects taken out and put into a stock-bottle, the cyanide and sawdust being returned to the bottle for the field; an ounce of pure chloroform for stupifying snakes, lizards, &c.,—if the scorpions appear unusually savage I generally pour a few drops on to them, before attempting to get them into the sawdust and cyanide bottle; a small bottle of oxalic acid, and a pen for sticking large Lepidoptera; one or two squares of linen, and strong elastic bands for tying up snakes, making up the complement.

Now to the requisites for personal use:—

1. A drachm of olive-oil, with which I well smear the eyelids, nostrils, &c., on entering the collecting ground, to keep off the flies. The veil, so generally used, makes one unbearably hot, and at the same time interferes with the sight when hunting small insects. The flies and thirst were my greatest enemies while collecting.

2. Some Ledum Palustre (a homœopathic tincture) for stings and bites of spiders, &c.

3. A charcoal or "officer's syphon," as made by Messrs. Atkins, Strand, for drinking out of stagnant pools and ditches.

4. Half a pint of pure brandy in case of snake-bite.

5. When collecting far out in the bush, many miles from dwellings, the "ammonia syringe," for injecting into the veins when bitten by snakes. Much has been said in favour of and against this recent invention; and Dr. Gosse, of Adelaide, and others, inform me that if the bite happens to be a harmless one, and the ammonia cure is used, death will quickly ensue, owing to a too rapid action of the heart. Having taken many scientific opinions on the subject, I determined to act on the following plan if bitten, which fortunately was never the case. The moment a snake bites you commence drinking the strongest brandy, taking about a pint during, say, from ten to fifteen minutes, using violent exercise to induce profuse perspiration. If the bite is a

venomous one the spirit will scarcely affect you. I have heard of numerous instances of life being saved by this means. The symptoms of a dangerous bite are sensation of suffocation, swelling of the throat, and dark, lurid and purple colour of the face: if these symptoms come on with any degree of severity, then apply the syringe with all possible speed. Many cases of death in fifteen minutes have occurred from the "death or deaf adder," and from the "red-bellied or black snake" (Pseudechis porphyriacus), these being the two most fatal snakes in South Australia; the former I have not met with, but have been sprung at by Porphyriacus, in a manner by no means pleasant. I also captured two other species. The whole of the above can be conveniently fastened on to the saddle, something in the way of refreshment also being added. Occasionally I take my pole-net and air-rifle.

Lastly. By no means omit some "weed." I know of no occasion when a mild smoke is so enjoyable as after six or seven hours frying in the sunshine, especially if one is fortunate enough to meet with a tree that casts any shade. The woods consist entirely of blue and red gum trees, whose foliage is miserably scanty; the honeysuckle and blackwood have good foliage, but were rare in the parts I visited.

I made my head-quarters at Nairne, a little village thirty miles from Adelaide, collecting sometimes on the ranges towards Adelaide, and sometimes going forty miles in the other direction towards Goolwa and the lake Alexandrina, and so on along the River Onkaparinga and Murray scrub. There is splendid sport for duck shooters in these parts. When I first went there, being quite a "new chum," my surprise can be imagined at being offered by the blacks half a dozen wild-fowl in exchange for a loaf! It is a splendid field for the sportsman, the whole country abounding in birds, including many most gorgeous parrots. The "grass parrot," and "Adelaide paroquet" or common "Rosella," are, moreover, very nice eating, especially when stewed with mushrooms.

Finding the entomological features of the country did not improve, I spent the last season in shooting: the skins, however, are perfectly useless, nearly all of them having been skinned by inexperienced hands and not properly preserved,

the necessary chemicals being very difficult to obtain so far out in the country.

With my live birds I was also unfortunate, having lost over a hundred fine parrots, and some wild cats, &c., since I left the bush. On the whole, therefore, my visit to Australia has been a failure, as far as Natural History is concerned. My principal object in going there was on account of health, which, in some respects has improved, though the exhausting heat has debilitated it in many others.

At the Cape of Good Hope we found a few dingy butterflies, including our constant friend V. Cardui; also one female C. Edusa of very small size, and shot with a fine rich purple tinge.

The spiders in Australia are very large and savage: they are called by everyone Tarantulas,—at least they *mean* Tarantulas. "Triántelopes" is the general pronunciation, which everybody, from a ploughboy to a "J. P.," will persist in giving the word!

My entomological operations were considerably interfered with, by an accident sustained through my horse swerving and pitching me against a gum-tree while galloping through some bush; consequently, the fact of having one's arm in a sling for six weeks with a broken finger did not facilitate collecting. This, fortunately, occurred during the wet season; but it has been a great inconvenience to me ever since.

Most of our readers have, doubtless, read the accounts of the swarms of small locusts which swept over a large part of South Australia, devastating the country and crops to a frightful extent: in fact, devouring all vegetables wherever they went; orange groves, vines, fruit-trees, &c., all falling a prey to their voracious appetite. For the information of those who have not read the details of this pestilence, I may just say it is, fortunately, only the second time the colony has been similarly visited. The sun was frequently totally hidden by the denseness of the swarm, which was considered to be half a mile in depth. A clever calculator estimated that upwards of eight tons passed hourly.

I cannot close this rambling affair without publicly thanking several gentlemen for their willing and valuable assistance to me in collecting. First of all I must mention F. G. Waterhouse, Esq., C.M.Z.S., Curator of the Adelaide Museum and

Institute, who gave me much valuable information, and with whom I had some pleasant collecting. To Messrs. Alfred and Edwin Heath, of the Treasury and Mitcham, I am indebted for innumerable kindnesses, and for many useful bush hints. At Nairne I was assisted by Dr. O. Weld, M D., J.P., &c.; also by Mr. Timms.

In conclusion, I must say, with all due deference to the Australian colonies, I soon found out that the idea in England of its white inhabitants being so generous-hearted, frank, and honest, was a miserable delusion. In none of my previous travels (rather limited, certainly) at home, in France, Switzerland, Belgium, and elsewhere on the Continent, have I met with such avarice and dishonesty as were evinced by the South Australians. I allude, of course, to business transactions. Should any of those who have sufficient patience and time to read these notes, meditate a trip there, let me recommend them to keep their eyes well open, and pockets well shut! I speak from experience, for which I paid dearly. With few exceptions, the inhabitants of N——, Mount B——, and other surrounding villages, rival our cleverest London "sharpers,"—as far as dishonesty is concerned. They have also a peculiar method of transacting business in these parts. We will suppose you have a little account with Mr. Brown, which you are anxious to pay. You ask him for his bill. It is promised to-morrow. You call to-morrow: he will make it out that evening. Another day passes: you are leaving the neighbourhood, and time being precious you *implore* him for his account. It does not arrive; in fact, like nearly all the tradespeople there, he is too lazy to make it out till compelled to do so. Your day of departure has nearly arrived, and *then* the long wished-for accounts appear by post, always accompanied with a polite little note (in rather remarkable spelling) to the effect, "that if your account is not paid immediately, you will receive a police summons!" Above all things beware of colonial "chemists," as they style themselves, who profess "to prepare prescriptions accurately." Through one of these "chemists" I nearly lost my life. Being in the village (or "township") of Mount B——, and having a bad attack of neuralgia, I went to a "chemist," who prescribed and gave me a bottle of medicine, saying it was something "strongish," which would soon

relieve the pain, but not offering *a word of caution* as to there being any *danger* if an over-dose was taken. The pain getting much worse, I took a third of a dose more than his prescription: this soon produced all the horrible symptoms of poisoning by strychnine, which I need not describe. Thanks to the kindness of Mr. Timms, at whose house I was spending the evening, my life was saved, he driving me instantly to my friend Dr. Weld. On subsequent inquiry the chemist informed us that in that bottle of eight doses there was sufficient strychnine to quickly kill three people!

Since sending you the notes, I have come across a bad specimen of Lampides Bœtica, also taken near Nairne.

The butterflies at present named are as follows:—(1) Thyca Aganippe, a few; (2) Callidras Lactea, one; (3) Heteronympha Meropa, abundant; (4) Geitoneura Klugii, not common; (5) Junonia Villida, common; (6) Danais Chrysippus, common; (7) Vanessa Kershawii, abundant; (6) Lucia limbaria, not common; (9) Terias Igana, a few; (10) Lampides Bœtica, one; (11) Lycæna Phœbe, swarming everywhere.

H. Ramsay Cox.

West Dulwich, S.E.

On some Amurland Insects. By Francis Walker, Esq., F.L.S.

PART I.

There are three principal natural divisions of land on the earth,—Asia, Africa, and America; Europe being considered as the western part of Asia. Each of these forms two subdivisions connected at the equator, and having their base in the tropics, and extending more or less,—the one towards the north pole, the other towards the south pole; and the resemblance between the productions of these six subdivisions have been considered to be owing to continents which, in early time, have gone up and down in the intervening spaces. In America the land to the south, exclusive of some antarctic islands, forms one compact region, which tapers from the tropics to Cape Horn; and some of the insects in the districts near this Cape resemble, as has been observed many years ago, other insects in North America and in North Europe. The land to the north is interrupted by the Caribbean Sea and by the Gulf of Mexico, beyond which it

widens into North America, and has a large arctic expanse. Africa differs widely in aspect from America, it being limited, with the exception of the Isle Tristan da Cunha, the Isle of Desolation, and a few others, to the middle part of the earth: its north division, as regards the insect Fauna, includes Arabia and the countries bordering on the Mediterranean, and occasionally a few of its native insects appear on the coast of England. The species in St. Helena and in Madeira would, perhaps, be found to have greater resemblance to those of Africa, when the insects in the mountains of West Africa are more known.

The tropical regions of Asia are not compact like those of Africa and of America, but are composed of numerous islands; and the southern part of this division is chiefly formed by Australia and by New Zealand. Its northern division includes more land than any one of the five before mentioned, and is a wide field for the investigation of the distribution and range of insect species thereon. The migration of insects from east to west in this division will account for the absence of many species in western districts, owing to the difficulties they experience in surmounting intervening obstacles before they can find suitable spots for effecting stations. It will also account for the occurrence of species in widely-separated localities, and for their absence in the intervening space, where climate, or soil, or vegetation, or cultivation, has not allowed them to make or to continue a settlement.

It has been said that during the gradual decrease of the glacial epoch, its retreat was followed from south to north by insect species, and that these in many cases wholly left the south of continental Asia, to which they were formerly limited. In this progress they would be hindered by the Himalayas and by other alps, and by the vast plains of 14,000 to 16,000 feet elevation beyond, and would find less obstruction in a passage through China and Mantchouria to Saghalian-oula or Amurland, or the large region of the river Saghalien or Songari and of its tributaries. In this journey some species would ascend and colonise mountains, and thereby epitomise and anticipate the present arctic insect race. The correspondencies between alpine and arctic insects in Europe are well known: they have been less

observed in America; and in Africa the alpine insects when discovered may indicate what the arctic species of that region would have been if their abode had been called into existence.

The advance of the race from Amurland to West Europe is across a space of several thousand miles, and must have occupied a long time, though attended with less difficulties than the spreading from south to north, and favoured by increasing mildness of climate.

The following notes mention some of the Amurland insects that are the same or not the same as those of England. This region, as before mentioned, is intersected by the great river Amur and by its tributaries, and is bounded to the north by the Stenovoy mountains. The source of this river is near that of the Tula; the latter, joining some others which proceed from the Altai mountains, feeds the lake Baikal, near which is Irkoutsk: this lake occupies a large part of the space between the Stanovoy mountains and the Altai mountains, the latter being connected with the Oural mountains.

FRANCIS WALKER.

April, 1872.

Entomological Notes, Captures, &c.

Collecting in Sherwood Forest: abundance of Euperia fulvago.—Sugaring for moths seems to have been so unproductive in nearly every district this year, that an account of a bit of good work at this kind of collecting will, I think, be interesting to the readers of the 'Entomologist.' August 20th to 24th I spent in company with the Rev. G. C. B. Madden and Mr. S. L. Mosley, at Sherwood Forest, our object being to collect several of the local Lepidopterous insects which occur there. Next to Amphipyra pyramidea, Cosmia trapezina, and Noctua xanthographa, by far the most abundant Noctua was Euperia fulvago, and in the four nights we captured six hundred specimens of this species; and, at the same time, a lepidopterist from a neighbouring town took four hundred: a thousand specimens for the four of us! This looks like slaughter, and I know we shall be charged as "exterminators," but our raid upon them seemed scarcely to affect their

abundance, as when we left, to all appearance, they were nearly as numerous as ever.

Amongst the other species we took may be mentioned:—

Argynnis Adippe. In wretched condition.

Thecla Quercus.

Orgyia pudibunda. Larvæ from oak.

Ennomos tiliaria.

Amphydasis betularia. Larvæ common.

Ephyra punctaria and pendularia. The most abundant larvæ we beat, except those of Halias prasinana.

Eupithecia minutata. Larvæ on ling.

Melanthia ocellata.

Cidaria russata and testata.

Platypteryx falcula. Larvæ tolerably common on birch.

Notodonta Dromedarius and dodonæa. Larvæ of the former on birch; of the latter on oak.

Cymatophora diluta. Common at sugar.

Acronycta leporina. Larvæ on oak and birch.

Hydrœcia nictitans.

Chæreas Graminis. Not uncommon at ragwort flowers.

Cerigo cytherea. Common at sugar, but mostly in poor condition.

Luperina cespitis and testacea.

Agrotis Tritici.

Tryphæna janthina and fimbria. Common.

Noctua glareosa. Common at sugar, and in beautiful condition.

N. brunnea, Dahlii, Rubi and neglecta.

Agriopis aprilina. Pupæ at roots of oak.

Aplecta occulta. One fine specimen at sugar.

Hadena Pisi. Larvæ on Pteris aquilina.

Anarta Myrtilli. Larvæ on ling.

Gonoptera libatrix. In lovely condition, at sugar.

Amphipyra Tragopogonis.

Stilbia anomala. A few specimens flying over long grass and heath, also at ragwort flowers.

Crambus inquinatellus. Very abundant.

C. pinetellus. Much less common, and more local.—*Geo. T. Porritt; Huddersfield, September* 5, 1872.

Argynnis Lathonia near Canterbury.—On Friday, the 6th inst., two specimens of Lathonia were taken at Swarling

Downs. On Saturday, the 7th, I took eight more, and they are all very fine but two; one is a beautiful female. I have sent two alive to Mr. Stevens; also four to Mr. Woods, of Marylebone Road; two alive to Rev. H. Burney; and to two others. The female was but just out; its wings were limp, and not half grown when found, but they soon came right. I searched for the empty pupa-case, but was unable to find it.—*G. Parry; Church Street, St. Paul's, Canterbury, September* 9, 1872.

Argynnis Lathonia in the Isle of Wight.—In August last I captured a specimen of A. Lathonia near the cricket-field, at Ventnor, and saw another taken.—*J. Venables; Barnes, S.W.*

Argynnis Lathonia, C. Hyale, &c., at Margate.—A few days ago some friends of mine returned from Margate with a large number of common butterflies, captured for the purposes of ornamental Entomology. Amongst them were three specimens of A. Lathonia, two of which were taken while settling on the road leading to Kingsgate. They were all captured at the end of July, and are in fair condition; and I have had much pleasure in adding them to my collection, through the kindness of my friends. Besides Lathonia they have brought about twenty specimens of C. Hyale, a good supply of E. ochroleuca, and one specimen of S. palealis, all from the same locality.—*J. P. Barrett;* 33, *Radnor Street, Peckham, S.E.*

Argynnis Lathonia and Pieris Daplidice at Dover.—I was looking over the setting-boards of Mr. Whorwell (of No. 23, Market Square, Dover), with my friend Mr. Hall, when I spied a fine specimen of Lathonia, quite fresh and in good condition; also a specimen of Daplidice, which was rather shattered in the right hind wing: they were both taken by Mr. Whorwell at Dover. Mr. Whorwell has only just commenced the study of Entomology, and these rarities have been taken in his first year of collecting. Mr. Hall also saw a fine specimen of Lathonia in the box of a young collector returning from the chase, and pointed out to him the value of the insect, of which he was entirely ignorant.—*J. Bradford Jarvis; Harbledown, Canterbury, September* 5, 1872.

Argynnis Lathonia and Colias Hyale near Dover Castle.—A specimen of Lathonia has just been brought to me by

Master E. Richard, of 4, Chancellor Villas, West Dulwich. He captured it last week near Dover Castle; and also caught two Hyale, and saw five or six others. The Lathonia unfortunately is in a most deplorable condition.—*H. Ramsay Cox; West Dulwich, September* 3, 1872.

Argynnis Lathonia at Dover.—My brother, who was at Dover last Tuesday, met several boys entomologising, one of whom had taken four Argynnis Lathonia the previous day, and another seven during the last week or so. They were principally captured in the meadow land just behind the castle. I have since heard that as many as thirty specimens have been taken in the same locality, this season, by different collectors.—*Geo. W. Bird; September* 21, 1872.

Argynnis Lathonia, Pieris Daplidice, &c., at Dover.—More than a dozen Lathonia have been taken here this season; also two specimens of Daplidice; Edusa and Hyale have been very abundant. A pair of Lathonia were taken copulating.—*A. W. Owen;* 33, *Liverpool Street, Dover.*

Argynnis Lathonia at Folkestone.—At Folkestone, September 16th, I dethroned her majesty from the bloom of Centaurea Scabiosa.—*Charles Oldham; Newton House, Amhurst Road, Hackney, September* 20, 1872.

Argynnis Lathonia near Yarmouth.—During the past week a specimen of the Queen of Spain fritillary has been caught by a party at Bradwell Rectory.—'*Norwich Mercury*' *of August* 31, 1872.

Pieris Daplidice at Deal.—In the last week of August I took five fine specimens of P. Daplidice near Deal, two females and three males, all as perfect as though just issued from the chrysalis. Will the fact of my capturing this insect three successive years in the same locality, and in the same spot (a grassy hollow), throw any light on the question, as to whether Daplidice breeds in this country?—*W. Woods;* 112, *Marylebone Road, Regent's Park.*

Pieris Daplidice near Folkestone.—On the 15th of August last I took a male specimen of Daplidice in a hollow at the foot of the Downs, near Folkestone. The insect was in good condition, and could hardly, I think, have been a "blown-over." On the 22nd of August, 1871, I took a female specimen of the same insect, in a lane leading to Abbot's Wood, near Hailsham, Sussex. This specimen was in fair

condition, but not so fresh as to preclude the supposition that it had been blown-over from the opposite shore.—*Cecil C. M. Dale; 2, Old Square, Lincoln's Inn, London, W.C.*

Pieris Daplidice in Suffolk.—A good specimen of the Pieris Daplidice, the Bath white butterfly, was taken by Mr. Wm. Pawsey, at Felixstowe, the other day.—'*Suffolk Chronicle.*'

Pieris Daplidice in Cambridgeshire.—A friend of mine has captured two specimens of Pieris Daplidice near Newmarket, and I believe others have been taken in the same locality this year.—*G. H. Raynor; Hazeleigh Rectory, near Maldon, September* 16, 1872.

Occurrence of Vanessa Antiopa in Great Britain during the Autum of 1872.—The notices, received during September, of the occurrence of Vanessa Antiopa in various parts of this country, are so numerous, that it has been found impossible to insert them at length. It was necessary, therefore, to condense them, and, in doing this, it has been thought best to class the occurrences in counties, alphabetically. In the list given below, when the number of specimens is not stated, one, only, is recorded to have been seen or taken.—*Edward Newman.*

Berkshire. The Warren, Reading, two specimens.—*E. B. Poulton.*

Buckinghamshire. Newport Pagnell, beginning of September.—*Thomas Corder.*

Cambridgeshire. Baitsbite, near Cambridge, seen in some numbers, and several specimens taken.—*G. H. Raynor.*

Cheshire. Twelve miles south of Chester, on dried cow-droppings, end of August.—*C. Wolley Dod;* '*Field.*'

Derbyshire. Peat Moss, near Chesterfield, August 29th.—*J. M. Hewitt.* One in a peach-house in Melbourne Gardens, feeding on a decayed peach which had fallen to the ground.—*J. J. Briggs;* '*Field.*'

Durham. Durham, by Mr. F. Raine, who saw others.—*W. Maling.* Darlington, one seen, two said to have been caught.—*John Law.* Greatham, towards the end of August.—*H. MacDowall.*

Essex. Witham, August 23rd and 25th, September 5th.—*W. D. Cansdale.* Bradwell-on-Sea, September 2nd, by Mr. G. Owen.—[*Rev.*] *J. W. Mills.* Two specimens taken

by me at Halstead, September 2nd.—*S. R. Bentall.* Brentwood, September 2nd.—*E. F. Growse.* Walthamstow, September 2nd.—*W. Downing.* A female taken by me at Maldon, in the High Street, September 13th.—*G. H. Raynor.* Latchington, one this year and one last.—'*Chelmsford Chronicle.*' Mundon, several seen.—*G. H. Raynor.* Burnham.—*Id.* Two at Colchester.—'*Field.*' Southend.—*C. S. Barnes;* '*Field.*' Blackheath, near Colchester, two, September 2nd.—*H. Aggis;* '*Field.*'

Hampshire. During August I took fourteen specimens in the Isle of Wight, and saw others; I believe the insect to be comparatively common there this year: my specimens were taken at Wroxall, Shanklin, Ventnor, and Freshwater, and were attracted by sugar.—*J. Venables.* West Worldham, August 22nd.—*G. Turvill;* '*Field.*' Bedhampton, Havant, August 28th.—'*Field.*' Freshwater, Isle of Wight, August 23rd.—*W. J. Sterland;* '*Field.*'

Hertfordshire. Astridge Common, near Tring, middle of August, by Mr. John Wood.—[*Rev.*] *H. Harpur Crewe.* Hoddesdon, September 3rd, by my son; seen at Stanstead about the same time.—*W. L. Horley.* Two near Brickendon, September 12th and 16th; others heard of.—*Wm. Simmonds;* 33, *Villier's Road, Hertford.*

Huntingdonshire. Ramsey, September 3rd, by Mr. C. R. Bingham.—'*Field.*'

Kent. Dartford, end of August, several seen, and one taken by Mr. W. Packman, with almost pure white margin; two others seen in the Marshes.—*G. W. Bird.* Two specimens taken by me in Darenth Wood, August 25th and September 8th.—*Augustus Priest.* Canterbury, one taken and three seen, end of August.—*G. Parry.* Faversham.—*W. J. Skelton.* Tunbridge Wells.—*C. Seabright.*

Lancashire. Taken by me at Ribchester, near Blackburn, with the pale border, September 4th; another taken in the neighbourhood with the deep yellow border.—*A. G. Latham.* Sedgley, near Manchester.—'*Manchester Courier.*'

Leicestershire. Belvoir, September 3rd.—*Wm. Ingram;* '*Field.*'

Lincolnshire. In an orchard at Grantham, September 5th, by my brother.—*A. E. Ensor.* In an orchard at Waltham, by Capt. Seddon, two others seen, with the deep yellow

border.—*John Cordeaux*. Boston, middle of August.—*J. W. Richards.*

Middlesex. Kingsbury, a female.—*W. Woods.* Stone Grove, Edgeware, August 25th.—*A. F. Barraud;* '*Field.*'

Norfolk. We have seen eleven in the neighbourhood of Cromer during the last few days, and although we have only caught two specimens, it has been that we have been unarmed with a net, and not that the insects seemed wild.—*C. M. Lowe.* Seen by me at Northrepps Cottage on August 24th; one reported at Sherringham; and one on the Plumstead Road, near Norwich.—*J. H. Gurney, jun.* Near Drayton, end of August and beginning of September, ten specimens taken by me, and one by the Rev. G. Norris; one near Diss; and others in different parts of the county.—[*Rev.*] *Theodore H. Marsh;* '*Field.*' Bradwell Rectory, near Yarmouth, end of August, three.—'*Norfolk Chronicle.*' Honingham Thorpe, beginning of September.—'*Norfolk News.*' Near the Cantley Station, beginning of September, by Mr. T. Harding, Station-master.—*Id.*

Northumberland. Near Newcastle, August 23rd, by a man named Stoll.—*W. Maling.*

Nottingham. Near Markham Clinton, with the pale border, end of August.—*R. E. Brameld.*

Scotland. In the Vale of Dee, 1300 feet above the sea-level; at Kirriemuir, Forfar, August 21st and 22nd.—'*Field.*' Near Forres, two specimens.—*Id.* Aberdeen, by Mr. James Garrow, who observed several others flying about.—'*Aberdeen Free Press.*' Braemar, September 26; two in the Valley of South Esk and Glen Prosen, August 21st.—'*Field.*' One on the shores of Loch Lochy, August 3rd.—*J. H. White;* '*Field.*'

Somersetshire. On the Mendip Hills, about three miles from Wells, with the pale border, by Dr. Madden-Medlicott.—*H. W. Livett, M.D.*

Staffordshire. Near Newcastle-under-Lyne, August 18th and 22nd; at Cannock Chase about the same time, wary and difficult to capture; taken by me at Badenhall, near Eccleshall, September 14th, flying round a tree infested by the larvæ of Cossus ligniperda, in company with many other Vanessæ, all of which seemed attracted by the exudations caused by the presence of this internal feeder.—*F. W. Dutton.*

Suffolk. Chedburgh, near Bury St. Edmunds, end of August, by the Rev. H. K. Creed; and at Tuddenham St. Mary's, five specimens within an hour, by Messrs. J. and E. Edwards.—[*Rev.*] *A. H. Wratislaw.* Taken by me at Stowmarket, August 24th.—*C. R. Collen.* Ipswich, two specimens, August 25th and September 2nd.—*James Parsons.* Near Bury St. Edmunds, September 9th.—*R. Kay.* Bungay, August 25th, by Mr. W. Downes.—'*Norwich Mercury.*' Crowfield Parsonage, August 25th.—'*Field.*' I have captured three close by Ipswich, and I think twenty specimens have been captured in Suffolk.—*C. F. Long.*

Surrey. Dulwich, five specimens, end of August and beginning of September; Lower Norwood, two specimens, end of August; taken by me at Shirley, September 10th.—*H. Ramsay Cox.* Barnes, last summer.—*J. Venables.* Taken at Mickleham, by Mr. B. Haynes, at the end of August; and seen by me, August 16th, between Ashstead and Headley.—*Francis Owen.*

Sussex. Near Linch Church, middle of August, by my uncle, the Rev. R. C. Bull.—*H. H. Bull.* Burgess Hill, end of August, by Mr. Dill of Brighton.—*O'Reilly.* Rottingdean, August 24th, by the Rev. W. R. C. Adamson.—*Francis Owen.*

Wales. Taken at Pensarn, Abergele, August 28th, by Mr. R. A. Barker; the specimen has strikingly the English characteristic—the white border.—*Samuel James Capper.* About half-way up Penmaenmawr, September 2nd.—'*Field.*' On the highroad between Colwyn and Conway, August 27th.—*Wm. Romaine Callender.*

Yorkshire. Beverley, in some numbers; several are in the habit of visiting our garden, attracted by fallen pears, &c.: I have seen one only a few minutes since; two have been captured here a day or two ago; one at Hull, sipping at a rum-cask; and another at Hornsea.—*F. Boyes; August 28th.* Beverley, end of August, three specimens.—*N. F. Dobrée.* Selby, September 12th; Nunappleton, near Tadcaster, August 23rd and September 14th, two specimens; York, September 12th.—*Edward Milner.* Spa Mill, near Huddersfield, August 26th; and at Huddersfield, September 14th.—*Geo. T. Porritt.* Taken by me between Wansford and Skerne, end of August; and seen at Driffield, September 3rd.—*W. H. Jennings.*

Doncaster, August 25th, by Mr. Arion Wood; at Sandal and in Edlinton Wood.—*A. Paterson.* Richmond, September 15th, shot with a catapult by a schoolboy.—[*Rev.*] *G. P. Harris.* Old Mill Road, Barnsley, August 21st.—*T. Lister; 'Field.'* Keighley, August 16th.—*R. Millar.* One at Old Malton on a plum-tree.—*Thomas C. Walker; 'Field,' September* 21. Taken at Dishforth, at Thorpe Perrow, and at Ripon.—*R. Blakeborough.* Bramley Grange, near Leeds, September 8th, by Mr. T. P. Mallorie.—*W. E. Clarke.*

A few Mornings with Pieris Daplidice, Argynnis Lathonia, Colias Hyale, C. Edusa, &c.—Having just returned from a three weeks' cruise (on land) on our southern coast of Kent, I give you a short account of my seeings and doings. I arrived at Dover on the afternoon of August 31st; the next morning I took a walk to the favourite hunting-ground for butterflies, the Castle-meadow, but, as it was dull, only noticed a few common species. The following morning (Sept. 2nd) was very fine and hot, and on my way to the Castle-meadow observed a birdstuffer's shop, which I entered, and enquired of Mr. Gray if he had any insects for sale: much to my surprise, he produced two fine P. Daplidice, male and female, which he assured me had been taken the previous week, one in the Castle-meadow, the other at Shepherdswell, about six miles inland; he had sold them to a gentleman, and was then just going to send them away. After this I was not long before I bent my steps to the Castle-meadow, and soon noticed two young gentlemen with nets: I asked them what they had taken; they said only a few Adonis blues, but one of them told me he had given chase to a Bath White and lost it, and as he so fully described I felt certain he was correct. I therefore looked most carefully at all the dark-looking white butterflies I could see, and suddenly I saw before me a very fine pale clouded yellow (C. Hyale), which I captured, and not many minutes after another a short distance off, a suspicious-looking white, and just as he came up I saw he was the one I was in search of, and the next moment he was in my net, and he proved to be a most lovely male Daplidice that had, apparently, only that morning come out of chrysalis. I remained there for another two hours walking over the most favourable looking ground, but not another could I see: one or two clouded yellows came along the side of the hill, flying

with great rapidity. That evening I had to leave Dover, and the next day I visited Margate, where I remained eight days, and found in the lucerne-fields, both near the town and at Westgate, about one mile and a half off, C. Hyale in great plenty: two or three dozen a-day might have been taken by anyone who was able to give active chase to them: a few Edusas amongst them and plenty of C. Cardui, but could meet with no varieties; but I afterwards purchased a very fine one taken near Dover, something like that figured in Mr. Newman's book, but handsomer and richer in colour. Finding no chance of getting Daplidice there, I retraced my steps to Dover, hoping by that time the females of Daplidice might be out. The weather kept rather cloudy and windy, and although I remained there nine days I was not able to meet with another, but heard of two fine ones being taken, and I saw another female captured in the third week of August. However, on the 13th of September, being exceptionally fine and warm, I met with a beautiful A. Lathonia about a mile from the Castle-meadow, and on the 18th I took three more, one male, worn, and on a blade of grass a fine male and female paired; they remained so twenty-four hours, and I afterwards kept the female alive two days, but she would lay no eggs and died: she was very fine and perfect. On the 19th I took another male and a female, both very fine and fresh, apparently only just born. I cannot agree with my friend Mr. Newman that these specimens fly over from France, as four of my specimens taken are as fine as bred, and the P. Daplidice was also: from what I know of the north coast of France, having visited Calais, Boulogne, Dieppe and Dunkirk, I am inclined to think the south coast of Kent warmer and more favourable for the production of both these species, and the food-plants for both (wild mignonette, clover and heart's-ease) are very abundant this year in the neighbourhood of Dover. I heard of four V. Antiopas having been seen at Dover and Folkestone, but only one captured. How are we to account for the appearance of this latter insect in some abundance this year nearly all over England? I can quite understand P. Daplidice and A. Lathonia appearing in their proper habitats in greater plenty than usual, the weather being fine at the time the caterpillars were feeding up, and also fine at the proper time for the appearance of the perfect insects.—*Samuel Stevens; 28, King Street, Covent Garden, September* 21, 1872.

Deiopeia pulchella at Brighton.—My friend Mr. Howard Nicholls, when walking on the East Cliff, between Bedford Street and Bloomsbury Place, about a quarter before seven on the morning of the 5th inst., found, sitting on the pavement, a beautiful female specimen of D. Pulchella, which he kindly presented to me alive a few hours afterwards. The specimen is a fine one, measuring one inch and eight lines; and, judging from its perfect condition, had probably only emerged from the chrysalis a few hours before its capture.—*H. Goss; Brighton, September* 21, 1872.

Colias Edusa.—While collecting with Mr. Farn in the middle of Dulwich Wood, last week, I was much surprised at our stirring up a pair of Edusa. Is not this a singular locality?—*H. Ramsay Cox; West Dulwich.*

Imago of Vanessa Urticæ with head of the Larva.—I have bred a specimen of V. Urticæ with the head of the larva: it has been flying about freely with the others, although it seems impossible that it can see; the antennæ are entirely absent. The specimen has been seen alive by several members of the Haggerstone Entomological Society.—*J. Clark;* 11, *Duncan Place, London Fields, Hackney.*

Interbreeding of Vanessa Polychloros and V. Urticæ.—In the beginning of August I found a specimen of Urticæ *in coitu* with a Polychloros. The Urticæ died about a week ago; but the Polychloros, which I suppose to be the female, is still alive, and seems to be hybernating. I am much afraid I shall not get her to lay in the spring, as, although I have confined many females on elm, I find that Polychloros persistently refuses to lay in the spring.—[*Rev.*] *G. H. Raynor; Hazeleigh Rectory, Maldon, Essex, Aug.* 26, 1872.

Vanessa Polychloros in North Lancashire.—I captured here, to-day, a specimen of the large tortoiseshell butterfly (Vanessa polychloros). There are but few instances, I believe, of this species having been taken in the North of England.—*James Murton; Silverdale, near Carnforth, September* 4, 1872.

Acronycta Alni in Charnwood Forest.—I saw a very fair specimen of A. Alni taken at rest on a fir-tree in Charnwood Forest, on July 15th.—*H. H. Bull; Harrow.*

Polyommatus Hippothoë at Hackney Marshes.—While taking a walk with a friend on the 8th inst., across Hackney

Marshes, we were both somewhat startled to see a butterfly, which was unmistakably a beautiful (female) specimen of the large copper: it was flying within two feet of the ground, and it was so close to us that if we had had a net one of us could not have failed to have taken it. We pursued it with our hats for a few yards, but we lost sight of it amongst a number of thistles. This statement can be corroborated by my friend P. Boulden, of 32, Marian Square, Anne's Place, Hackney Road.—*E. Munday;* 54, *Driffield Road, Old Ford, Bow, September* 12, 1872.

Hyale, Helice, &c., at Folkestone.—During the last week in August and the first in September I captured several specimens of Hyale at the foot of the Downs, and saw many more, but only one in their favourite place—the undercliff, in the Lower Sandgate Road. Edusa was comparatively scarce everywhere; but I saw two good Helice (one alive), which a young collector had taken in the last-mentioned place; and a gentleman also informed me he had seen two veritable Lathonia and one Antiopa, which had been captured in the Warren: but insects, taken on the whole, were certainly not nearly so abundant as in 1871 and 1870.—*M. N. Inman;* 10, *Upper Hamilton Terrace, London, N.W.*

Sphinx Convolvuli at Dulwich.—A specimen of Convolvuli was last week captured at rest on a post, by a boy in the Croxted Road: it was alive when brought to me, but owing to its having passed through several inexperienced hands, it is now sadly rubbed, and almost useless.—*H. Ramsay Cox; West Dulwich, September* 16, 1872.

Catocala Fraxini near Canterbury.—I have to record the capture of a very large female C. Fraxini at sugar last night, Saturday, about three miles from Canterbury; it is just a little rubbed. This is the third specimen I have taken in the same wood during the last few years; the last I took three years ago. I have shown this specimen to the Rev. T. Hurst and to several other collectors. I have not yet killed it, thinking it may lay some eggs.—*G. Parry; Church Street, St. Paul's, Canterbury, September* 15, 1872.

Catocala Fraxini at Ipswich.—A large specimen of C. Fraxini was captured here on the 25th of August, having entered a house at night attracted by light. It was placed in my hands alive the next day, and is now in my cabinet.—*Henry Miller; Ipswich, September* 13, 1872.

Description of the Larva of Eupithecia togata.—General colour dull pinkish brown; central dorsal, subdorsal, and spiracular lines whitish, indistinct, especially the two latter; skin wrinkled; body sparsely studded with black tubercles and short hairs; head and collar glabrous and horny, dusky brown. A queer internal-looking creature, strikingly like a miniature Cossus Ligniperda. Feeds inside the buds and young shoots of spruce-fir. I am indebted to the kindness of Mr. Hellins, of Exeter, who reared it from the egg, for the opportunity of seeing and describing this, I believe, hitherto unknown larva. Mr. Buckler has succeeded in taking its portrait. Hatched, July 18th. Full fed the end of August. —[*Rev.*] *H. Harpur Crewe; The Rectory, Drayton-Beauchamp, Tring, September* 2, 1872.

Mosquitoes.—In England there are three genera of Diptera Nemocera, or thread-horned two-wingers, that sting and draw blood with their mouths; and there is no recent instance of any foreign kind having migrated to this country. These genera are—Culex, or gnat; Simulium, or sand-fly; Ceratopogon, or midge. In Lapland, in America, and in other countries, the gnat is called the mosquito; and the attacks of the Lapland gnat are not few and feeble, as are those of the English gnat. In Italy the mosquito is not a gnat: its name is Phlebotomus Papatasii; its hum is more soft and low than that of the gnat; the genus to which it belongs is not found in England; the family in which it is included is represented here by Psychoda, the little moth-like fly that may often be seen on windows.—*Francis Walker.*

Orgyia Gonostigma and Papilio Machaon at Maldon.—About a fortnight ago my brother and myself captured a male specimen of O. Gonostigma, flying briskly in the sun, close to Maldon. I cannot hear of the previous occurrence of this insect in these parts. Another insect, new to this district, was captured at Maldon about the same time. A specimen of P. Machaon was impaled on a needle by Mr. Gutteridge, whilst sitting on his garden wall in the middle of the town. It does not seem possible that the insect could be a bred one escaped, as there is but one entomologist in the town, who does not plead guilty to having had any Machaon pupæ this year. The marshy nature of the surrounding district renders it not improbable that Machaon may breed regularly in some

sequestered nook near here. I may mention with regard to this insect, that Wicken Fen, in Cambridgeshire, the only locality in which Machaon can now be found with any certainty, is diminishing in size every year; and before ten more years have rolled over our heads Machaon may rank with Hippothoë, as no longer a native of Britain.—*G. H. Raynor; Hazeleigh Rectory, Maldon, Essex, August* 26, 1872.

Zygæna Meliloti.—Seeing several notices in the September number of the 'Entomologist' respecting this insect, it may interest several readers to know that I took the species in 1869, in the New Forest. Mr. A. B. Farn was looking over my collection last week, and drew my attention to a very small Burnet, which, on examination, proves to be Meliloti. On referring to the number in my journal, I find I caught it in the enclosures, between those known as "Boldrewood" and "Stubby Copse," Lyndhurst, in July, 1869. This proves the value of journalising (by means of a number underneath) *every* specimen in one's collection.—*H. Ramsay Cox; September* 2, 1872.

Eremobia ochroleuca near Ware.—A few weeks ago I found E. ochroleuca on a chalk-hill, near this place.—*Alfred F. Buxton; Easneye, Ware, September* 14, 1872.

Second occurrence of Calosoma sycophanta near Penzance.—Our naturalist, Mr. W. H. Vingoe, some years since, captured a specimen of this rare beetle within the limits of this town. I have now to report a second capture by his son, Mr. Edward Vingoe, a few weeks since, at the parish of St. Paul, a little to the west of Penzance. I saw the latter alive myself; the metallic colours of both examples were similar.—*E. H. Rodd; Penzance, September* 12, 1872.

Calosoma sycophanta at Plymouth.—A fine specimen of this beetle was taken by a friend of mine, in a street at Plymouth, last week. The last, I believe, was captured far inland, and is now in my cabinet.—*J. Brooking Rowe; August* 31, 1872.

Erratum.—Entom. p. 193, line 14, for *Vanessa Antiopa at Sheerness* read *Vanessa Antiopa near Rochester.*

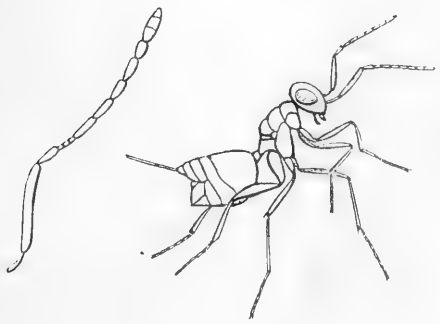
THE ENTOMOLOGIST.

No. 110.] NOVEMBER, MDCCCLXXII. [Price 6d.

Economy of Chalcidiæ. By Francis Walker, Esq.

(Continued from p. 202.)

The three genera here represented belong to the Eupelmidæ, a family distinguished, like the Encyrtidæ, by the peculiar structure of the middle legs.



CEA PULICARIS.

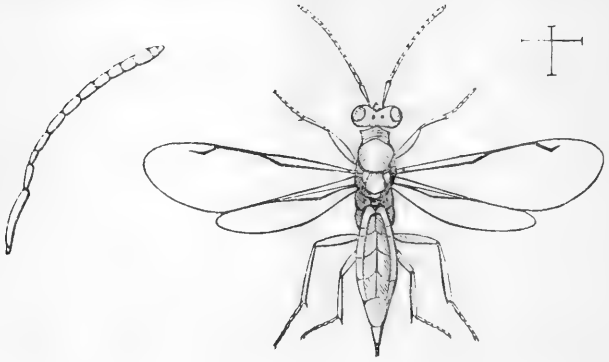
Cea.

This genus is only known in these isles by two specimens, found in Ireland by A. H. Haliday; the one figured, and another which has wings.

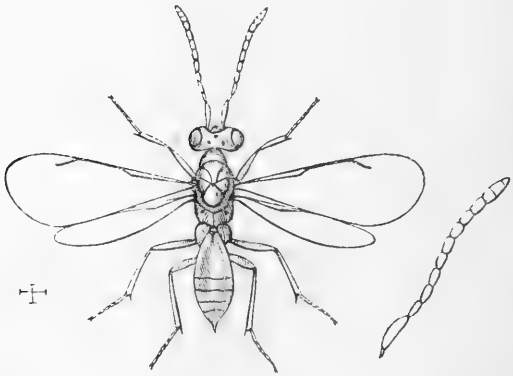
Calosoter.

There are two British species, C. vernalis and C. æstivalis; the former appears earlier in the year than the latter, from which it may be distinguished by its larger size and darker wings. They are both, probably, parasitic on wood-eating

insects; and C. vernalis may be found seated on wood in buildings, and often in company with Cleonymus depressus. C. æstivalis frequents the wood of old, decayed oak-trees.



CALOSOTER VERNALIS.



EUPELMUS UROZONUS.

Eupelmus.

This genus is very limited in the number of British species. E. urozonus inhabits as a parasite some kinds of

oak-galls, especially the oak-apple, from which specimens may be obtained.

FRANCIS WALKER.

Notes on some Insects of Italy and of South France, observed between the middle of May and the middle of July, 1872. By FRANCIS WALKER, Esq.

The opportunities for observation were few and short, and the weather was at first unfavourable. Many researches by many persons in different seasons and localities are required to determine the range of Italian species of insects, and to serve as means for the future author on entomological geography in Italy. The interest in seeing these objects is greatest when they occur in abundance, and thereby contribute to the diversity, and, in Lepidoptera especially, to the beauty of the aspects of natural scenery.

LEPIDOPTERA.

Pieris Brassicæ, P. Rapæ, Vanessa Cardui, Plusia Gamma, Stenopteryx hybridalis, and Camptogramma bilineata, appeared nearly everywhere, and are therefore not here again mentioned. Macroglossa Stellatarum was also widely spread.

Avignon, *May* 14.—Papilio Podalirius, Aporia Cratægi, Anthocharis Eupheno, Melitæa Didyma, M. Phœbe, Hipparchia Mæra, H. Megæra, Lycæna Adonis, L. Alexis, L. Sedi.

The above species were at the Fountain of Vaucluse, a spot remarkable for its associations, and for its rocky wildness and for beauty. A. Eupheno was plentiful, and flitted slowly over the numerous wild flowers there; the others were scarce.

Marseilles, *May* 16.—Papilio Podalirius, Hipparchia Galatea, H. Pamphilus, Chrysophanus Phlæas, Lycæna Alexis. Here, as at Genoa, P. Podalirius was of rare occurrence, and did not appear in the open country, but only in the gardens about the town.

Nice, *May* 17.—Hipparchia Egeria.

Genoa, *May* 20, 21.—Papilio Podalirius, Colias Hyale, Vanessa Atalanta, Hipparchia Pamphilus, Hesperia Alveolus.

The wild flowers in the neighbourhood were numerous and in great variety: Cypripedium calceolus was plentiful; another Cypripedium, whose specific name I do not know, was less common.

Pisa, *May* 24.—Scopula ferrugalis.

Rome, *May* 27 *to June* 8, *June* 18 *to* 21.—Papilio Machaon, Gonepteryx Rhamni, G. Cleopatra, Colias Edusa, Pieris Daplidice, Melitæa Didyma, M. Rhodopensis, Vanessa Io, V. Atalanta, V. L-Album, Hipparchia Egeria, H. Megæra, H. Janira, H. Pamphilus, Chrysophanus Phlæas, C. Thersamon, Lycæna Alexis, Hesperia sylvanus, H. linea, H. Alveolus, H. Alceæ, Ægeria chrysidiformis, Syntomis Phegea, Eulepia grammica, Arctia villica, Plusia Ni, Acontia solaris, A. luctuosa, Acidalia ornata, Lythria purpuraria, Crambus rorellus, Pterophorus pentadactylus. H. Janira among the butterflies and C. rorellus among the moths were the only two species that occurred in abundance; G. Rhamni and G. Cleopatra appeared close together, and in equally fresh condition; V. L-Album and P. Ni frequented the neighbourhood of the fountain of Egeria; A. villica was found in the groves of Diana, near Albano; and S. Phegea flitted in the precincts of the villa of Hadrian and in the woods of Tibur or Tivoli.

Naples, *June* 11 *to* 17.—Papilio Machaon, Colias Edusa, Melitæa Rhodopensis, Hipparchia Megæra, H. Pilosellæ, Chrysophanus Phlæas, Lycæna Alexis, Zygæna Medicaginis, Syntomis Phegea, Deiopeia pulchella, Callimorpha Jacobææ. None of these, with the exception of H. Megæra and D. pulchella, occurred in the immediate vicinity of Naples. Some few C. Edusa were on Vesuvius to two-thirds of the height; the rest were near the shore of Lake Avernus.

Capri.—Gonepteryx Cleopatra, Colias Edusa, Hipparchia Janira, H. Pilosellæ, and Arctia villica, were on the heights near the cliffs, above the intensely blue sea.

Florence, *June* 24 *to* 27.—Papilio Machaon, Colias Edusa, Hipparchia Galatea, H. Megæra, Lycæna Alexis, L. Argiolus, Hesperia linea, H. Alceæ, Heliothis peltigera, Acontia luctuosa. Butterflies were now more numerous; C. Edusa and H. Galatea appeared in abundance, and H. linea in great profusion.

Lucca, *June* 28, 29, *July* 2, 3.—Papilio Machaon, P. Podalirius, Gonepteryx Rhamni, Colias Edusa, C. Hyale,

Leucophasia Sinapis, Argynnis Paphia, Melitæa Didyma, M. Rhodopensis, Vanessa Io, V. Atalanta, Hipparchia Hermione, H. Galatea, H. Egeria, H. Arcanius, Chrysophanus Phlæas, Lycæna Arion, L. Corydon, L. Alexis, L. Ægon, L. Acis, L. Argiolus, Hesperia Sylvanus, H. Actæon, H. Alveolus, Zygæna Medicaginis, Z. Filipendulæ (*var.* with outer spots confluent), Procris Pruni, Syntomis Phegea, Dysauxes punctata, Callimorpha Jacobææ, Ennychia octomaculalis, Pyrausta purpuralis, Endotricha flammealis, Spilodes palealis, Fidonia atomaria, Thalera bupleuaria, Acidalia sylvestraria, Rhodostrophia Calabraria. Butterflies and moths at this time swarmed amongst the myrtle flowers in the woods on the hills, near Lucca, and contributed to adorn them by their numbers and their various flight. H. Galatea was the most numerous, and appeared to consider Pieris Brassicæ an intruder, and chased it; L. Sinapis and L. Arion were of frequent occurrence; and the beautiful S. Phegea hovered in great abundance, and the sight of it and the rose-banded wings of R. Calabraria was very attractive.

Baths of Lucca, July 1.—Leucophasia Sinapis, Hipparchia Hermione, H. Arcanius, Chrysophanus Phlæas, Lycæna Ægon, L. Alexis, Hesperia Actæon, Zygæna Medicaginis, Syntomis Phegea, Callimorpha Jacobææ, Herminia derivalis, Botys hyalinalis, Scoparia ambigualis, Acidalia holosericeata, A. subpunctaria. This spot is higher in the Apennines than the hills before mentioned, and some of the insects have a more northern character. The Acidaliæ and B. hyalinalis abounded.

Ravenna, July 5.—Papilio Machaon, P. Podalirius, Colias Edusa, Lycæna Alexis, besides some other kinds whose names are not remembered. These occurred in the forest, which is of comparatively recent existence, for the spot which it occupies was covered by the sea two thousand years ago. It was much enlivened by the flowers of the sweet-scented clematis, and P. Podalirius was more common than near Lucca.

Venice.—Vanessa Atalanta.

Bellagio, Lake of Como, July 12.—Colias Edusa, Leucophasia Sinapis, Vanessa Antiopa, V. Io, V. Atalanta, Hipparchia Egeria, Chrysophanus Phlæas, Lycæna Alexis.

Isola Bella, Lago Maggiore, July 13.—Scoparia ambigualis,

seated on the tree whereon Napoleon inscribed "Battaglia," previous to the battle of Marengo.

Milan, July 11.—Pieris Daplidice, Vanessa Atalanta, V. C-Album, Hypogymna dispar.

Susa, July 15.—Gonepteryx Rhamni, Colias Edusa.

FRANCIS WALKER.

Entomological Notes, Captures, &c.

Scarcity of Butterflies last June.—The unsettled and ungenial weather prevailing in many places at the end of May and the beginning of June had a very marked influence upon butterfly-life. Those species which were in these weeks in the larval or pupal condition had their development retarded, while the imagos that had hybernated, or emerged before the cold rains and the high winds, were mostly swept out of existence. The summer landscape in some parts of Kent—on those days at the commencement of June when there were occasional gleams of sunshine—presented an unnatural aspect from the scarcity of butterflies, which give such a charm to the rural scene. Even of the common Brassicæ and Rapæ few individuals were about, much to the satisfaction of the gardener. Only an occasional straggler of Rhamni was to be seen, though in many seasons a good number of the old imagos live on far into the summer. Of the three familiar Vanessæ, *viz.* Atalanta, Io, and Urticæ, there were very few about. The spring brood of the latter species had been considerably delayed. The first individual noticed in the act of emergence from the pupa was seen on the 18th of June, though probably some had appeared a few days before. In former years fresh specimens have been out some weeks earlier, both in Kent and Middlesex, and doubtless elsewhere. In the vicinity of Gravesend there were scarcely any young larvæ of Atalanta and Io; and some battered females of Io seemed to be still flying in search of suitable spots for oviposition. Of the larvæ of Urticæ I observed a less number than usual feeding in May and June: the females of this species are particularly nice in their selection, passing by large patches of nettles, which look promising, to settle in parties upon those plants growing near ditches, and

rather exposed to view than otherwise. And from the occurrence in one spot of larvæ, adult and newly hatched, it would seem that a succession of imagos are attracted to the same locality, though it will sometimes happen that the nettles have been so far stripped that the latest out have, perforce, to migrate before they are full grown.—*J. R. S. Clifford; 59, Robert Street, Chelsea, July* 18, 1872.

Late emergence of Lepidoptera.—It would be easy, if not particularly interesting, to bring together many proofs of the great check given to insect-life by the ungenial weather of early summer, though the effects were, as was to be expected, very various in different counties. I propose to cite a few instances, in addition to those already given, showing how some of the moths occurring in the London district were affected thereby. The general broods of the following larvæ were two or three weeks in arrear of their usual time: namely, Odonestis potatoria, Arctia caja, Bombyx neustria, Liparis auriflua, Abraxas grossulariata (in open places, not so in gardens), Cheimatobia brumata, Hybernia leucophearia, H. rupicapraria, Selenia illunaria, Diloba cæruleocephala, Cosmia trapezina, and Yponomeuta padella, the latter appearing in good numbers at last, greatly to the discomfiture of some persons who, priding themselves upon their hawthorn hedges, hoped they had escaped the ravages of the species for the present season. Of imagos, amongst the Macro-Lepidoptera, I might cite many instances: some, however, especially amongst the Noctuæ, are so capricious, that what is a late emergence in the experience of one observer is an average appearance in the estimation of another. The following were noticeably behind the wonted period in London, or in the country south and east of the metropolis, as seen or captured by myself:—Melanippe montanata, M. galiata, Cabera exanthemaria, Anaitis plagiata, Camptogramma bilineata, Iodis lactearia, Hemerophila abruptaria, Acronycta Psi, Acidalia straminata, Euclidia Mi, and Orgyia pudibunda. From the paucity of Tortrices and Crambi on the wing in June, it was evident that in these families the unfavourable effects of the season had also been felt.—*Id.*

Agamogenesis in Sphinx Ligustri.—Perhaps some of the readers of the 'Entomologist' will recollect, or, on referring to vol. v. p. 375, will find, a communication from me on the

above subject, with a note from the Editor requesting further observations, and that I would report thereon; and, though I have but little to communicate, I now send the desired report. I stated in my first communication that I had nearly fifty larvæ, from eggs produced by one moth; but when they had grown larger and could be more easily counted, I found the number was sixty-three: ten of these I retained for personal observation; I gave nine to one friend, and six to another; the remainder I turned adrift when they were nearly full fed. Those in my possession all went to earth on and before the 12th of August, 1871; five of them produced moths, the first emerging on the 17th June, 1872, followed by others on the 19th, 20th, 23rd, and 27th; the first and fifth died in a day or two after emergence, without laying eggs, yet, on dissection, I found they contained eggs in an undeveloped state, and that they apparently died from dropsy, their bodies being nearly full of water; the others laid eggs respectively on the 24th, 27th, and 30th, all the eggs being unfruitful; therefore it would appear that Agamogenesis does not descend beyond the first generation. Some of the moths reared by my two friends also produced barren eggs. All the moths contained eggs, and it appears to me questionable whether there are any males in moths in which we find Agamogenesis. It will also be seen that but five out of ten caterpillars produced moths this year; but, on turning up the earth in my breeding-cage, I found five apparently healthy, active pupæ, one of which I dissected, and found it to be full of moisture, and without the least appearance of change. I also found on enquiry that my friends had but seven moths from fifteen caterpillars; thus from twenty-five pupæ there has been but twelve moths, leaving thirteen pupæ still undeveloped. I have again buried the four pupæ, with the hope that next year they may produce moths: should they do so I think it may account for various moths being more abundant some years than they are at others. In an uncongenial season like the present, pupæ remain dormant until one more congenial, when they emerge with others; thus increasing the number of moths in that year to more than the usual average. Sphinx Ligustri appear to be more general feeders than was at one time thought: I have found them feeding on ash, privet, teasel, laurustinus, and fuchsia; and I see they have

been taken this year from holly; yet I have invariably found that they will leave any other food for the privet, when it is placed near them.—*Stephen Clogg; Looe, September* 9, 1872.

The Smerinthi Double-brooded (Entom. vi. 190).—It is not a very rare occurrence for a second brood—or at least a *portion* of a second brood—of the above genus to appear *in confinement*, if the weather proves favourable to their development. On more than one occasion I have reared S. Populi and occasionally, though much more rarely, S. ocellatus, in the autumn, from eggs laid in May or June; and a few seasons ago I caught a specimen of S. Populi *at large*, in August. I never obtained a second brood of S. Tiliæ; and my experience points to the fact that the specimens of S. Populi bred in the autumn are inferior in size to their spring relations, a fact, indeed, which is well known with other species whose double-broodedness is unquestionable. I have observed, too, that in the case of S. Populi a small proportion of the pupæ produce moths in the autumn, whilst the rest stand over till the following spring; and I suspect that the emergence of specimens out of doors is of rare occurrence in the autumn: I have known but of the solitary instance mentioned above. During a very warm season many species, which are usually slow in their development, pass through their metamorphoses with comparative rapidity: for instance, in 1868 I caught two females of A. fuliginosa on the 10th and 15th of May respectively; both deposited eggs, which duly hatched; but several of the larvæ from the first brood outstripped their fellows in growth so much, that ten of them produced moths between the 8th and 13th of the following July, whilst the majority of their brethren were busily feeding, and about half-grown. The past summer has undoubtedly had a very peculiar effect upon the development of many insects; and, instead of increasing the broods, seems to have retarded or destroyed a large proportion.—*G. B. Corbin; Ringwood.*

Atropus niveus.—This peculiar little insect has again occurred in the locality where I met with it last season, and I have seen specimens from the beginning of June till the end of August; but, compared with last season's abundance, the species has been scarce this. One evening in August I caught two specimens flying rather rapidly, about *three* or

four feet above the surface of the water, thus, in a measure, departing from the usual habit of the species, whose lowly flight has more than once been adverted to in these pages. With regard to the question asked by my friend Mr. J. P. Barrett, *viz.*, "How long will Niveus survive away from its native pond?" (Entom. vi. 199), I may say that my limited experience points to the fact that they soon die when placed in a pill-box, but some specimens live comparatively much longer than others in such a situation. It is a species which seems to have abundance of enemies of various kinds, as their torn and defunct bodies, so often seen floating about on the surface of the water, testify; but the cause is, doubtless, traceable to the habit of the species hiding amongst the herbage at the water's edge during the day-time: thus they become an easy prey to spiders and other predatory creatures. I have seen a small reddish ground-beetle—Calathus mollis or C. melanocephalus, I believe—preying upon them more than once; and some specimens of Niveus I have seen completely covered with exceedingly small, leech-like creatures, whose tenacious hold must have been anything but pleasant to the poor little insect.—*G. B. Corbin.*

Where are the Lepidoptera?—Whilst our ornithological brethren in various quarters are—or were—crying, "Where are the swallows?" we may with equal reason enquire after the insects of different orders which constitute the food of the birds, for surely there has been an equal scarcity of both. I never experienced a worse season for Lepidoptera; for even the species which hitherto have been abundant were scarce, or altogether unrepresented this season. "Sugar" has been a total failure; and both diurnal and nocturnal Lepidoptera have alike experienced some serious drawback or partial annihilation. Some evenings in "leafy June" I rambled miles, net in hand, without seeing a single specimen of *any* moth, large or small. What could have been the cause? Was it the cold, damp spring and early summer; and did its effects retard or destroy the "game" we sought after? Under either circumstance, what are our prospects for next season? The latter part of the summer appeared to be favourable, as far as heat, and fine, bright weather were concerned; still the state of things remained almost unchanged, and the scarcity of Lepidoptera seemed to be

regulated by the ancient law of the Medes and Persians, which "altereth not."—*G. B. Corbin.*

The fitful appearance of Rare Insects.—Can any of your readers explain the fitful appearance of some of our rarities? This year, V. Antiopa, frequently recorded; last year, D. pulchella; and in 1870, D. Galii. In the 'Entomologist' for March, 1871, I recorded the capture of a considerable number of the larvæ of D. Galii, at New Brighton, in the autumn of the previous year. Indeed, they were not at all uncommon, nor confined to any particular locality, but were met with for miles along the sand-hills, wherever the Galium plant grew. It was difficult to believe they had been sufficiently sought for before. This, however, was not the case, as every year, for the last ten or twenty years, the sand-hills had been most diligently searched by some of our best observers, and such a conspicuous larva as D. Galii could not have been overlooked. Again, none have been found since 1870. The blown-over theory surely cannot account for such occurrences; and in the case of the V. Antiopa recorded it is evidently genuine British, from the peculiar white margin.—*Samuel James Capper; Huyton Park, near Liverpool.*

Argynnis Lathonia and Pieris Daplidice in Jersey.—I took Lathonia rather plentifully on the 1st of April and the 1st of June on some sand-hills near the sea-shore: few were on the wing during July and August, but in the middle of September they again appeared. The April specimens were evidently just out of the chrysalis: they were smaller than autumnal ones. I took one Daplidice during May, and about a dozen more in August.—*W. Poingdestre; 6, Clarence Terrace, St. Helier's, Jersey, September* 23, 1872.

Argynnis Lathonia at Folkestone.—A specimen of Argynnis Lathonia was caught on the 14th September in the Warren, near Folkestone, by H. G. Greenish.—'*Science Gossip*,' *October* 1, 1872.

Argynnis Lathonia and Pieris Daplidice in Kent.—On August 26th I had the pleasure of capturing one specimen of Lathonia, and saw two others at the foot of the hills at Folkestone. Mr. Harbour, of Deal, reports to me the capture of six specimens of Lathonia: one at Walmer, one at Gussen, and four at Shepherd's Well, by a gentleman collecting for his first season, who also took five Daplidice. One Daplidice

was also taken at the back of Dover Castle and one at Tilmanstone, by a country lad, who sold it for the enormous sum of one penny.—*C. Seabrook;* 17, *Queen Street, Brompton, S.W., September* 24, 1872.

Argynnis Lathonia at Ipswich.—I have been again fortunate with Lathonia, and have captured two fine specimens flying over the Phlox Drummondii.—*C. F. Long, Medical Superintendent, Ipswich Borough Asylum, Sept.* 22, 1872.

Argynnis Lathonia and Pieris Daplidice at Aldeburgh, Suffolk.—I have had the pleasure of seeing a specimen of P. Daplidice and also of A. Lathonia, taken by my cousin, Mr. A. E. Garrod, at Aldeburgh, on the 6th and 13th of September last.—*A. L. Hunt; St. John's College, Cambridge, October* 22, 1872.

Occurrences of Vanessa Antiopa in Great Britain and Ireland during the Autumn of 1872 (continued from Entom. vi. 219):—

Cheshire. This has been a poor season for Entomology about here: my best acquisition is an Antiopa taken this autumn at Neston, two miles from here, and given to me alive.—*J. F. Brockholes.*

Cornwall. A single specimen was seen, but not taken, at Hessenford, about five miles from Looe, about the middle of August.—*Stephen Clogg.*

Devonshire. It may interest some of your readers to know that I caught a fine specimen of Vanessa Antiopa in this neighbourhood (Exeter): it was resting on a willow at the time I captured it.—*W. K. Batchelor;* '*Journal of Horticulture.*'

Durham. V. Antiopa has been rather plentiful about here this autumn. On August 23rd I caught a fine male in my garden here, another was seen the same day, also one on the 24th and one on the 30th; all near here. Since then two have been seen in the town; and I have had a worn female sent me from near Castle Eden Dene. On September 5th (whilst taking G. C-Album, which was very numerous, in a wood near Helmsley, Yorkshire) I caught a fine female, and saw another on the 6th, but was unable to catch it.—*Frederic Raine.*

Ireland. Mr. Frank Fowler, Ravensdale Park Gardens, Co. Louth, writes:—"We have seen this beautiful butterfly here on two occasions this season, though not able to capture

it. I think it has a taste for fruit, having been seen near the peach-house."—'*Journal of Horticulture*,' *Sept.* 19, 1872.

Northumberland. My wife has seen a specimen of Antiopa at Newbiggen-by-the-Sea, and my brother-in-law saw another at Warkworth.—*J. C. Wassermann.*

Somersetshire. One seen near Taunton.—*J. Gatcombe.*

Suffolk. We have just taken at Oakley, August 29th, a specimen of Vanessa Antiopa: it was seen resting on the front wall-plate of a fig-house; it next visited the peach-houses, where I made an unsuccessful attempt to capture it. In half an hour it came back to nearly the same spot; and was finally taken resting on the border close to a few peaches that were ripening on the open wall. I think it is more than likely it has a taste for fruit, like its near relative V. Atalanta. —*Wm. Robins; Oakley Park;* '*Journal of Horticulture*,' *September* 12, 1872.

Surrey. V. Antiopa appears to be unusually numerous this season: a fine specimen was caught at Buxted a fortnight ago. Subsequently another rare butterfly, Pieris Daplidice, was caught while hovering over some lavender flowers.—*Edward Luckhurst;* '*Journal of Horticulture.*'

Sussex. On Monday, September 2nd, at Maresfield, the seat of Lady Shelley.—*Edward Newman.*

Warwickshire. About ten days since I had a fine V. Antiopa brought me that had been captured at Middleton, a village four miles from here.—*Egbert D. Hamel; Tamworth, October* 3, 1872. I caught, on the 19th September ult., a specimen of V. Antiopa in Combe Wood.—*H. Vicars; Rugby.*

Yorkshire. On Wednesday, 21st August, a friend of mine took a specimen of V. Antiopa at rest on a manure heap.—*Jno. Harrison;* 7, *Victoria Bridge, Barnsley.* On August 16th, I had brought to me alive a fine specimen of Antiopa, by a person who had taken it off a wall at Keighley the previous day.—*R. Millar;* 83, *Hanover Street, Keighley, Yorkshire.* I hear that four specimens of V. Antiopa were seen at Hovingham, about the third week in September: two were captured, and a third might have been, as it sat for a long time on a window, but its value being unknown it was allowed to escape; and a person in Driffield says that she saw a large, dark butterfly, with a light-coloured border, fluttering outside her window.—*G. R. Dawson; Driffield.*

Correction of locality for V. Antiopa.—In my notice of the capture of V. Antiopa (Entom. vi. 218, line 7), for "Bury St. Edmunds," read "Bury, Lancashire."—*R. Kay.*

Nola albulalis in the Isle of Wight.—It will be interesting to you to know that Mr. Packman, of Dartford, has this season (in July) taken some very fine specimens of the scarce Nola albulalis. I cannot give you the exact locality, but it is certainly no great distance from Dartford, as he tells me he had plenty of time for collecting when he started in the morning, and returned the same afternoon.—*Geo. W. Bird; October* 23, 1872.

Chœrocampa Celerio.—I have recently placed in my collection a specimen of this insect, in perfect condition, which was taken in Southover, Lewes, about the middle of September, by my cousin, Mr. Evelyn Blaker, who kindly presented it to me alive. The moth flew in at the open window, attracted doubtless by the light, for which this species is known to have so strong a predilection.—*M. S. Blaker; Lewes, October* 21, 1872.

Zygæna Meliloti.—In the first week of July this year I took in the New Forest (and in the part of it mentioned by your other correspondents) male and female specimens of Zygæna Meliloti. Furthermore, I obtained a supply of eggs; and immediately on my return to town I handed perfect insects (the actual parents) and eggs to Mr. T. H. Briggs, with whose paper on the "English Burnets" (Trans. Ent. Soc. 1871, pp. 417—440) many of your readers are, no doubt, familiar. The aspect of the specimens and the time of their appearance made it impossible to refer them to any of our five-spotted forms; and if they *had* been either form of Trifolii, the conclusions to which Mr. Briggs' paper points would have been swept away. The discovery was, therefore, exceptionally interesting; but, after submitting scales, &c., and the eggs to a microscopical scrutiny (Mr. Briggs has the notes made at the time), it was determined to wait until the larvæ grew, and then to renew investigations. Of these larvæ I can give no account; but Mr. Briggs has a number duly hybernating, and he will, no doubt, be able eventually to give full details. I hope we shall thus, in due course, have a complete life-history of the moth: when this is written the entomologist will have done his work. Then we must expect the

synonymy-man; for I suppose there is no one not thoroughly prepared for the announcement that "Meliloti, *Esper*," must be promptly surrendered for the "Coribungus" of some "prior" worthy. It may be worth while to add that this insect is not the Meliloti of Stephens or Curtis. The former, however, considers that *Albin's* picture of a Zygæna larva (pl. lxxxii.), represents the larva of Meliloti, figured and described by Esper. I can see no resemblance.—*W. A. Lewis; Temple, October*, 1872.

Callimorpha Hera at St. Leonard's.—A specimen of Callimorpha Hera was caught by a member of our household in 1868, in a garden near Warrior Square Station, St. Leonard's, and is still in my possession. I have also a Vanessa Antiopa, taken on a paling near this house in 1872.—*H. C. Fawcett; Beach View, Hollington, Hastings, October* 7, 1872.

Note on Zeuzera Æsculi.—I have more than once observed that this moth, when newly emerged, has the wings rubbed or torn at the margins; and this is probably the case pretty frequently with this and other wood-feeding species, where the moth has to extricate itself from a puparium partially surrounded by wood and bark. The female moth rarely quits the tree from which it has emerged until impregnation has taken place; but the male flies about with some degree of briskness.—*J. R. S. Clifford.*

R. Cratægata and A. Caja.—The following facts, from personal observation, about these two common species, have not, I believe, yet been recorded. Many larvæ of Cratægata hybernate, at least in the North of England, and are found full grown in the spring; the moths from these begin to emerge about Midsummer, and form our summer brood: these are half as large again as the *imagos* of the spring brood, and more brilliantly coloured. In this district Caja is rather scarce, and the eggs are generally laid on willow or poplar, on which the young larvæ thrive well till after hybernation. When found in the spring they are generally on low plants, as in those places where the species is most abundant. —*G. P. Harris; Richmond, Yorkshire.*

Tæniocampa Opima.—Through the kindness of Mr. Capper, of Huyton Park, near Liverpool, I, like Mr. Corbin, became possessed of eggs of the above species, and acting on the advice of that gentleman, I placed them in a fine calico

bag, and tied them on a branch of the sallow. In about a fortnight they hatched; and, like those of Mr. Corbin's, throve wonderfully well. When they were about one-third grown I removed them from the calico bag, divided them into three companies of about forty each, placing each company in a course muslin bag to allow of more air and light, again tying them on to branches of the sallow, changing them every third or fourth day according to circumstances; and although we had many heavy thunder-storms and drenching showers, still they continued to thrive, many of them outstripping their companions by several days in the race for maturity; at which stage I removed them to my breeding-cage, where they would feed for two or three days, and then go down. I only lost some four or five, and those more by accident than otherwise; so that I calculate I have quite a hundred healthy pupæ. I may say I was equally successful with larvæ of O. fascelina, sent me by the same gentleman. —*Thomas Goodyear; Church Road, Malvern Link, August* 4, 1872.

Description of the Larva of E. Pimpinellata, late Denotata. —*Var.* 1. Ground colour bright green, sometimes darker on the centre of the back; central dorsal line darker green; subdorsal lines paler; anal tip of dorsal line crimson; head reddish; spiracular line pale green; belly green, paler than ground colour; segmental divisions pale yellowish green: resembles much the larvæ of Fraxinata and Lariciata. *Var.* 2. Pale russet-green; dorsal line darker; subdorsal line slightly darker; head reddish brown; anal tip of dorsal line crimsonish red; spiracular line yellowish, margined underneath with russet-brown; belly yellowish green; segmental divisions paler. *Var.* 3. Neutral crimsonish red; paler towards the spiracular line; dorsal line madder-brown; subdorsal lines indistinct, reddish brown; head reddish brown; tip of anal segment crimsonish red; spiracular line pale straw-colour; margined underneath with neutral red; belly grayish; segmental divisions pale straw-colour. In shape all resemble very much the larvæ of Fraxinata and Lariciata, and are full fed the latter end of September. It feeds on the seeds of Pimpinella magna and P. Saxifraga; seems most partial to P. magna, upon which plant I have found the larvæ rather freely. The colour of the larva seems to

assimilate with the seeds: green ones upon green unripe seeds, and the red ones upon the purple ripe seeds.—*William Prest;* 13, *Holgate Road, York, September* 16, 1872.

Variety of C. Xerampelina.—On the 22nd of August I had the pleasure of taking a very fine variety of Xerampelina: the ground colour, instead of being yellow, is of a dull coppery red, the stigmata darker, and the lines forming the central fascia pale bright yellow. It is identical with specimens from the Isle of Man, now in the possession of Mr. E. Birchall.—*William Prest.*

[I have this variety, and find it described in Guenée, vol. v. p. 402.—*Edward Newman.*]

Chortodes Bondii and its Food-plant.—The addition of the date of Mr. Poulton's capture of this species (Entom. vi. 191), would render his note more valuable. What does he intend by *wild rhubarb?* The rhubarb so commonly cultivated is not a British plant, though a straggler may now and then be seen growing apparently wild. Is it not the buckwheat (Fagopyrum) that he is referring to? The yellow-flowered plant described is probably the charlock,—at any rate one of the common Cruciferæ.—*J. R. S. Clifford;* 59, *Robert Street, Chelsea.*

Catocala Fraxini at Shrewsbury.—I have in my possession a specimen of this rare and beautiful insect, C. Fraxini, which was brought to me alive by the Rev. R. Warren, the Mount, Shrewsbury: it was taken by his daughters, while playing on the lawn, about mid-day, on the 19th September. This is the first specimen I have heard of, taken in the neighbourhood of Shrewsbury.—*T. Pickin; Mount Fields, Shrewsbury.*

Catocala Fraxini near Wisbech.—On the 31st of August I took, at sugar, a fine specimen of Catocala Fraxini.—*G. D. Armitage; The Cottage, Tydd St. Mary, Wisbech, September* 23, 1872.

Leucania L-Album and Catocala Fraxini near Canterbury.—A fine specimen of L. L-Album was taken at Pine Wood, Settlebourne, by Mr. E. Edney, a collector. On Tuesday, the 24th of September, I took one myself at sugar; last evening, Saturday, in the same place, it was very windy, when both were taken in the same wood, where my brother took the only known specimen three years ago, which

Dr. Harper had; and singularly enough I took Catocala Fraxini in the same wood the same year; so also I have this year.—*G. Parry; Church Street, St. Paul's, Canterbury, September* 29, 1872.

Pupæ at Derwent Water.—Last winter I dug, near Derwent Water, pupæ of the three following insects, which are not mentioned in Mr. Greene's list:—Notodonta Carmelita: six, at the foot of a small birch; I reared these and got eggs, and have now several pupæ from them. Ennomos Lunaria: two, under loose bark of a birch, if I remember right. Halias Prasinana: spun up among the grass at foot of an oak. These were dug in September, 1871. I may also mention, to encourage beginners, that it was nearly my first attempt at digging; and that I also got during the winter pupæ of Apiformis, P. Populi, Palpina, Camelina, Dodonæa, Ocularis, Ridens, Crepuscularia, Abbreviata, Castigata, and many of the common species.—*W. C. Marshall; Trinity College, Cambridge.*

Entomology at Watlington.—During a short visit to Watlington I observed a few species which escaped my notice last year: Ochroleuca frequented the flowers of Centaurea Scabiosa during the day; Cardui had just emerged from the chrysalis; Satyrus Semele had been taken earlier in the season; and the gentleman who had captured it also informed me that he had seen a specimen of Apatura Iris in an oak grove near, but failed to secure it. Larvæ of Ligustri and Atropos were tolerably common. Among others I noticed Galiata, Popularis, Diffinis, Libatrix (very fine, at sugar), Iota, Chrysitis, Tragopogonis, &c.—*T. P. Lucas;* 169, *Kennington Road, Lambeth, London.*

Prionus coriarius in Devon.—Two specimens of this somewhat rare beetle, male and female, were taken in this neighbourhood in August last.—*John Purdue; Ridgeway, Plympton, Devon.*

Note on Phylloxera Quercus.—The recent account of Phylloxera vitifoliæ or Vastratrix, in the 'American Naturalist,' mentions that it is oviparous in summer and hybernates in winter, and that there are no eggs then. In this it agrees with Phylloxera Quercus, which I have often observed, for more than twenty years, to lay eggs in summer and autumn, which eggs are shortly hatched, and their occupants do not

lay eggs, but pass away in early winter, except a remnant, which must serve for the continuance of the race. As the moving power of the creature is very little it cannot go far from the leaf, to whose recesses it must resort in the spring; and the means whereby it shelters itself from severe frost has not been observed. Other families of Aphides pass the winter in the egg-state; and Chaitophorus Aceris is remarkable on account of its æstivation, or passing summer months in a suspension of growth, as is the case with some caterpillars: this occurs in a very early stage of its existence. P. Quercus is represented beyond the Atlantic by another Phylloxera (P. Rileyi of Lichtenstein), which frequents oaks in North America.—*Francis Walker.*

Additional Parasites of Cynips lignicola.—I have lately bred seven different species of parasites, not including the well-known Callimome (Devoniensis, *Parf.*) and Decatoma, from some dwarfed galls of C. lignicola, which I collected at Burnham, Essex, last February. Mr. Walker has kindly examined the insects, and finds some new to Britain, if not altogether new species. The insects are (1), ten specimens of Ormyrus punctiger, emerged from 18th June to 29th July; (2) one male Eurytoma, *n.s.?* emerged 18th April; (3) one Pteromalus, *sp.?* emerged 13th May; (4) numerous specimens of a Callimome, nearly allied to C. inconstans, emerged between 28th April and 20th June; (5) several females and one male of Callimome, *n.s.*, emerged between 3rd and 17th April; (6) nine specimens of a small black Hymenopteron, quite unknown to Mr. Walker, seven females and two males, emerged from middle to end of March; (7) one specimen, emerged 25th June, returned by Mr. Walker as *n.g.?* allied to Entedon. All these were bred from a small cluster of galls on a single twig.—*Edward A. Fitch; Down Hall, Rayleigh, Essex, October* 8, 1872.

Extracts from the Proceedings of the Entomological Society, February 5 *to March* 18, 1872.

Plant-lice and their Enemies.—Mr. M'Lachlan brought before the notice of the meeting an illustration of the manner in which the ravages of Aphides are checked by parasitic

Hymenoptera. He exhibited a portion of poplar-twig from Dr. Knaggs' garden at Kentish Town, which had been occupied by a large family of dark-coloured Aphides: of these nothing now remained but their empty inflated skins, each of which presented a circular opening, whence the parasite (probably an Aphidius) had emerged, the whole bearing much resemblance to a collection of empty egg-shells of some large Lepidopterous insect. The portion of poplar-twig was less than an inch in length, and on it were nearly one hundred of these empty skins.

Two Species of Argas new to Britain.—Prof. Westwood exhibited specimens and drawings of the following:—

Argas reflexus, *Latreille.* Type of a family and genus not hitherto recorded as British. A colony of this species had been found by Mr. Gulliver under a stone in the crypt of Canterbury Cathedral. It ordinarily infests pigeons on the Continent, and the colony had probably originated from individuals that had fallen from the flocks of those birds frequenting the Cathedral. (Mr. F. Smith added that specimens of the dog-tick had been forwarded to him that had been found in the same Cathedral, and he has since furnished information to the effect that the British Museum possesses an example of the Argas from the same building.)

Argas Noctulæ, *Westw.* Perfectly round in outline, the disk of the cephalothorax with deep and large punctures widely scattered, and with radiating punctures towards the margins. Long. 5 mm. Taken from off a gentleman in the church of Whittlesford, Cambridgeshire, having evidently fallen from the larger noctule bat, of which two young individuals had dropped close to the gentleman on whom it had been found, and whom it attempted to bite. Forwarded to Prof. Westwood by Mr. F. Bond. It is closely allied to the Argas Pipistrellæ of Audouin, but is very much larger.

Double Cocoons of Insects.—Mr. F. Smith called attention to the fact that mice are in the habit of devouring the dead pupæ of Bombyx mori contained in what is known as 'silk-waste,' *viz.*, the inner cocoon remaining after the external silken envelope had been wound off. This had been brought to his notice by one of his sons as occurring in a London silk-warehouse, and a parcel of the said 'waste' brought to him afforded an instance of a double cocoon, or, rather,

a very large cocoon containing two pupæ lying free within it, and evidently constructed by two larvæ working in concert. Mr. F. Moore said the cocoons were those of Bombyx mori, from China. Double cocoons were not of infrequent occurrence; and occasioned some additional trouble in the winding process. Mr. Jenner Weir alluded to the occurrence of double cocoons of Eriogaster lanestris; and Mr. Müller remarked on an analogous occurrence among species of sawflies, though this was scarcely a parallel instance, inasmuch as the sawfly larva merely used one side of an already constructed cocoon as a foundation for its own, and did not act in concert with its fellows.

Parasitic Larvæ of Pygæra bucephala.—Mr. Butler exhibited drawings (and a dried specimen) of parasitic larvæ that had emerged from the bodies of caterpillars of Pygæra bucephala, which they almost equalled in size. He had not been able to determine the insect to which the larvæ belonged, as these latter died after spinning a quantity of threads, partly black, partly white, on the surface of the earth in the vessel in which they were placed. It was suggested that they probably pertained to some large species of the family Ichneumonidæ.

Ants Storing Seeds.—Dr. F. Buchanan White communicated the following extracts from his note-book respecting the habits of a species of ant in Italy, bearing upon Mr. Moggridge's remarks on the storing of seeds by ants at Mentone, as noticed by Mr. F. Smith at the meeting on the 1st of January, and reported in the 'Entomologist,' vol. vi. p. 54. "Capri, June 3, 1866. In the afternoon to the Punta Tragara, where a colony of ants afforded us much amusement. These little insects had a regular road, made by cutting away the grass and other plants in their way. This road was about one inch and a half wide and several yards long, and led to a large clump of plants in seed. Along this road a long train of ants were perpetually travelling to the nest (or formicarium), bearing with them pods of Leguminous plants, seeds of grass and of Compositæ (Chrysanthemum segetum), &c. The perseverance with which a single ant would tug and draw a pod four times its own length was very interesting; sometimes three or four ants would unite in carrying one burden. Near the formicarium was a great mass of *débris*, consisting of

empty pods, twigs, emptied snail-shells, &c., cast out by the ants. The seeds appeared to be stored inside the nest, as in one that I opened the other day I found a large collection. .... The species was a black ant; the formicarium was under ground." The late Mr. Charles Horne had observed, in the open plains of India, a similar habit in the species of ants found there. Their pathways were often thirty feet in length, and formed by cutting away the grass, &c., as noticed by Dr. White, and the ants were constantly seen carrying full grass seeds into their nests: the quantity of seeds was sometimes so great that five or six handsfull could be collected from one nest.

Do Galls of Willows ever overhang Water?—Mr. Albert Müller read the following remarks:—"In a letter I lately received from Mr. Peter Cameron, jun., of Glasgow, the writer asks: 'Have you noticed that the galls on willows overhanging rivers are only on the leaves above the land, very few, if any, being on the leaves over the water? This is the case in this neighbourhood.' The gall referred to by my correspondent is produced by Nematus Vallisnieri, *Hartig*. I certainly have seldom, if ever, seen the galls on boughs overhanging water, but the question requires further investigation. Baron von Osten Sacken has recorded the same thing of the American plum weevil (Conotrachelus nenuphar), which, according to him, avoids trees overhanging water when depositing its eggs. The question of ovipositing insects thus avoiding trees in positions which may be dangerous to their brood has some practical bearing where the conservation of foliage or fruit crops is of importance. I have myself witnessed that certain water-beetles, namely, Dytiscus marginalis and several species of Colymbetes, have dropped down on hothouse frames protected by glass. They made this mistake by taking the glass to be their native element: theirs was an error of sight. Assuming that insects injurious to fruit-trees often discern their positions by sight, it seems worth while to offer the suggestion that the means which attracted the water-beetles might possibly be made use of for keeping away such insects as avoid water, and which might possibly be scared away by any object simulating that element."

Argas reflexus.—Prof. Westwood exhibited living examples of Argas reflexus, from Canterbury Cathedral, of which he

brought dried examples before the meeting on the 5th ultimo; also another species of the same genus collected by Dr. Livingstone in Central Africa, remarkable for the rounded tubercles with which its surface is studded. This latter species, according to Dr. Livingstone's observations, enters the feet of the natives, between the toes, causing pain and inflammation.

Undescribed Species of Phycita.—Mr. S. Stevens exhibited an apparently undescribed species of Phycita, taken near Gravesend, bearing much external resemblance to certain species of Crambus, and especially to C. perlellus, of which it possessed the pearly lustre.

Ants Storing Grain.—Mr. F. Smith stated that he had received a further communication from Mr. J. T. Moggridge, now at Mentone, respecting the storing of grain by ants of the genus Aphenogaster, as mentioned at the meeting on the 1st of January. Mr. Moggridge had confined a colony of the ants in a glass vessel, so as to observe their habits, and he was able to confirm his previously-expressed belief that they feed upon the stored grain.

Coleopterous Fauna of Eastern Siberia and Western Europe.—Mr. H. W. Bates exhibited a number of British species of the genus Carabus, arranged side by side with the species which were their nearest representatives in Eastern Siberia, as illustrations of the wide difference which exists between the Coleopterous fauna of Eastern Siberia and of Western Europe. He added that of about fifty species of Carabus inhabiting Eastern Siberia, only one (C. granulatus) was found also in Western Europe, the other forty-nine being quite distinct. He recalled the attention of the Society to the wide acceptance which the zoo-geographical division of the globe, as propounded by Dr. Sclater, had received amongst zoologists. An amendment of these divisions had been since proposed by Prof. Huxley, who, however, did not change that portion of Sclater's generalization which concerned the subject now under consideration, and which established the whole of Europe and Northern Asia as one great division, termed the "Palæarctic." This division appeared to apply very well to the classes of birds and mammals, but not to insects, as was shown by the great amount of difference existing in the genus Carabus and in other genera of Coleoptera. Each species exhibited was

accompanied by that to which it was most nearly allied. Thus C. nitens was represented in Eastern Siberia by C. tuberculosus; C. clathratus by C. canaliculatus; C. arvensis by C. conciliatus; C. monilis by C. regalis, &c. No greater amount of difference existed between Northern America and the Palæarctic region, although the former had been separated as a distinct region, termed the "Nearctic." In conclusion, Mr. Bates remarked that he considered no philosophical importance could be attached to vague general divisions of the earth. What was really important was to ascertain the districts which presented a large amount of peculiar forms, and then to investigate the causes and origin of this peculiarity in each case. In the course of the discussion that followed, Prof. Westwood remarked upon the desirability of ascertaining the range of each species, and of determining the amount of variation or modification presented by it in different districts; and he called attention to the similarity between the insects of Eastern Siberia, Japan, and Western America. Dr. Sharp said that the Spanish Carabi were mostly peculiar to the Iberian peninsula, though some were species known to have a wide range, but modified in this district. He considered that species quite peculiar to mountains were necessarily restricted in their range, whereas those found in the plains were of wide distribution. He remarked that all the species of the genus Oxytelus, seen by him, from Eastern Siberia, were specifically identical with those of Britain, whereas of the genus Bledius no species was common to both countries. Messrs. Weir, Müller, Janson, M'Lachlan, &c., also took part in the discussion, and the two latter remarked on additional instances of the occurrence of allied forms in Eastern Asia and North America, as exhibited in the genus Pteronarcys among the Neuroptera, and Cupes in Coleoptera.

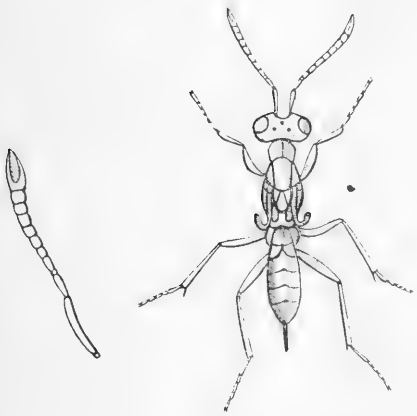
The Genus Acentropus.—Mr. Dunning read a memoir on the genus Acentropus, in which he brought together a *résumé* of all that had been written on the subject. After commenting upon the opinions expressed by various authors as to the position of the genus, he arrived at the conclusion that it is truly Lepidopterous; and, furthermore, he had failed to find valid reasons for considering that more than one species existed, for which he retained the name Acentropus niveus.

THE ENTOMOLOGIST.

No. 111.] DECEMBER, MDCCCLXXII. [Price 6d.

Economy of Chalcidiæ. By Francis Walker, Esq.

(Continued from p. 227.)



EUPELMUS DEGEERI.

This fly has a range from Italy to Sweden, where it was first described by Degeer, whose name it bears, and there is matter for discovery in the habits of life of it and its associates. Of the latter the first is the Cynips of Potentilla reptans, a maker of galls on this plant. The second is Torymus globiceps, *Nees*, first noticed by Degeer, who reared it and the gall-maker from the same gall, and observed that the Torymus grub spared the Cynips grub, whereby it

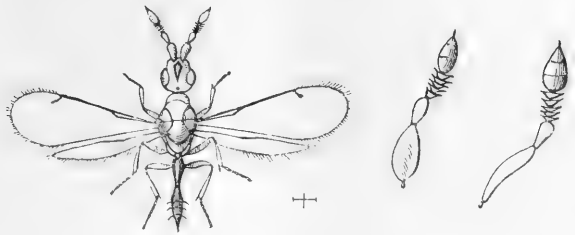
would seem that they partook together of the substance of the gall. Nees, though he names the second Torymus (= Callimome), supposes that it may be a Eupelmus, and says that he is not aware that any one, except Degeer, has observed it. The third is Eurytoma Abrotani: many of these were reared by Nees from Potentilla galls, which galls had just before produced the Cynips abundantly. Nees does not mention whether the Eurytoma interferes in early life with the Cynips, and I believe that different species are included by him under the name E. Abrotani. The species which Nees describes as Eurytoma plumata is not known as British (there is a continental specimen of it in the British Museum), but I believe that some of the authors which he has cited, under the above name, have described a different and a British species.

CEROCEPHALA FORMICIFORMIS.

This species is semi-domestic and of rare occurrence, and may be parasitic on a house-insect. I have seen it on paper at Killarney, in North Devon, in Lancashire, and near London. Spalangia nigra, which belongs to the same family, is never abundant, though it is a parasite of the common house-fly, and there is room for inquiry as to the means by which some Chalcidiæ are exceedingly rare, while others, such as a Pteromalus or a Diglyphus, appear in hundreds of thousands.

The family to which Pirene varicornis belongs may be found on flowers in fields, and one of them, at least, is

serviceable to the growth of corn, being a parasite of the Cecidomyia that infests the ears.



PIRENE VARICORNIS.

FRANCIS WALKER.

Observations on Diptera. By R. H. MEADE, Esq.

In the hope of exciting some interest in the study of British Diptera, I am induced to make a few observations on this almost totally-neglected class of insects.

It is difficult to tell the reason why the two-winged flies have excited so little attention in Great Britain, since on the continent of Europe they have always been, and still are, a favourite group of insects. I cannot believe that English entomologists, who have any true appreciation of the wonders of the science which they profess to study, are only captivated, like children, by the bright hues of butterflies' wings; but if it be not so, why do the Lepidoptera engross so much attention, to the exclusion of the other orders?

Though the colours of Diptera are generally sober, they are not always so; and in some families, as the Syrphidæ, they can vie with those of the Hymenoptera; but it is not for their colours that they deserve to be studied, but, as with Coleoptera, on account of their endless varieties and numbers. They constitute one of the most extensive orders of insects, both as regards the immense number of distinct species, and also the enormous swarms of individuals of the same species: surely the number of objects to be investigated must increase the interest of the study. It may render the

commencement of the task more difficult; but when we admit that novelty adds the sweetest charm to all pursuits, we must allow that the study of Diptera is not likely to lose its interest for want of new objects to be examined.

To the naturalist, condemned, like myself, to pass the greater portion of his life in a large town, Diptera are interesting, because many species may be met with in our houses and on our windows, in our stable-yards and little gardens, and in many suburban localities, where no Lepidoptera or Hymenoptera, and very few Coleoptera, could be found. It is really surprising to note the number of distinct species of flies which may be seen at different times on the panes of a window, even in a large, smoky town. I will enumerate a few, to some of which I may again have to allude in my further remarks.

At all seasons, except when the weather is frosty, the little flies belonging to the genus Phora, may be seen on our windows, and at once distinguished from most others by the vivacity of their movements, as they are continually coursing over the panes of glass. Numerous species of gnat-like flies (Tipulariæ) may also be seen both late and early in the season, some of which, as the species of the genus Sciara, somewhat resemble the Phoræ in appearance, though not in their movements, as they are very sluggish. I have seldom seen the true gnats (Culicidæ) in the town. Besides the common domestic fly and the blue-bottle, several species of Anthomyia may be included in the list of house-flies, and are constantly found on the windows, especially A. scalaris and A. canicularis. A very pretty little spotted fly, also belonging to the family of the Anthomyidæ, is not uncommonly seen on the windows in warm weather, *viz.* the Spilogaster uliginosa. It is a curious fact, that while I captured three specimens during the past summer on my dressing-room window, I did not meet with one out of the house, or in any other locality. Individuals of the common dung-fly (Scatophaga stercoraria), are of frequent occurrence on the windows, especially in the early spring and autumn months, when the weather is chilly: they may be at once known by their covering of downy hairs, which are of a bright yellow colour in the males. Among the smaller and less-highly developed Muscidæ, besides the Phoræ, with which I commenced my list, I may enumerate

the Blephariptera serrata, a little, sluggish, rust-coloured fly, very common on the windows in the early spring; also the Lonchæa vaginalis, a little, chubby, steel-blue coloured one, resembling an Anthomyia in form, which is occasionally met with; and I may conclude my list with the genera Borborus and Sphærocera, several of which are often seen on windows in spring and autumn, especially on those near stabling, as these little flies breed in immense numbers in horse-dung.

Diptera are among the earliest insects which appear in the spring. If a very mild, bright day should occur, even in the beginning of February, numerous small flies may be seen, which appear to be hatched by the sunshine. The most abundant of these are the little dull-coloured species belonging to the family of the Borborides, which, I have already stated, breed in manure: one of the most common of these, the Sphærocera subsultans, may easily be distinguished by the length and thickness of the hind legs, which enable it to leap as well as fly, whence its trivial name. The common house-fly (Musca domestica) does not occur in any abundance before the middle of summer, owing to its hybernation during the winter, for only a few individuals escape the effects of the cold, and from these the swarms of the ensuing season are bred. The true house-fly is really a domestic insect: it is seldom found far from houses, and chiefly abounds in large towns and cities; in country houses it is sparingly met with, and its place seems to be supplied by other species. I have often examined the flies in the rooms and on the windows of houses in rural situations, and instead of Musca domestica have found Pollenia rudis, or Stomoxys calcitrans. The latter may at once be known from the true house-fly by its having a horny, geniculated and projecting proboscis, with which it can make a very sharp puncture, and suck the blood of man and animals. The former, which is slightly larger than the domestic fly, has the thorax clothed with yellow downy hairs.

In the spring before the house-fly begins to breed, its place is chiefly supplied in our rooms by one or two species of Anthomyia. The flies of this family may be distinguished at once from the true Muscidæ, by the disposition of the veins or nerves of the wings. In the genus Musca the fifth longitudinal vein (sometimes called the præbrachial) is bent

at an angle towards the extremity of the wing, so as to close the end of the first posterior cell, while in all the Anthomyidæ the fifth longitudinal vein runs more or less parallel to the fourth, in a straight direction to the posterior border of the wing. The most common species of Anthomyia in Yorkshire, which abounds in the houses, streets, gardens, &c., from early spring to late autumn, is the A. scalaris, which may be distinguished at once by having a large tubercle at the extremity of the inner side of the tibiæ of the intermediate pair of legs. This fly, which breeds in stercoraceous matters, is smaller and more slender than the true house-fly, and is chiefly found in the neighbourhood of houses and other buildings, its place being supplied by other species of the family in woods and fields. Another common domestic species (if I may so call it) of Anthomyia is Canicularis. I find, in Yorkshire, that this makes its appearance rather later, and disappears sooner, than Scalaris, and is never quite so abundant; but in the more southern counties it appears to be the more common species: it is rather smaller than Scalaris, and has a yellow diaphanous mark on the sides of the two first abdominal segments. Some flies, as the blue-bottle (Calliphora vomitoria) and the pretty green bottle-fly (Lucilia Cæsar), are common in all localities; but there are others which appear to be partial in their distribution. A species which abounds on walls of out-houses and stable-yards in Yorkshire, is the Curtoneura stabulans: this fly is intermediate in size between the house-fly and the blue-bottle, and is of a dull gray colour, with a reddish tinge to the scutellum and legs. Although so very common in the north of England, and, according to Zetterstedt, in Scandinavia, it appears to be of sparing occurrence in the southern parts of England.

In warm, and especially in showery summer weather, while driving or walking in wooded localities, we must all have been annoyed by the swarms of smallish flies (rather less than house-flies), which are constantly teazing both our horses and ourselves, by buzzing round our heads, and settling on our faces, hats, and coats. These flies, which may be readily distinguished by the yellow tinge at the bases of their wings, belong to the species Hydrotea meteorica (one of the Anthomyidæ); and it is a curious fact, which I cannot

explain, that those which we see are all females. The males keep by themselves, and are less frequently found.

In closing these desultory observations, I may say that I shall be very glad to afford all the information that is in my power to any entomologist who may be induced by these remarks to interest himself in the study of British Diptera; and I shall feel much obliged by the loan of any specimens that may be entrusted to me for the purpose of examination, particularly of those belonging to the Anthomyidæ, as the British species of this family are very little known.

R. H. MEADE.

Bradford, Yorkshire,
November, 1872.

On some Amurland Insects. By FRANCIS WALKER, Esq.

PART II.

Motschulsky, Menetries and Stal have noticed respectively the Coleoptera, Lepidoptera and Hemiptera of Amurland.

The first author observes that nearly the whole of the new species described by him belong to the most eastern part of Siberia, in which region 470 species have been found. Of identical species there is 1 in 30 for the Amur and Central Europe, 1 in 10 for the Amur and the South Oural, 1 in 6 for the Amur and the most eastern Siberia. Thus, the Fauna of the western region of the Amur has thrice more analogy with that of the region of the Pacific, in Siberia, than with that of the South Oural, and five times more than with that of Central Europe. The Fauna of South Oural is comparatively poorer in species than that of Central Europe and than that of the Amur region. In Iceland 81 species of Coleoptera have been found; in Lapland, 967; in Jakoutsk, 120; and in Kamtschatka, 130. Two are common to Iceland and Jakoutsk, 5 to Iceland and Kamtschatka, 37 to Jakoutsk and Swedish Lapland, 33 to Jakoutsk and Kamtschatka. Thus, of identical species, there are 1 in 40 for Jakoutsk and Iceland, 1 in 29 for Jakoutsk and Lapland, 1 in 8 for Jakoutsk and Kamtschatka; and the conclusion is that the Fauna of Jakoutsk has five times more analogy with that of Kamtschatka than

with that of Iceland, and thrice more than with that of Lapland. Jakoutsk and Pekin have, of identical species, 1 in 66; Jakoutsk and the Amur region, 1 in 10. The variation of Coleoptera is six times more considerable in latitudes than in longitudes. The genera of Coleoptera of the Amur region belong in a great part to the European Fauna; and it is only along the south part of this river, from Soungari towards the east, that different generic forms appear, partly those of tropical Asia, such as Metopodontus, Prismognathus, Encyalesthus, Luperodes, Calasposoma, Nodostoma, Coptocycla, Languria; partly those of North America, such as Dichelotarsus, Cephalaon, Ophryastes, and Leposoma. All the western part of the Amur region has forms very analogous to those of Daouria, which, intimately allied to those of Siberia generally, are only a continuation to the east of the European Fauna. Some species of North Europe appear much more southward in the Amur region, such as Hylobius arcticus and Oiceoptoma lapponica, which extend to America; and in this region tropical forms are accompanied by arctic forms, and some genera, such as Epicausta, Mylabris, Tentyria, and Dorcadion, extend more northward than in Europe. Among the 470 species of Coleoptera, collected along the river Amur and in the most eastern part of Siberia, more than two-thirds are found also in Daouria; 500 species have been found in South Oural, and 340 in the western part of the Amur; 126 species are common to Germany and the region of the Amur; 140 species are common to the South Oural and to the west region of the Amur. The line which passes from the North Pole by the Oural, the Sea of Aral, East Persia, to the South Pole, represents the meridian of the productive force of organized bodies, which force becomes more rich and more varied in proportion as it approaches the Atlantic and the Pacific. Austria has 3500 species of Coleoptera; South Oural, 2500, of which 140 are found in the Amur region.

With regard to Lepidoptera, Menetries remarks thus:—In following the course of the Amur, European species will be found at each end of the stream, but in the middle of its course, that is towards the south, the Fauna changes suddenly, so that in the most southern part, or from the mouth of the Soungari to that of the Oussouri, there are

many species of China and Japan, and even new species of tropical forms. Of the species he forms five divisions, omitting those which inhabit the whole of Europe. The first division comprises the species that are found in nearly all Europe: twenty-three species, which inhabit equally the higher and lower part of the Amur. The second division includes the species that are somewhat peculiar to North Europe: thirteen species, which are found with those of the first division. In the third division are twenty-three species, which have analogy with those of Central Europe, and nearly all of them inhabit the south part of the Amur. The fourth division has fourteen species, which are found more especially in Eastern Europe. The seven species of the fifth division are found in South Europe, and not elsewhere on that continent. Of the 212 species enumerated, 38 are new; and in the whole number there are—154 European forms, 30 forms of the Russian Fauna, 28 forms wholly strangers to Europe. Menetries observes that some species are found more towards the north in the east than they are in the west, and that the sight of half-tropical forms, in the 47° of latitude, is not less remarkable.

In the Ent. Zeit. Stett. vol. xix., Prof. Stal has published a list of 111 Hemiptera inhabiting Siberia and Russian North America. Of these 36 are new, and 75 are European. Of the 36, twenty-six are Siberian, one of Siberia and Kamtschatka, one of Kamtschatka, and eight of Sitka.

Diptera generally being more quick-witted, sharp-sighted, or impulsive, than any other insects, take the lead in migration, and in extending their influence over new regions. A large part of them are especially useful in the development of flowers and thus advancing vegetation, and in promoting the healthiness of a climate by removing what has an opposite tendency. Numerous British species of this order appear to be also inhabitants of Amurland.

FRANCIS WALKER.

Entomological Notes, Captures, &c.

Description of the Larva of Xanthia citrago.—On the 9th May, 1871, I received from Mr. John Firth, of Cleckheaton, a larva of this species; and, on the 13th of May of

the present year, half a dozen from Mr. John Harrison, of Barnsley. At this date they are about three-quarters of an inch in length, and have still to go through the last moult: for this purpose they enclose themselves in loose cocoons, formed by drawing together two leaves with silken threads. At the end of May they are full grown, and may be described as follows:—Length about an inch, and tolerably plump in proportion. The head is very slightly narrower than the 2nd segment, and still narrower than the 3rd segment; it has the lobes globular, but the front rather flattened. Body cylindrical, tapering a very little towards the head; segmental divisions tolerably distinct, but not deeply cut; skin soft and smooth. Ground colour of the dorsal surface dark olive-gray; head smooth and shining, the upper part pale brown, the lower dark sienna-brown. Medio-dorsal line dirty white; subdorsal lines similar in colour, but narrower and less distinct; spiracular region dull whitish gray. On the 2nd segment, just behind the head, is a semicircular black mark, divided by the medio-dorsal line; above, and bordering the subdorsal lines, is a conspicuous series of longitudinal black marks, having the appearance of interrupted black stripes. Trapezoidal dots distinct, white. Spiracles enclosed in a black mark, very minute, grayish white. Ventral surface and claspers uniformly dirty green, the skin semi-translucent; legs black and shining. Shortly before spinning up, the ground colour of the dorsal surface changes to yellowish brown. Feeds on lime. The cocoon is formed by drawing closely together several of the growing leaves, and the larva remains inside for two or three weeks before assuming the pupa state. The moths from my larvæ appeared at the end of July.—*Geo. T. Porritt; Huddersfield, November* 11, 1872.

Occurrences of Vanessa Antiopa in Great Britain and Ireland during the Autumn of 1872 (continued from p. 236).

Durham. I believe about twenty specimens of V. Antiopa have been captured within a circuit of twenty or twenty-five miles of this place.—*W. Maling; Newcastle-on-Tyne.*

Gloucestershire. A specimen of V. Antiopa was brought me a few days ago: it was found hybernating in the middle of a stone-heap, near Winchcomb. I never heard of one being taken about here before. The border is white.—*C. Mace; Winchcomb, November* 18, 1872.

Lincolnshire. A very fine specimen of Vanessa Antiopa was taken here on Sunday, the 27th of October. It was in perfect condition, and the markings very clear, but the border not *very* deep coloured.—*Mrs. Cross; Appleby Vicarage, Brigg.*

Norfolk. August 27, 1872. Mr. R. A. Rising informed me he saw one in his garden at Horsey on this date. Four others were caught about the same date, by my friend Mr. H. Hickling, in a small meadow adjoining the Heigham Causeway, in Norwich; and I had one brought me by a lad, who knocked it down with his cap in Pottergate Street, and it was therefore rather damaged. On the 4th of September Mr. S. Meachen, who was driving through Crostwick, six miles from Norwich, counted as many as seven, near the Marl Staithe; and further along the road, near the Horstead Marl Staithe, he saw another. I have received information of numerous other instances, in which individuals have been observed; but the above instances are more specially authenticated.—*T. E. Gunn; 5, Upper St. Giles' Street, Norwich.*

Northumberland. One seen at Rothbury, near Morpeth.—*J. H. Rowntree.*

Suffolk. Captured at Oakley.—'*Land and Water*,' *September* 7, 1872.

Warwickshire. A fine specimen with pale margins was taken near Warwick, on the 22nd August, by Mr. C. S. H. Perceval.—*J. S. Baly; The Butts, Warwick, Oct.* 30, 1872.

Yorkshire. Since I sent you a notice of the capture of a specimen of V. Antiopa in this town, several others have been seen or taken in the neighbourhood; and I have also heard of the following occurrences of the insect in other places, in addition to those recorded in last month's 'Entomologist.' Four specimens seen at York, and one taken in the same city, on the 29th of August, by Mr. Hind; one or two at Sheffield; and one at Bradford.—*J. H. Rowntree; Scarborough.*

Sphinx Convolvuli, Tillus unifasciatus, and Ponera contracta, near Warwick.—I have either seen or taken the following species, amongst others. Sphinx Convolvuli: picked up in the street by my son, on Saturday last. Tillus unifasciatus: two specimens on elm-posts, at Barford, three miles from here. Ponera contracta: a single female, taken in my garden. In addition, Vanessa C-Album and Colias Edusa occur

occasionally; the former insect, forty years ago, was very abundant in this locality.—*Joseph S. Baly; The Butts, Warwick, October* 30, 1872.

Is L. Rubricollis Double-brooded?—This question was asked in No. 92 of the 'Entomologist.' In the following number I gave an opinion that it was not double-brooded. I should perhaps have said, *regularly* double-brooded. Recent experience seems to show that it is not so. I took it this year in our locality freely, throughout June and the greater part of July, but did not observe a single specimen in August. This month (November), while pupa-digging in the same locality, I have taken several pupæ of Rubricollis, and also observed several half-fed larvæ hybernating in the crevices of the bark and among the lichens, with which the trees are covered. The larvæ are in all stages, from half-fed to those descending the trunks to undergo pupation. Some larvæ were in their cocoons, if they may be called so, unchanged. I thought at first that this might be a different method of hybernating; but I find they are changing one after another. The pupæ may be found on the surface of the ground underneath leaves, or among the fragments of lichen that have been washed down by the rain, the favourite place being where the earth lies high against the smooth part of the trunk, and not under the arches of the roots. The cocoon is a very flimsy affair, and partakes more of the nature of a web, spun by the united exertions of three or more; each pupa, however, being separated from its neighbour: I have taken up as many as five, hanging in this way together. I expected to have found the pupa spun up behind the lichens, but have not found an instance of it yet. I hope this may throw some light upon the seemingly vexed question: "Is Rubricollis double-brooded?" The various stages from the larva to the pupa, now, will account for the succession of imagos during June and July. This insect seems to be exceedingly local; it is plentiful about a few particular trees, while others in the same avenue, seemingly as suitable, are entirely neglected. I have taken Rubricollis in some half-dozen woods round Alton, and I know just which trees to go to for them. In these woods I have taken them plentifully in June, and generally during a part of July, but never in August.—[*Rev.*] *A. C. Hervey; Pokesdown.*

Chelonia caja Double-brooded.—I have this day had a Chelonia caja emerge from its pupa. I have several other pupæ. The eggs were deposited at the end of June: they were hatched during the first week in July, and spun up between the 9th and 14th of September. I may mention that out of several hundred larvæ, hatched at the same time, about twenty only have changed: the rest are still feeding, are about three-quarters of an inch in length, and of course will hybernate.—*W. D. Cansdale; White House, Witham, Essex, November* 5, 1872.

Chelonia caja Double-brooded.—About the middle of August last I took a female Chelonia caja, and she laid me a patch of eggs, which in due time hatched, and I put them in a cage to feed them up, in the hope of perhaps getting a variety: three of the larvæ fed up in an astonishing short time, compared with the others, and went to pupæ about the 4th of October; one of these came to the imago on the 16th of November, while I have some of the same larvæ in a dormant state scarcely three-quarters of an inch in length.—*E. Holton;* 131, *Holborn Hill, November* 18, 1872.

[Several of the Lithosiidæ, Chelonidæ and Sphingidæ are exceptionally double-brooded. All our entomologists have noticed this; but I think there is no occasion to chronicle additional instances of this character. The same may be said of the Cuspidates, particularly those of the genus Notodonta. —*Edward Newman.*]

Demas Coryli and Lithosia caniola.—Permit me to make a few remarks relative to D. Coryli. In 'British Moths,' page 40, you say it has a tuft or brush of brown hairs on the 4th, 5th, and 12th segments. It should be 5th, 6th, and 12th. Also two black brushes, one on each side, and much longer, on the 3rd segment, and pointing forwards over the head, looking like two horns; and it is certainly double-brooded in this vicinity, for I find the larvæ every year in May or June, according to the season, and again in September, and nearly always obtained from oak. And with reference to L. caniola, page 474, you state that "they feed exclusively on Leguminosæ." I brought home last June about twenty larvæ, which I found all feeding on lichens on the face of the rocks, at Bolthead; and not knowing what my larva was, I read up the Lithosias, thinking it was one of them, and it agreed

very nearly with Caniola, but mine was feeding on the lichens: I saw them in the act of feeding before I removed them, so there could not be any doubt about it. I waited patiently for about a month, and bred sixteen perfect insects, and they agreed with Caniola; but I could not remove the impression from my mind that it must be something else, as you stated they fed exclusively on Leguminosæ, and pertinaciously refused to touch lichens which had been provided for them. I submitted some to Mr. Bond, and he at once pronounced them to be Caniola; and he further stated that on the Continent they were generally found feeding on lichens on walls, churches, &c. The insect also occurs at Dartmouth.—*Geo. C. Bignell; 6, Clarence Place, Stonehouse, Plymouth, November* 19, 1872.

[I am obliged for the correction as regards Coryli, but I need scarcely remind my correspondent that I had no knowledge of the work issued in my name, until after this description was published. In his observation on my description of the food of Caniola, Mr. Bignell has, and I am sure inadvertently, omitted the words "in confinement," which seem to me to contain the pith of my statement. This species has *always* been supposed to feed on lichens. In my translation and abstract of Guenée's monograph of Lithosia, I have said (Zool. 8387): "It is known that all their larvæ feed on lichens;" and of Caniola, in particular, I have said: "The larva lives principally, if not exclusively, on the lichens which grow on the walls, and especially on the tiles of the roofs"—of the cathedral at Chartres, &c. Mr. Birchall's discovery of its feeding on Leguminosæ I mention as extraordinary, and as confirmed by my own observation of the larva *in confinement.—Edward Newman.*]

Late Appearance of Cæruleocephala.—On Monday, October 28th, I caught a very good specimen, apparently just out, resting on a lamp-post; and the same evening took another from a lighted lamp, and saw another flying round it.—*Edward B. Poulton; Victoria Villa, Reading, November* 4, 1872.

C. Bondii.—I regret the omission of the date of this capture, and am obliged to Mr. Clifford for reminding me of it: it was the first week in July. As to the wild rhubarb, I always called it by that name, not thinking that it was a near relation

to the other, or, in fact, in any way similar, except in the size and shape of the leaf. Possibly it may be a localism; but I think it is not a correct inference to draw, that because the vulgar name of a wild flower, with the addition of an adjective, is the same as that of the garden plant, without the adjective, that therefore they should be at all nearly-allied species. A parallel instance is afforded by the common stingless plant, called dead nettle, which has nothing to do with the common nettle, the similarity being only in the shape of the leaf, which similarity gives rise to the name in common use.—*Edward B. Poulton.*

[I have not the most remote idea of what plant my correspondents are writing: surely there cannot be a moment's difficulty in obtaining the botanical name of any large plant, like rhubarb. The very object of scientific nomenclature is defeated by these discussions.—*Edward Newman.*]

Searching for Moths on Echium Vulgare.—On a recent visit to the South Coast I found this to be by far the best way of catching moths, where there are no trees to sugar on. A few hints as to time, and apparatus needed, may be useful. I believe the time of year best suited for this kind of work is June and July, because the flowers are then fully out, and you have a chance at the midsummer Sphingidæ. Nothing but Gamma flew before nine o'clock; and then Porcellus began to come out, and continued till it was just time to light the lantern; after which I only captured one. One evening, arriving a little early and waiting for the moths, I caught a specimen of Stellatarum at half-past eight, the latest I have ever noticed it. The locality which the bugloss is most fond of is a chalk-bank, which is very inconvenient for catching the moths on the upper side of the bed of flowers, since you are certain to disengage huge pieces of earth and chalk, that, rolling down, effectually save you the trouble of catching the moths. Most Noctuas I could coax into the cyanide-bottle without using the net at all, but Sphingidæ and Geometers needed the net; and for them I found one with a long handle and a light cane-ring, with a loose shallow bag, the most convenient form. Of the Noctuas, Batis, Derasa and Marginatus were the most difficult to capture, behaving more like Geometers than anything else. I generally searched first the bottom of the bed, then the sides, so as to get as much as

possible before submitting it to the ordeal of the shower of stones caused by going along the upper part. I always found sticking to one bed, and searching it thoroughly, better than going from one to the other. Strigilis, Exclamationis and Segetum were nuisances, but a larger percentage, than is generally the case at sugar, were things worth keeping. The easiest moth to catch was Lucernea, *nothing* seemed to move it from the flower. On one occasion I took a large Newfoundland dog with me, and just as I was about to bottle a fine Lucernea the dog brushed past, and bent the plant to the ground; when it sprung up, there was the Lucernea on the flower; and even then, when I had the bottle right over it, I had great difficulty in making it go inside.—*Edward B. Poulton.*

Grapta C-Album and Thecla Betulæ in Essex.—As Grapta C-Album seems to occur very rarely in this county, I think it worth while mentioning that a specimen was captured by one of the sons of the rector of Mundon, about three miles from Maldon, last year: it settled on a wheat-sheaf, in a field opposite the rectory, and was netted off this. T. Betulæ occurs also in Mundon Wood; and Antiopa, as mentioned in the October number of the 'Entomologist,' has been seen there several times.—*G. H. Raynor; St. John's College, Cambridge, November* 2, 1872.

Late Appearance of T. amataria.—I was very much surprised at taking two specimens of this insect very late in the year: one on August 27th, and the other on September 1st, both netted on the wing in the evening. In your 'British Moths' (p. 84) you state that the imago appears about Midsummer; and Mr. Stainton gives the months of June and July as the usual time for its appearance. Judging from the condition, I should say those I took were decidedly a second brood.—*G. H. Raynor.*

Black Variety of Cabera pusaria.—In looking over my cabinet I noticed a black variety of this insect, taken by a friend, last June, in Darenth Wood, Kent.—*Augustus Priest; 16a, Merton Road, Kensington, November* 11, 1872.

Cerastis erythrocephala at Darenth Wood, Kent.—On the evening of the 28th of last month, I captured at sugar a very fine specimen of C. erythrocephala, at Darenth Wood. —*Geo. W. Bird; 27, Hamilton Terrace, St. John's Wood, N.W., November* 2, 1872.

Pempelia Carnella in Essex.—A specimen of P. Carnella was taken here this summer at light. I believe this to be a new locality for it.—*S. R. Bentall; Nightingale Hall, Halstead, Essex.*

Filaria in Larva of a Lepidopteron. I should like to know if the following is of common occurrence. One morning in October, when I opened my breeding-cage, I noticed a caterpillar of some Noctua, which had the appearance of being ichneumoned. I left it for a few minutes, and on my return saw it surrounded by a white thread, which, on closer observation, I discovered to be a white worm, proceeding out of the mouth of the caterpillar: it was about six inches long, smooth, and as thick as coarse sewing-cotton; on leaving the caterpillar it took refuge in the moss. The caterpillar crawled away and concealed itself in the mould, without appearing to have suffered in any way from the parasite.—*Annie Michael; High Street, Sevenoaks.*

[The parasite was a Filaria, a genus of entozoic worms, very frequently inhabiting the larvæ of Lepidoptera; but I have never seen one escaping by the mouth.—*Edward Newman.*]

Machaon and its Haunts.—In the 'Entomologist' for October a paragraph, upon the probable disappearance of this beautiful insect within a given time, is inserted from the pen of Mr. Raynor, of Maldon. While residing at Norwich it was my annual custom to collect large numbers of the larvæ of Machaon,—indeed for sixteen years I continued to collect them in the proper season without an omission: the result of this experience leads me to doubt very much the theory, that in ten years hence it will be banished from its marshy breeding-grounds. Not being acquainted with the neighbourhood of Wicken Fen, I cannot determine whether drainage will in ten years time exterminate the species in that quarter, and thus cause it to seek refuge at Maldon, but of the Norfolk fens no such result is to be feared, for miles above Horning, and thence nearly down to Yarmouth, Machaon breeds as plentifully now as when I first visited the locality; neither is it probable, from the very nature of these fens, that drainage can be introduced so to materially affect the nature of the bogs where the larva is found: these are composed of peat (sometimes called turf), or, in other words, decayed vegetable matter, which can be easily

agitated for twenty yards around by a sudden jerk of one's weight. Persons residing in the locality contend, with some show of reason, that miles of these bogs actually float; and to bear this statement out it is asserted, that on certain spots immense quantities of soil have been added to the surface, but in all cases it eventually sinks to the original level; therefore, whatever becomes of Wicken Fen, the fens of Norfolk, where Machaon is to be found, are not likely to be materially interfered with,—the quality of the soil is of the poorest possible description,—if even the possibility of draining on a large scale existed. I attach but little significance to the fact of a single specimen of this insect being found upon a garden-wall in any particular locality. Machaon is a strong flyer; and it being the custom now-a-days to say when a rarity is captured *that it must be blown over* (especially by entomologists who do not happen to capture them), can it not with propriety be conjectured that these isolated specimens of Machaon have escaped from breeding-cages, or travelled from a distance comparatively easy as compared with a journey over sea. There are many reasons which induce me to believe that but few localities are favourable to the natural production of this insect, notwithstanding the fact of the plant on which it feeds being abundant in all marshy districts. Amongst the great numbers of the larvæ I have from time to time taken, not a single ichneumon has been amongst them, yet if the larva is left exposed, away from its native habitat, the result is the reverse. In the year 1868 the larvæ were as plentiful as ever. In 1869 I again paid a visit to the Norfolk fens; but being a few weeks earlier in the season than usual, I succeeded in finding forty-nine eggs within a radius of about twelve yards: curiously enough, although the young larvæ emerged from the eggs nearly simultaneously, the greater portion fed rapidly, turning to pupæ, and in a fortnight produced the perfect insect; a few others arrived at maturity after remaining in pupæ till the following May, while four remained in the chrysalis state a year after that, thus showing that, although the eggs were to all appearance from the same brood, the greater portion escaped from the chrysalis in two weeks, whilst others remained dormant for two years, although the whole were confined in the same breeding-house. The beautiful larva of

Machaon is easily found, and easily reared upon the common carrot-top, upon which it thrives, and ultimately produces a finer perfect insect than is to be found in the natural state, probably owing in some degree to being less exposed to bleak winds, generally prevailing in marshy districts.—*Robert Last;* 116, *Belgrave Street, Mosely Road, Birmingham.*

Extracts from the Proceedings of the Entomological Society, March 18, 1872.

(Continued from p. 248.)

Hemigynous Specimen of Acronycta leporina.—Mr. Bond exhibited a British specimen of Acronycta leporina, presenting a remarkable instance of dimorphism, the right-hand wings being coloured and marked as in the variety known as bradyporina (which at one time was considered a distinct species), whereas those of the left-hand were entirely typical of leporina. The body also partook of the two forms, being divided longitudinally into two tints.

The Common Hornet in Siberia.—Mr. Smith said that the discussion at the last meeting respecting Siberian insects had induced him to examine specimens of the common hornet, from Europe, Siberia, and North America, and he found that individuals from these districts presented no appreciable differences, and their specific identity was proved by the genital organs being alike in all cases, whereas those of the Asiatic V. orientalis differed considerably.

Ravages of Locusts in South Australia.—Mr. C. A. Wilson communicated the following:—

"Some of the farmers in the North appear to have suffered very seriously from the swarms of locusts that have suddenly made their appearance there; and during the past three weeks the papers have been full of letters, paragraphs, and articles, upon the scourge, which have traversed the colony in force from the north, and attacked Adelaide in their march southward. As the subject is one of deep interest to every tiller of the soil, we collect the most important items of information and comment for the benefit of our readers. The 'Register,' referring to the subject on December 19th, says:—'It will be remembered that, in alluding to the locusts in a

former issue, we requested information as to their ravages. One correspondent has responded to that request, and the facts he furnishes, as published below, show that the duty of victualling for a week or two the hosts of locusts that have billetted themselves upon the city and suburbs is far from a trifling one. The only grain of comfort offered to relieve our minds comes in the shape of a communication from an old colonist, to the effect that the locusts are in the habit of depositing their eggs this month, and that they never long survive this domestic operation. The sooner they set about the preliminaries for their final exit the better. Subjoined is the communication to which reference is made above:—"I observed in the 'Register's' leader this morning that any particulars of ravages done by the locusts would be gladly inserted. Perhaps the following may be worth noticing amongst others, and you may rely upon its correctness, for I write merely what has come under my observation:—Mr. H. Hughes cut two sections of hay (pure wheaten and intended for wheat) about six weeks ago, when quite green, and an excellent crop of green feed followed, which is termed 'second crop.' It was quite thick with young ears on it, and about one foot or one foot and a half high. On Saturday it was standing fresh and green, and at three o'clock in the afternoon there was not a stalk left. Mr. Hughes intended turning his cows in to-day, and had been relying upon the ground providing grazing for some time. Having reserved a small portion of the second crop (which was too good to cut for hay) as seed wheat, he had been unable to turn the stock in before, and it had consequently grown without hindrance. The ground containing the second crop destroyed is about sixty or eighty acres. The locusts were about Burnside in immense numbers, and produced quite a humming or buzzing noise in the air as they passed. All seemed to be going S. or S.W. The neighbourhood is still full of them (those left behind), and they are eating every particle of feed down. I am not aware of their having done damage to gardens or standing wheat crops."

"'Delta,' the well-known naturalist of South Australia, writes thus:—'During the last few weeks, these locusts have done more than their average amount of damage at this season of the year, but, judging from past experiences of their

migratory habits and times of appearance, I do not think we have more than usual to fear from their depredations this season, except in limited localities. These creatures, just now more particularly infesting Adelaide and neighbourhood, are genuine locusts.

"'In every year this kind of migratory locust has appeared at some part or other of the colony in a greater or less degree, though perhaps never to such an extent in our metropolis as during the time first mentioned,—the exact year I forget. They were then, and often since, of four distinct species, all flying and mingling together, but not easily distinguished, being nearly similar in size. That spoken of by your correspondent 'Observer'—"female dirty brown, males a bright yellow"—was and has always been by far the most numerous. In all the locust tribe, I believe without an exception, the male is smaller than the female.

"'In every year that I have observed these migrating species at one or other part of the colony, they have in no case been seen in any numbers after the 1st of January. They seem to die off gradually as the new year approaches: their time is up, their strength exhausted, and, perhaps, the increasing heat of the weather and decrease of food aid in their destruction. At this time, also, the females finish their egg-laying. As to remedies against their numbers and destructive habits, these have been asked for naturally enough ever since their first appearance, but none can be offered as concerns the mass, nor reasons given why they come more one year than another, or in particular localities. In the earlier days I could suggest but two things, and these applied only to their very partial destruction, first stating that the gradual cultivation and opening up of the soil would tend as much as anything to decrease their numbers, as the eggs (of which each female lays a good many) are deposited about an inch under ground, thus preserving them from the effects of the weather, but not from the action of the plough. Of the two remedies (though only to a small extent) above alluded to, the one was keeping a large body of fowls, to assist the insectivorous birds that were always seen in numbers about a homestead, especially at locust time; but in these days of destruction of the smaller birds for sport, or under the mistaken impression that they are all fruit- or

grain-eaters, and are, therefore, indiscriminately shot down, we must not wonder that insects of many kinds, including injurious ones, will increase; and this I see you also mention. On one of these locust visitations—it might have been in 1858, mentioned in your last article—I observed immense swarms of a kind of bird, a little larger than an English sparrow, hovering like a thick cloud over several of the larger tracts of land where the unwelcome visitors were flying, and soon found that they fed principally, if not solely, on them. The name of the bird I did not learn, as it disappeared with the locusts, as if sent for their especial capture. The other partial remedy I mentioned at the time, and which had been previously told me by a friend, was the same as your correspondent 'Observer' speaks of, *viz.*, the leaves of the castor-oil plant, just for the purpose, as he says, of protecting flowers, &c., in a garden. In past years I have frequently tried this, and always found it succeed best when the leaves were fresh. The locusts in their flight descended on them, as on everything else of a vegetable nature, and died after the first few bites: more locusts took their places, so that each leaf was nearly covered with dead bodies, others lying all around who had only strength left to crawl a few paces off, so quickly did the poisonous effects of the sap of the leaf act.

"'Our references to locusts last week were confined to the Northern Districts, and they occasioned very little notice in Adelaide; but since that the townspeople have had ocular proof of the kind of plague that the Northern farmers suffered from. On Friday evening, December 15th, an enormous swarm of locusts passed over the city, darkening the air, and creating no little sensation. It appears that for some time they had been steadily marching—if the kind of locomotion affected by them can be called "a march" —upon the metropolis. We have no positive proof of the fact, but it is more than probable that the army mentioned before as having reached Kapunda, and as being *en route* for Gawler, is identical with that to which we are now referring. It was seen approaching the city by Mr. Badge, who, on Friday, whilst about three-quarters of a mile beyond Athelstone, encountered a swarm of locusts so thick that his horse refused to face it at a faster pace than a walk. The rider had to cover his head to save himself from injury by

their striking him. They were making their way towards Adelaide, passing in solid phalanx towards the south-west. A few stragglers remained in the squares and streets, apparently too much fatigued to continue the advance, but the main body kept standing or covering a space extending over many hundred yards in length and many yards in breadth. The citizens flocked out from their houses to witness the unusual sight, and examined with interest the solitary locusts that remained behind. They appeared to be of the ordinary type, but of large size and wonderfully strong in the wing. Another huge swarm of locusts visited the city on Sunday, December 17th, alighting in various parts of the Park Lands and in private gardens, where in a very short time they left marks of their voracity upon vines, fruit-trees, and other specimens of vegetation. A day or two afterwards Mr. Townsend, of Rundle Street, showed us a basket of apricots, or rather stones, to give an idea of the devastation the locusts had caused among some of the gardens at Glynde and in the Torrens Valley. He states that on many trees of American plums there is not a vestige of fruit left, the invading hordes having thoroughly bared the orchards. We have also seen a bunch of potato-tops and a sample of maize, taken from splendid growths in Mr. O. Philp's garden, Chain of Ponds. At ten or eleven o'clock on Monday there was not a solitary specimen of the pest about, but soon after countless myriads arrived, and descended upon a splendid patch of potatoes, varying their diet with other green things. It is rather remarkable, but it is vouched for, that the locusts do not touch thistles. Standing upright in the midst of farmsteads and along the river-bank, where clouds of the creatures have gorged themselves, may be seen splendid samples of the much-abused thistle flourishing while dreariness reigns around. All these are very much like the doings of the locusts of 1844; for we find in the old file already referred to the following paragraph:—"During the last few days North Adelaide has been visited by swarms of destructive locusts. In the gardens at the back of Kermode Street they have made great havoc, clearing the vines of their leaves, and eating up the melons and everything else that is green. On Monday the whole neighbourhood was alive with them, their constant fluttering in the air not being unlike the flakes of a heavy snow-storm. Last year they did much damage in this

particular locality, but this year their numbers are greatly increased."'—'*Register*,' *November* 13, 1844.

Haggerstone Entomological Society.—The Fifth Annual Exhibition of the above Society took place at the Society's Rooms, 10, Brownlow Street, Haggerstone, on the evenings of Thursday and Friday, November 14th and 15th; and, in spite of the extremely inclement weather, there was a very fair attendance of visitors. The Exhibition, if not excelling, was in no respects inferior to those of preceding years, and of which accounts have appeared in the pages of the 'Entomologist.' Amongst the many rarities exhibited were specimens of Vanessa Antiopa (eight taken this season), Argynnis Lathonia, P. Daplidice, C. Fraxini, Zygæna Meliloti, N. Albulalis, C. Erythrocephala *var.* Glabra, D. Galii, A. Selene (remarkable *var.*), C. Dominula (black *var.*), C. Caja (black *var.*), &c. A novel feature in the Exhibition was contributed by Mr. E. G. Meek, and consisted of a complete set of Entomological apparatus; Mr. F. Bond also very kindly lent several cases of extraordinary rarities from his extensive Ornithological collection; Dr. H. G. Knaggs exhibited several interesting microscopic objects, illustrative of the difference in the scales of various genera of butterflies; and Mr. Cooke, with his usual kindness, contributed several large cases of magnificent Exotic Lepidoptera, which excited great admiration.

Errata.—At p. 231, line 31, *for* east *read* west. At p. 238, line 4, *for* in the Isle of Wight *read* near Dartford. At p. 238 of Vol. V., Hesperia Comma (reported as taken near Shrewsbury) *should be* Grapta C-Album.

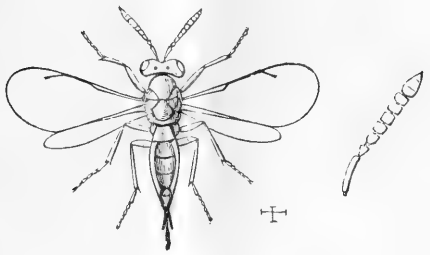
Death of Mr. Edleston.—Robert Smith Edleston, of Bowdon, in Cheshire, died at his residence on the 31st of October, 1872, and was buried at Bowdon church on the 2nd of November. From an early age he had been a most ardent collector of Lepidoptera, and had made one of the largest collections in Great Britain: this is particularly rich in British Tineidæ. Of late years Mr. Edleston turned his attention almost exclusively to British Coleoptera; and of these, also, he had made a very large collection. He was fifty-three years of age.—*Edward Newman.*

THE ENTOMOLOGIST.

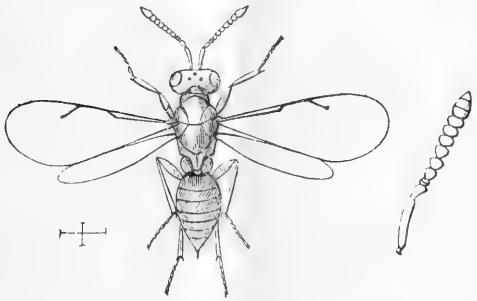
No. 112.] JANUARY, MDCCCLXXIII. [Price 6d.

Economy of Chalcidiæ. By Francis Walker, Esq.

(Continued from p. 251.)



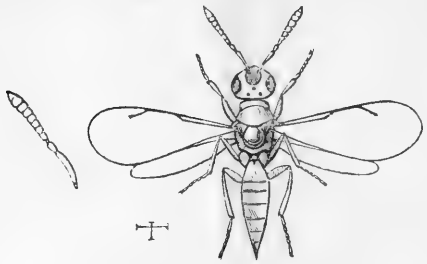
GASTRANCISTRUS LATICORNIS.



HORMOCERUS MARITIMUS.

The three genera represented by the accompanying three figures belong to the Hormoceridæ, a family distinguished from the Sphegigasteridæ by the nearly sessile abdomen, and from the Pteromalidæ by the strongly-marked sutures of the

parapsides. Psilonotus is especially distinguished among the Chalcidiæ by its highly-polished and glittering mesothorax.



PSILONOTUS ADAMAS.

Having nothing to say on the habits of these three flies, I will conclude with a few words about other parasites.

1. Cynips viridis, *Fourc.* This is a Callimome, and may be conveniently considered as a synonym of C. Bedeguaris, as it also lives in the bedeguar.

2. Cynips Rubi, *Schr.* Also a Callimome, whose synonyms may be recorded on a future occasion. Schrank saw it proceeding from bramble-galls or swellings, concerning which Giraud has since published extensively.

3. Cynips fungosa, *Fourc.* Also a Callimome, but the species is doubtful; however, it may be adopted in preference to one of the more modern names bestowed upon oak-gall Callimome species, and then it will not be afterwards brought forward as a claimant for priority.

4. Cynips pomacea, *Fourc.*, or C. solitaria, *Oliv.* This is a still more doubtful name, but it may be applied by attending to the inmates of the small, round, hard galls beneath oak-leaves; and I purpose noticing it at some other time.

5. Ichneumon Muscarum, *Linn.* This is a Pteromalus, and is a very elegant little creature, but its small size hides its beauties. It must be well known by its continual occurrence on windows, where it occasionally appears in great numbers. It prolongs the existence of many Aphides, by consuming ladybirds and Aphis-eating flies in their infant state, and thereby helping to adjust their numbers to their office in the scheme of creation.

FRANCIS WALKER.

Pseudobalani, or False Acorns. By EDWARD NEWMAN.

IT is by accident that the miner first hits the auriferous vein: it is no merit of his; it is a mere piece of good fortune that might happen to any man in the gang. The precious metal had been there for untold ages; it only wanted the accident of discovery; the "happy thought," as our 'Punch' would call it; and the happy thoughts, by which I have set brains and pens to work, were quite as *naïve* as some of those which our respected contemporary has rendered so amusing. Such was the question about Acentropus; such the "blown-over theory;" such the suggestion that the Fauna of the Channel Islands should be considered British; and such that many of our galls are Pseudobalani, or false acorns. All these subjects are rich veins of ore, and require only the leisure and talent, that abound in our Entomological Societies, to work them to great profit and advantage. It is only with oak-galls that I have to deal at present.

I have observed—everyone has observed—that at certain seasons of the year oak-trees produce objects dissimilar to the familiar, normal, and, as we might say, legitimate, objects, annually produced by oak-trees, namely, leaves and acorns: we call these dissimilar objects, galls, or oak-galls. By detaching these, taking them home, and treating them in the manner I have already suggested in the 'Entomologist' (Entom. iii. 171), we learn that each gall is a nursery for an insect, or sometimes for many insects, which eventually attain the perfect condition, and afford the entomologist an infinite fund of amusement and instruction: some are gall-makers (Cynips, &c.); some are parasites on gall-makers (Callimome, &c.); and some, which are neither (Balaninus, &c.), seem to seek food and lodging in the abnormal objects I have mentioned,—for these I have suggested the name of inquilines. So far I shall carry my readers with me.

The next step many will hesitate to take: it is that the oak, like every plant, has an imperative duty to perform, a duty which, under all circumstances, however adverse, it struggles to perform, namely, the production of certain organs essential either to the well-being of the individual tree, or to the continuance of the kind or species of tree.

The leaves are examples of the first class of organs; the acorns of the last. The gall-makers exercise a direct interference with this natural propensity: they set up a local inflammation or irritation in the constitution of the oak, in order to compel it to elaborate a certain description of food adapted to the requirements of their young; the ordinary productions of the oaks, in their normal or natural state, not being adapted to this purpose. Here, then, are two antagonistic forces: the oak struggling to preserve itself and its kind; the gall-maker compelling it to produce something quite different, namely, food suited to preserve *itself* and *its* kind; the struggle is never ended. The oak is required, whether by the diversion of its sap into new channels, or by a certain chemical change in the character of its sap caused by the injection of a new element,—this is still a moot question,—to elaborate new substances: it does not willingly comply; and although unable to resist the requisition, although unable to say, "I will not produce a nasty, fungoid, spongy substance for food of the infant gall-makers," it does so with as bad a grace as possible; it seems to say, "If I must, I must, but I do it very reluctantly, and will make your new diseased food as much like the old healthy food as I possibly can." So the gall-maker strives to produce deformity and abnormality, and the oak all it can to maintain uniformity, normality, good order, and legitimate produce: the result is the production of spongy food for the Cynips in the familiar form of acorns, or rather caricatures of acorns, so grotesque that we can scarcely recognize them.

Let us enquire how this struggle—this contention between the giant oak and the pigmy Cynips—is carried on. Let us examine Dr. Mayr's beautiful work, 'Mitteleuropaischen Eichengallen,' and ascertain what evidence it affords of the value of my theory. Dr. Mayr has described and figured ninety-six species of oak-galls, many of which have been found in Britain. His figure 5 represents the gall produced by Aphilothrix Sieboldii; the little acorn-like objects, more than fifty in number, represented as forcing their way through the rind of the twig, have assumed the form of the very young acorns of Quercus sessiliflora; each consists principally of an involucre or cupule, the undivided style projecting in the centre: this is very conspicuous and strongly pronounced;

the cupule is curiously striated longitudinally. Figure 18, which Dr. Mayr considers to be produced by Cynips Kollari, I have always supposed to be, and have therefore called, Lignicola; it is the one to which I have devoted more attention than any other: in this the acorn-form is entirely lost, the gall being perfectly spherical, a form which presents to the superficial observer the most obvious objections; in these, however, the projecting style was obvious in ninety-seven galls out of a hundred which I examined; in the remaining three it was to be detected, but was not distinctly pronounced; it is always exactly opposite the basal attachment of the gall: the exterior surface of the gall is scarcely distinguishable from that of the pericarp of a perfectly healthy and natural acorn, but the interior surface of the pericarp adheres to the testa, and this to the cotyledons, thus causing a much greater appearance of continuity than is the case in an acorn: the cupule is very disproportionate in size, very much smaller than in the normal acorn; sometimes, although rarely, the testa, or its homologue, is separable both from the pericarp and the cotyledons. In the galls produced by Cynips glutinosa (Mayr's figures 21 a, 21 b, 21 c, and 21 d) the contest between oak and Cynips seems to have been severe: the form of the *pseudobalanus* is varied; of its numerous shapes, the acorn-shape being the exception. In the beautiful gall produced by Aphilothrix Gemmæ (Mayr's figure 28), the scales of the involucre, or cupule, are flattened and produced into leaf-like laminæ, forming an imbricated mass of very interesting appearance: this curious object is usually called the "artichoke gall." The minute, but perfect, representation of an acorn in the centre of its leafy cup is very striking, and I think must be convincing evidence of the truth of the theory, so far as this species is concerned. The similarity of the gall of Aphilothrix *Glandulæ* of Hartig (Mayr's figure 34) to an acorn seems to have impressed itself on that eminent Hymenopterist, or he would scarcely have given it that specific name. The same observation applies to the gall produced by Spathegaster *glandiformis* of Giraud (figure 91 of Mayr).

In conclusion, I may say that I quite expect and hope to hear objections to the theory here propounded, that many of the oak-galls are *pseudobalani*, or false acorns, that is to say,

productions resembling acorns, but entirely without the germinating and reproductive power of these familiar objects. To produce an acorn has been the intention of the oak, but the gall-fly has frustrated the attempt. Instead of sending this trifle to either of the more learned and technical journals, I have preferred submitting it to the more practical readers of the 'Entomologist,' feeling sure that it cannot there escape that searching investigation which ever tends to the evolution of truth.

EDWARD NEWMAN.

Notes on some Insects of Italy and of South France, observed between the middle of May and the middle of July, 1872. By FRANCIS WALKER, Esq.

(Continued from p. 230.)

Avignon.—Coleoptera: Anthaxia cyanicornis, Cetonia stictica, C. hirtella, Chrysomela Tremulæ. Diptera: Tipula gigantea. Hymenoptera: Xylocopa violacea.

In these notes the more minute and less-observed species will follow those which are generally known. Cetonia stictica and C. hirtella appear to be distributed throughout South Europe, and therefore need not be mentioned again: the former is much more abundant than the latter. Only one specimen of the beautiful Buprestid, A. cyanicornis, was seen. X. violacea is too frequent in the Mediterranean region to require a second notice.

Marseilles.—Coleoptera: Lachnæa tripunctata, Coccinella 7-punctata. Orthoptera: Gryllotalpa vulgaris.

C. 7-punctata occurred in great swarms about the harbour here, like it may be occasionally seen on the sea-coast in England, shortly after it has assumed the beetle state. It was seen here and there on Mount Vesuvius; it has been found in plenty on Mount Sinai and Mount Lebanon; it is spread over most of North Asia; and other gregarious species of insects are likewise very widely distributed.

Genoa.—Coleoptera: Dasytes hirtus, Crioceris merdigera, Lachnæa tripunctata, Coptocephala scopolina, Pachybrachys hieroglyphica, Timarcha coriaria, Chrysomela Banksii, C. intricata, Coccinella 22-punctata. Hemiptera: Eurygaster Hottentotta.

Dasytes hirtus was frequent in this district, but was not seen elsewhere.

Pisa.—Coleoptera: Chrysomela cerealis. Hemiptera: Miris ruficornis, Aphis Rosæ, Chaitophorus Populi.

C. cerealis was rather numerous on a rosemary bush, to which plant this beetle seems to be much attached. C. Americana, which I have found in the Forest of Fontainbleau, is much larger, but has like colours. Ch. Populi was also seen at Avignon, and appeared in great profusion at the Baths of Lucca, where it was attended by an ant, which was very different from any English species of that tribe.

Rome.—Coleoptera: Lebia turcica, Ateuchus laticollis, Gymnopleurus acantharus, Pentodon punctatus, Valgus hemipterus, Trichodes alvearius, Akis punctata, A. Italica, Scaurus striatus, Blaps gigas, B. similis, Isomira murina, Dorcadion pedestre, Saperda nigricornis, Stenopterus rufus, S. præustus, Leptura livida, Clythra taxicornis, C. meridionalis, Lachnæa tripunctata, Chætostoma bucephala, Cryptocephalus flavilabris, C. 4-pustulatus, C. Hypochœridis, Chrysomela Banksii, Gastrophysa Polygoni, Adimonia rustica, Coccinella variabilis, C. 22-punctata. Neuroptera: Libellula depressa, Calopteryx Virgo. Hymenoptera: Scolia flavifrons, S. bidens, Stizus nigricornis, Pelopæus spirifex. Hemiptera: Miris ruficornis, M. erraticus, M. longicornis, M. dolabratus, Lopus tunicatus, Capsus scriptus, C. 6-punctatus, C. bipunctatus, C. Chenopodii, Pyrrhocoris aptera, Graphosoma lineata. Diptera: Usia ænea, Phthiria minuta.

Lebia turcica frequents twigs in hedges. Akis Italica, Blaps gigas and Scaurus striatus now inhabit the Coliseum. Akis punctata and Dorcadion pedestre may be found on walls in the outskirts of Rome. Scolia flavifrons is a very conspicuous object, on account of its gigantic size. Cynips argentea inhabits a large woody gall, which may be found in the woods about Tusculum and Albano: it is well figured by Dr. Mayr, in his 'Die Mittel-europäischen Eichengallen,' i. 14, pl. 2, f. 15. He remarks that it occurs on Quercus pubescens, very rarely on Q. sessiliflora; that it is scarce about Vienna, more common in South Europe. To this fly may be applied the words, "Sic vos non vobis." It only inhabits a small apartment in the middle of the gall, and is there not secure from the long oviduct of Megastigmus giganteus, a luteous Chalcid

with a golden green back. Great numbers of the inquilini-cynipids dwell in the outer regions of these galls, with their parasites, such as Eupelmi and Tetrastichi; there are also occasional inmates in these galls, such as a Fœnus, a Chrysis, an Osmia, another aculeate Hymenopteron; but a notice of these and their associates, Diomorus calcaratus and species of Eurytoma and of Callimome, may be deferred.

Naples.—Coleoptera: Ateuchus semipunctatus, Anomala Vitis, Scaurus striatus, Elenophorus collaris, Blaps gigas, Pimelia bipunctata, Cistela sulphurea, Omophilus picipes, Strangalia melanura. Hymenoptera: Scolia flavifrons, Discolia hirta. Hemiptera: Callipterus Quercus. Diptera: Dasypogon teutonus.

Anomala Vitis, Cistela sulphurea and Omophilus picipes frequent the desolate flanks of Vesuvius; and there Ateuchus semipunctatus was abundant, and busily engaged in its symbolical operations and constructions. Callipterus Quercus and its Aphidius-parasite may be found on the under side of oak-leaves. Various species of Aphides are abundant here, as elsewhere in Italy: their life here must be very different from that in Lapland, where I have found, near the North Cape, the nest of an aculeate Hymenopteron provisioned with them: there the egg-state must occupy half the year; here it may be of very rare and brief occurrence.

Florence.—Coleoptera: Ocypus olens, Cetonia angustata, Purpuricenus Koehleri, Stenopterus præustus, Coptocephala scopolina, Cryptocephalus Hypochœridis. Hemiptera: Miris longicornis, Capsus Chenopodii, Cicada Fraxini.

In Italy, during the spring, and in Switzerland, the sharp sound of the field-cricket fills all the valleys; but the vibration of Cicada Fraxini about the Mediterranean, in the summer time, is more loud and incessant: it may also be heard in the Vallais, at Sion, a spot of which the resemblance to Italy has often been remarked.

Lucca.—Coleoptera: Geotrupes vernalis, Cetonia morio, C. affinis, C. lucidula, Anomala Vitis, Lachnæa tripunctata, Coptocephala scopolina, Cryptocephalus Hypochœridis, Hispa atra. Neuroptera: Ascalaphus longicornis. Hymenoptera: Discolia hirta. Diptera: Laphria maroccana.

A. longicornis may be distinguished at some distance among butterflies by its peculiar flight. I have seen it

several times in the Bernese Alps (where it has a range of three thousand feet altitude), and two other species, A. macceronius and A. maculatus, in South France: in this district the flight of Myrmeleon libelluloides is also a very pleasing object. L. maroccana is the largest European of its tribe. The hairy Laphriæ, in South Europe, are an Entomological aspect which is not witnessed in England: their large size, strong forms, powerful flight, and dart-shaped mouths, enable them to exercise a limitating control over many kinds of insects.

Ravenna.—Coleoptera: Zabrus gibbus, Anomala Frischii, Triodonta nitidula, Cryptocephalus Hypochœridis. Neuroptera: Libellula cancellata, L. cærulescens, L. erythræa, L. striolata. Diptera: Pangonia marginata.

T. nitidula was abundant in the forest, but I did not see it elsewhere in Italy. The borders of the marshes and broad ditches about Ravenna swarm with snakes, frogs, and dragonflies: of the latter some other species were in company with those above mentioned; and the bright crimson L. erythræa presented a pleasing contrast with the numerous white waterlilies.

FRANCIS WALKER.

Entomological Notes, Captures, &c.

Description of the Larva of Boarmia roboraria.—I am indebted to the kindness of my friend Mr. J. P. Barrett, of Peckham, for the opportunity of watching this interesting species in all its stages. The eggs, which I received on the 11th of July in last year, seemed to be deposited in clusters, were oblong-oval in shape, the colour reddish brown. On July 14th they hatched, and the young larvæ were at once supplied with fresh oak-leaves, on which they fed so long as leaves were obtainable: this food failing in the autumn, tender oak-twigs were substituted; and to these the larvæ (then having attained a length of three-quarters of an inch) attached themselves by silken threads spun over the twigs, the threads being then grasped by the claspers; in some instances the threads were also even spun over the hinder segments of the larvæ. In this position they spent the winter

in a semi-torpid state, but in mild weather fed with evident relish on the tender bark, sometimes eating nearly through the twigs. In early spring many of them died off; and the only one which reached maturity was full grown early in June, when I described it as follows:—Length about two inches, and of average proportionate bulk. Head flat, and deeply notched on the crown, narrower than the 2nd segment, into which, when the larva is at rest, it is partially withdrawn. Body cylindrical, of tolerably uniform width, but with several prominences, as follows: the 5th segment is swollen from the sides into two conspicuous dorsal humps, divided by a notch on the centre of the dorsal surface; on the 6th segment is a transverse *ventral* ridge; and on the 12th are two very small dorsal humps; there are also two short anal points. Skin tough and rather shining, puckered on the anterior and posterior segments, but smooth on the middle of the dorsal surface. The ground colour is marbled with almost every shade of pale brown, tinged in several places with dull dark green, and blotched along the sides with pale bluish gray. Head chocolate-brown, the face mixed with gray. Medio-dorsal stripe interrupted and indistinct, a little darker than the ground colour; subdorsal and spiracular stripes scarcely perceptible. Spiracles distinct, pinkish brown, encircled with chocolate. The ground colour of the ventral surface is variegated with the same shades of brown as the dorsal surface, but has, in addition, several purplish marks; on each side the ridge on the 6th segment is a pale yellow mark; there is also the rather broad, interrupted, dull yellow, central stripe, characteristic of the genus. Legs pointed and curved inwards, dull chocolate-brown, the first joint paler than the others. When at rest the larva greatly resembles a twig, the notched head being exactly similar to two oak-buds. The single larva went down on June 10th; and the imago, a female, appeared on the 5th of July.—*Geo. T. Porritt; Huddersfield, December* 11, 1872.

Insects Reared during the Year (1872):—

H. Senecionis. Bred from larvæ found in the seed-heads of Senecio Jacobæa; coast.

P. Marmorella. Bred in July, from larvæ found on blackthorn in May.

S. Achatana. Bred in July, from larvæ collected on sloe in May.

P. Cristana. Bred from larvæ found feeding between united leaves of hawthorn.

E. Fœneana. Bred freely from roots of Artemisia vulgaris.

S. Rufillana. Bred sparingly from seed-heads of Daucus carota.

A. Badiana. Bred from larvæ found in the seed-heads of Arctium lappa.

C. Francillana. Bred sparingly from seed-heads of Daucus carota.

C. Dilucidana. Bred in abundance from stems of Heracleum sphondylium.

C. Dipoltana. Bred sparingly from seed-heads of Achillea millefolium.

E. Angustana. Bred from seed-heads of Achillea millefolium.

E. Steinkellneriella. Bred in March, from larvæ collected on sloe in September.

G. Atriplicella. Bred in July, from seeds of Chenopodium collected in October.

C. Argentulella. Bred freely from seed-heads of yarrow; coast.

C. Splendana. I have bred a fair number of this insect from larvæ collected in 1870, proving their existence as larvæ for nearly two years.—*Wm. Machin.*

Captures at Newcastle :—

M. Albicolon. On the coast near South Shields, in June ; not so plentiful as usual.

M. Albicillata, M. Tristata, and Penthina prælongana. Near Hexham, end of June.

Stigmonota lunulana (Dorsana). Chapwell Woods, in June.

Argyrolepia cnicana. Chapwell Woods, July 15th.

Leucania littoralis, Coremia munitata, Spilodes palealis (one specimen, within a few yards of high-water mark), S. sticticalis (two specimens), Crambus Warringtonellus (plentiful), Homœsoma nimbella, Gelechia fumatella (about thirty, but mostly in bad condition). On the coast, at Newbiggen-by-the-Sea, July and August.

Scoparia cratægalis and lineolalis. In Cresswell Woods, August.—*W. Maling; Newcastle-on-Tyne.*

Preserving Lepidoptera from Mould or Mites.—1. In the 'Insect Hunter's Companion,' by the Rev. Joseph Greene, a weak solution of corrosive sublimate (bichloride of mercury) in alcohol is recommended as a remedy for mould on Lepidoptera: the proportions in which the sublimate and alcohol are to be mixed, however, are not stated. Now, if the solution be too strong, it will deposit minute crystals of the salt upon the insects. I should be much obliged, therefore, if you would kindly inform me of the relative quantities of alcohol, and bichloride of mercury to be dissolved in the alcohol, in order to ensure the solution being of the right strength. 2. Also, in the same work it is stated that the insects should be "touched" with the solution. Does this mean that the whole of the insect is to be touched, or only the body? 3. Allow me to ask whether the 'Entomologist' is published by Van Voorst, or by Simpkin, Marshall & Co.—*H. A. Measor; 39, Leamington Road, Westbourne Park, W., December* 5, 1872.

[1. The solution should be tested by wetting the surface of black, brown, or any dark-coloured paper with a camel's-hair brush: if it leave a white deposit it is too strong, and must be reduced. 2. "Touching" refers more especially to the body on the under side, while holding the pin in the left hand; the fluid will then run into the wings. 3. The 'Entomologist,' as stated on the wrapper, is published by Simpkin, Marshall & Co.—*Edward Newman.*]

Argynnis Lathonia.—Three specimens taken in the neighbourhood of Deal at the beginning of October: two at Kingsdown, near Deal, and one among the sand-hills.—'*Science Gossip*,' *December*, 1872.

Vanessa Antiopa at Barnsley.—I have taken three specimens of Antiopa this year at Barnsley: one on the 21st of August, one on the 28th, and one on the 1st of September; all have white borders and are in good condition: found on sugar-tubs.—*J. Jackson; 4, Kendray Yard, Barnsley, Yorkshire.*

Vanessa Antiopa in Scotland.—One in the Forest of Glen Tanar, Aboyne, Aberdeenshire.—'*Science Gossip*,' *Dec.* 1872.

Captures of Antiopa in Kent.—I see Antiopa has not been recorded from here. A specimen was taken at Westerham on the 14th September; and the man, a labourer, carefully

brought it to me alive in his tobacco-box: I need hardly state the "weed" did not altogether improve the appearance of the insect; but the man did his best. A fine female specimen was taken on the 26th November, and is still alive. The borders of both were grayish (or dingy) white.—*William H. Smith; 5, Cedar Terrace, Sevenoaks, December* 5, 1872.

Vanessa Antiopa near Leeds.—Only a small party of these interesting strangers appears to have visited this part of Yorkshire. I have only heard of three specimens being captured near Leeds this autumn: one of these was taken in the centre of our smoky town, within a few yards of the Town Hall; and another in the yard of a woollen-mill, trying to extract food from some empty turpentine-casks. The singular character of the places, in which many of the specimens of Antiopa have been taken, seems to give some support to the opinion that they are chance visitors, and rather at a loss how to get a living in a strange country, no British butterfly, except a puzzle-headed white, venturing near such places as Town Halls and mill-yards. Is it an ascertained fact that there *is* a variety of Antiopa, in which the borders of the wings are pure white upon emergence from the pupa, or is the white of our specimens only faded yellow, like that of the Antiopa of the Continent after hybernation? I am told, on the highest authority, that British Antiopas can always be distinguished with certainty from foreign ones; but my son caught a number of specimens of this insect in the Tyrol last May, which appear to me precisely like those which do duty for British in our cabinets: the borders are pure white, and just sufficiently battered to look "unmistakably British," and "such as no foreigner would have thought it worth while to capture." I hope some of the host of Antiopa have escaped slaughter, and gone into winter-quarters, and that we shall hear of them in the spring; and that those who are fortunate enough to meet with females will not kill them hastily, but endeavour to obtain eggs and rear the butterfly, that we may learn whether a British-born Antiopa differs from a foreigner, and in what particular: but, unfortunately, the blown-over people would still say,—"If the child's a Briton, the father was'nt."—*Edwin Birchall; Kirkstall Grove, Leeds, November* 24, 1872.

[The question of my valued correspondent is to the point:—"Does Antiopa ever emerge from the pupa with a white border?" Many of my correspondents on the Continent—and surely M. Guenée with regard to France, Mr. Riley with regard to the United States, and so on with other countries—could at any time settle the question. Impressions are worth but little, but, from the inspection of a large number of specimens captured in different parts of Switzerland, my impression is that Swiss specimens have white borders, even when they emerge from the pupa. The "blown-over theory" I must leave for the present. I am looking forward to the republication in the 'Zoologist' of the paper on the "Advent of Antiopa," which appeared some months back in the 'Field,' and prefer delaying any allusion to that theory until the statistics are more complete.—*Edward Newman.*]

V. Antiopa.—Will you please tell me what time we are to look for this butterfly in the spring after hybernation?—*E. B. Poulton.*

[The first warm days in March, and continue looking for every warm day throughout March and April.—*E. Newman.*]

Is Lycæna Arion still to be found at Barnwell Wold?—I shall feel extremely obliged if you will inform me, through the 'Entomologist,' whether you consider Lycæna Arion to be still obtainable at Barnwell Wold.—*E. Sutton; New Kent Road, S.E., November* 16, 1872.

[I regret my inability to give any information in addition to that published at p. 140 of 'British Butterflies.' Doubtless some of my readers can give later intelligence.—*Edward Newman.*]

G. Dawson.—I am obliged by the offer of the two butterflies. I will not trouble you for them at present.—*Edward Newman.*

Singularly-marked Specimens of Pieris Brassicæ, &c.—Four years ago I purchased a specimen of Pieris Brassicæ, male, from a collector at Middleton, because its wing-rays, especially those in the under wings, were striated with bright emerald-green. Feeling the man was incapable of any trickery, and being unacquainted with any colour or practice by which such an effect as appeared upon the specimen could be produced, I offered him half-a-crown for it, and it became mine. Since then it has been examined, and

consigned to my store of "queer" things, times out of mind. Sometimes I almost thought it had been tampered with, but as often came the question, How could it be done? On the upper wings the colour is so narrow and faint upon four rays on the right side, and upon the five central rays on the left, that I felt no manipulation could produce it, whilst the broad bright stripes upon the five central rays of both lower wings of various lengths, from a quarter of an inch to five-eighths of an inch, seemed to point to some trick, especially so with one central ray, where there is a round dot at the top of the ray, such as might be supposed to be made with a full brush of colour (like a pin-head), but on turning the under side up my doubts always vanished, because here I found the whole of the rays on the under side brightish distinct green for a much greater length than any colour appeared upon the upper side; and so ended every examination. Convinced the effect was caused by the bursting of colour-containing cells, yet still fearing to risk such an opinion, I held my peace on the subject, and refrained from exhibiting the specimen. Some months ago I received a box of insects from Fernando Po, and on one specimen of P. Calypso, from thence, I observed faint traces of this peculiar green (Scheel's green) in small patches, and at once decided that the colour in both specimens arose from the same cause. By a recent mail-steamer I have received a box containing many specimens of Lepidoptera from Calabar (West Africa), and amongst them several P. Calypso, and on one of these this cell-colour has burst in all sorts of places, but principally along the discoidal rays upon the upper wing, making it a truly "green-veined white;" there are also some small green spots upon the lower wing and upon the under side. On seeing this specimen all my doubts were ended; and the Middleton specimen takes its place as one of my most interesting aberrations. I shall be glad to hear, through the 'Entomologist,' if there are any other such-marked specimens amongst us: to me these are quite a treat. It is utterly impossible that the African specimens could have been tampered with, and the effect is identical in all three specimens. The Middleton specimen was bred; the African specimens of course captured by negro boys, and they came here, unset, in envelopes, made by folding a piece of square paper into a

triangle, one side a little less than the other, to allow the two edges to be turned over; when these edges are gummed down, the most safe and perfect plan of packing butterflies is attained.—*C. S. Gregson.*

Variation in the Larva of Smerinthus Populi (Entom. vi. 184).—The peculiar variety, described by Mr. Dawson, occurs occasionally in the West of London. I have taken it about Shepherd's Bush and Acton, but not very recently. The moth does not show, I think, any notable difference. I have ascertained that the peculiarity does not occur in a whole brood, two larvæ feeding on a twig, which had evidently descended from the same parent, being unlike in this respect. —*J. R. S. Clifford;* 59, *Robert Street, Chelsea.*

Second appearance of Smerinthus Populi.—I have observed, like Mr. Craik (Entom. vi. 191), that the imagos will emerge occasionally in confinement during July and August, from larvæ matured during June and July. The cause, I think, is that the earth into which they have descended is of a higher temperature in the flower-pot or breeding-cage than they would have been subjected to had they entered the open ground. Sometimes, also, they may feed up more rapidly, but I do not imagine the effect of that is thus perceptible generally. Specimens of S. Populi may now and then be taken at large in the month of July; yet it by no means follows that these belong to a second brood, for, as I have repeatedly noticed, some individuals will emerge much later than the majority, even in the same district, the retardation being occasioned by the position of the pupa, the lateness of the larva the preceding season, &c.—*Id.*

Zygæna Meliloti.—When reading about a small burnet of the Trifolii type, I bethought me I used to have some specimens sent to me by my friend Mr. Bond, with a remark:—"May be new; hardly can be a scond brood of Trifolii." This must be nearly twenty years since. Last week I looked in my lumber boxes, and find I have the specimens yet; one I have sent on to be examined, and it has been returned to me as Meliloti.—*J. B. Hodgkinson;* 15, *Spring Bank, Preston, December* 1, 1872.

Dicranura furcula Double-brooded (Entom. vi. 197). I have had an imago emerge in August from a pupa of July, but, in all probability, this is a thing which only happens in

confinement. It is singular that I never had such a thing occur with Dicranura vinula, though I have fed up hundreds of the larvæ.—*J. R. S. Clifford.*

Liparis dispar at Wandsworth.—I do not like to add Mr. Greville's record to the number of doubtful instances of which he speaks, yet truth obliges me to state a circumstance which makes it questionable whether this occurrence is not capable of another explanation. Some years ago myself and a friend discussed how it was that the species, as bred in captivity, was so different in size, and somewhat different also in markings, from what is presumed to be the typical form. Some suppose that these are descended from a northern type; others think it is dwarfed by being so bred in-and-in, or through inappropriate food. By way of experiment, it was resolved to liberate some larvæ at a suitable spot, placing them on sallow (which is supposed to be the most healthful food), and watch the result. The spot chosen was Wimbledon Common,—one tolerably sheltered, and on the verge of the Common towards Wandsworth. How many were placed in the bushes I cannot say,—probably from fifty to a hundred, most of them having passed the last ecdysis; but, through unavoidable hindrances, I could not visit them until, in the natural course of things, they would have formed their cocoons: of these, however, I discovered no trace, nor subsequently could I find the insect thereabouts in any stage. This would have been in the year 1866 or 1867. But now this question arises, as the locality is not far from Southfields, did my liberated individuals establish the species in the neighbourhood, and so occasion Mr. Greville's capture, and perhaps others? Against this it might be urged that the moth is reputed to be sluggish in its habits, to which cause the limitation of its distribution in these islands has been attributed. Very few localities have been recorded where the species occurred during the present century; and had L. dispar bred up in Wandsworth or its vicinity for a number of years past, it would surely have been noticed by one or other of the many energetic collectors residing in that district. The point must at present be undecided.—*Id.*

The Hybernation of Liparis auriflua.—Rennie, and other authors of the earlier part of this century, speak of the hybernation of this species under a common web. I do not

know whether the insect has modified its habits since the time that our winters have mitigated their severity, but I have never succeeded in detecting such a colony in autumn, winter, or spring. In the breeding-cage each individual spins a solitary cocoon; and, when beating during September, I have never found that a number fell into the net from one bush. If our climate was more equable, no doubt these autumn larvæ would feed up and produce a second brood of moths, the species then wintering in the egg-state, as is stated to occur in some parts of the Continent. Perhaps some of the readers of the 'Entomologist' in northern districts may have found L. auriflua in winter living in society. —*J. R. S. Clifford.*

Acosmetia caliginosa: how to Capture it.—As I have had an opportunity of catching this insect during the past season in the New Forest, some account of the mode I found most successful in its capture may be useful. The enclosure in which I captured it was about a mile and a half from Lyndhurst, on the Brockenhurst Road: the growth was young, consisting principally of fir, and the grass was very long in the rides. I always caught these moths in the rides; and the following is the manner I found most effectual in disturbing them from the long grass. I walked slowly along the ride, holding my net by the ring, and stirring the grass in front of me, by sweeping with the end of the stick like a scythe. The longer the stick, and the slower you go, the better; for you lose a great many through their rising behind you. Unless experienced, you are sure to mistake them for the common grass-moth, flying in much the same manner: both rise and only remain on the wing for a short time, soon returning to the grass, where they are very difficult to see. I never saw one fly until disturbed. A friend, who also hunted for them, had more luck on a *rainy* day than on any other. Pamphilus, Icarus, and Gamma, were always rising from the grass, and more than once we disturbed Chrysitis. The time I caught them was the first two weeks in August.—*E. B. Poulton; Victoria Villa, Reading, November* 30, 1872.

Tinea pallescentella.—Passing through the goods'-yard of the Great Northern Railway, at Leeds, a few days ago, I noticed a number of small moths on the walls, and, although they appeared to be only "clothes'-moths," anything in the

shape of a moth being acceptable at this time of the year, I boxed a few of them. I believe the species to be Tinea pallescentella, although the time of its appearance seems abnormal, Stainton giving August as the usual time. The females much exceed the dimensions given in the Manual, some of them reaching one inch in expansion of the wings. Stainton states that the larva feeds on corn, and there are several corn warehouses not far distant; but I did not find the moths in or on them, but on the walls of the offices, ash-pit, &c., and I think it probable that the larvæ fed on the accumulations of rubbish therein. I shall be glad to send examples to anyone who cares for them.—*Edwin Birchall; Kirkstall Grove, Leeds, November* 24, 1872.

The Food of Eristalis.—I have been asked by a correspondent, "What is the food of Eristalis tenax?" the querist having reason to believe he had discovered pollen granules in its stomach. My answer is clear and decisive—"Pollen." The hypothesis of museum and closet entomologists that the Syrphidæ or Muscidæ cannot convey solid food into the stomach, because of the haustellate character of their *instrumenta cibaria,* is a beautiful and convincing proof of our disposition to accept "what ought to be," rather than to enquire of Nature herself "what is," her order in this respect. Eristalis feeds chiefly on pollen, and most of the Syrphidæ follow its example; the common house-fly eats various solids, and masses of these substances may be found in the stomachs of these Diptera undissolved and unaltered after passing through the entire length of the leathery and extensile promuscis.—*Edward Newman.*

Pairing of Butterflies of Different Species.—At the beginning of last June I found two butterflies of different species in the act of copulation, sitting on a plant of mustard which had been allowed to run to seed: the male was Pieris Rapæ, and the female Anthocharis Cardamines; the Cardamines was slightly rubbed. I plucked the plant they were sitting on, and placed the whole thing in a large wire-cage. They separated, however, shortly afterwards; and next morning the female was found dead, without having deposited a single egg.—*L. G. Pike; The Grove, Highgate, N., November* 27, 1872.

Wild Rhubarb.—Noticing the observation made on this

term (Entom. vi. 263, &c.), I think the great burdock (Arctium majus) must be the plant intended: the leaves are very similar to rhubarb. I used myself to call it "wild rhubarb." —*Nathaniel Hearle; West Looe.*

Extracts from the Proceedings of the Entomological Society.

Ravages of Locusts in South Australia (continued from p. 272).—"On Friday, December 17th, about sundown, there was an immense flight of locusts at Glenelg from the seaward. They were in countless myriads, and flying about nine or ten feet high. They had every appearance of having crossed the Gulf; at least, they were in full force at the end of the jetty, and appeared to be making their way, against the wind, towards the hills. One of the Glenelg fishermen states that he has on previous occasions seen locusts crossing the Gulf, and that he has, while out at sea, found his boat covered with them. A few days afterwards (December 20th) the locusts arrived in force at Glenelg, travelling rapidly southward. The right wing of the army rested on the coast line, but did not go further westward than the green herbage of the sand-hills. On the bare sands only a few stragglers were to be seen, and scarcely any within three or four yards of the water. Swarms alighted upon various patches of vegetation; one of couch-grass, we heard of, over which the locusts settled two deep, and were killed wholesale with whips. They attacked less zealously a small plantation of lucerne, the flavour of which seemed hardly to their taste. Near it a number of fowls collected, and seemed to be well employed in picking up specimens of Natural History. Mr. George H. Glover writes the following from Kersbrook on the 19th December:—'The locusts were first seen in this neighbourhood on Friday last; they still increased in what we would now call small numbers, for at about eleven o'clock yesterday morning (Monday, the 18th) they began to come in clouds, or rather in one continual cloud. The work of destruction was then commenced in earnest. In a very short time acres and acres of potatoes were cleared of their leaves; the ground, grass, potatoes, and fruit-trees from the bottom to the tops are literally covered with them: they are so thick that we

have enough to do to go through the gardens where there is anything green. The first things they eat most are potato-tops, and reeds and grass. Of course I shall be able to tell more about it in a few days. Their direction here is from north-west to south-east.' Some anxiety has been shown as to the extent of the ravages in Dr. Schomburgk's domain of the marauding armies of locusts; but it is gratifying to learn that, while verbenas and some dainty flowers have fared badly, the gardens as a whole have not suffered much. The bulk of the leafage of shrubs and ornamental trees would probably have been cleared but for the pasture-land which adjoins the pleasure-ground, and the plots of couch and other grasses that have been so tastefully laid out. On these spots the hordes settled in myriads, and in many places nothing remains but the bare brown earth and a few tussocks where there was formerly a fine bright green sward, soft as velvet and refreshing to the eye. The pests swept over the grass and ate it far closer than sheep would have done. The Director is yet thankful that this satisfied them, and the locusts in consequence spared what was of vastly more value. Well watering the plots will restore the artificial grasses, and ere long a fresh crop will spring.

"Other colonies as well as our own have been suffering from a similar visitation. From Echuca we hear that incalculable mischief has been done to the standing crops in the district; but the local paper adds:—'It may be useful to agriculturists to learn that the larkspur is exceedingly fatal to these insects. They may be seen lying dead in heaps in gardens where this plant is cultivated.'

"Mr. M. Symonds Clark, in a letter to the 'Register,' writes:—'Of birds which destroy locusts we have a great many species. A very old colonist has informed me that quail were formerly very abundant upon the Adelaide Plains, and that on examining the crops of some of these birds which he had shot he found them to be full of grasshoppers. Probably hawks of all kinds, crows, native magpies, shrikes, laughing jackasses, kingfishers, plover, landrail, swans, geese, and nearly all game birds, together with many of the small birds, lend their aid in checking the increase of the locusts. How advisable is it, therefore, that the wanton destruction of these birds should be put a stop to.'"

November 4, 1872.

Rare British Butterflies.—Mr. S. Stevens exhibited one example of Pieris Daplidice and six of Argynnis Lathonia taken by himself, last September, near Dover; also a dark variety of Pieris Napi, which he took at Leenane, Co. Mayo; two varieties, one very fine and rich in colour, of Pyrameis Cardui, and a black variety of Callimorpha dominula from Dover; and Sesia asiliformis, Chœrocampa celerio, and Deilephila livornica from Brighton. (See Entom. vi. 219.)

Fossil Butterfly in the Stonesfield Slate.—Mr. Butler exhibited a remarkably perfect impression of the wing of a fossil butterfly in the Stonesfield slate. It appeared to be most nearly allied to the now-existing American genus Caligo.

Minute Book of an Entomological Society.—Mr. Smith exhibited, and presented to the Society, the Minute Book of the Meetings of an Entomological Society existing in London from 1806 to 1822, in which were copied the minutes of the pre-existing Aurelian Society. This had been given to him by Dr. J. E. Gray. The Meeting passed a special vote of thanks to Mr. Smith for this interesting donation to the Society's Library.

[There are two Societies apparently comprised in this memorandum: the first existed from 1806 to 1813, and was called *The Entomological Society of London:* the second from 1822 to 1824, when it merged in the Zoological Club of the Linnean Society; it was called *The Entomological Society of Great Britain.* I have given details of these and four previous Entomological Societies, at p. 300 of the 'Grammar of Entomology.'—*Edward Newman.*]

Gnats at Oxford.—Prof. Westwood made some remarks on the habits of the common gnat. He had observed none in his house at Oxford till about July; but from then up to the present time there were swarms in certain rooms every night, making their presence known by flying to the lights. All were females, which sex alone is known to torment man by its bites. They were carefully destroyed each day; yet, although both doors and windows were closed, they were daily replaced by a fresh swarm, and he could only account for their presence by supposing they came down the chimneys.

[It would have been interesting if Prof. Westwood had stated the technical name of the insect he designates as "the

common gnat." I was at Leominster in the autumn, and observed swarms of gnats of an evening careering up and down the window-panes, and producing, through the multitude of busy wings, a loud humming noise. When the lights were extinguished for the night the noise subsided; and in the morning the winged pests were either scattered or had departed: they had not been carefully destroyed, as at Oxford. This species was *Culex ciliaris* of Linneus, described by Mr. Walker in 'Insecta Britannica,' vol. iii. p. 247. It is of a redder colour and is much smaller than Culex annulatus, another species that frequents houses, and may often be seen at rest on window-panes and elsewhere within doors, waving its black-spotted hind legs when annoyed. I think the fact of female gnats alone tormenting man is not confined to a single species, but consider it a general character of blood-sucking Diptera. I am not prepared to accept the chimney hypothesis for their appearance. —*Edward Newman.*]

New Part of the General Catalogue of British Insects.—This is by the Rev. T. A. Marshall, and comprises the Chrysididæ, Ichneumonidæ, Braconidæ, and Evaniidæ.

South London Entomological Society.—The first exhibition of specimens took place at Dunn's Institute, Newington Causeway, on Thursday, the 12th December, from 7 to 10 o'clock in the evening, and was in every respect successful. The company was large, indeed inconveniently large, for the room; so much so, that it has been determined to hold future meetings in the Assembly Room, 104, Westminster Bridge Road. The insects exhibited were of great interest, more particularly the varieties of Lepidoptera, and the life-history of other groups. It would exceed the limits of a single number of the 'Entomologist' to give a list of species exhibited, but, through the kindness of the assiduous and most courteous Secretary, Mr. Barrett, I am enabled to publish the following summary:—

Lepidoptera.—By Messrs. Barrett, Bidwell, Boden, Bond, Ramsay Cox, Chaney, Chitty, Cowley, Farn, Hoey (life-histories), Healey (Tineæ), Drs. Gill and Lucas, Messrs. A. Jones, Pawsey, Shearwood, Howard Vaughan, Rev. J.

Watson (a specimen of Corydon with five wings, Argynnis Charlotta, &c.), Messrs. Sydney Webb (very remarkable varieties), Wellman the President (bred Geometræ, particularly of the genus Acidalia), Wells, West, and Williams.

Lepidoptera and Coleoptera (*Exotic*).—By Messrs. Cox, Jarvis, Oldham, and Sherwood.

Diptera.—Messrs. Hoey (Hippobosca, &c.), and Newman (all the British Tabanidæ, and the larger Syrphidæ).

Hymenoptera.—Messrs. Healey (life-histories of Druidæ, or leaf-miners), Hillman (galls produced by Cynipsidæ, or gall-flies), and Hoey (life-history of Abia, &c.).

Coleoptera.—Messrs. Allin, Champion, Marsh, West (rare and interesting British species).

Hemiptera.—Messrs. Champion and Marsh (rare and interesting British species).

Stegoptera.—Mr. M'Lachlan (a collection of British Phryganidæ, or caddis-flies, with the cases of several of the species).

The varieties of British Lepidoptera attracted most attention; but the fine series of bred Acidalia exhibited by the President, the Druidæ exhibited by Mr. Healey, and the almost perfect collection of Phryganidæ exhibited by Mr. M'Lachlan, were the most interesting to myself.—*Edward Newman.*

Death of Mr. Lord.—John Keast Lord, the late manager of the Brighton Aquarium, died at his residence in Dorset Gardens, Brighton, on the 9th December, 1872, in the fifty-fifth year of his age. Just before the opening of the Aquarium, Mr. Lord had a severe paralytic stroke, from which he seems never to have completely recovered. He was known to the general reading public as the author of two works on Natural History: 'The Naturalist in Vancouver,' and 'At Home in the Wilderness;' but to the readers of the 'Entomologist' his name is more familiar through Mr. Walker's descriptions of the "Insects" he collected for the Viceroy of Egypt, both in Egypt and Arabia. These were named and published in the 'Entomologist' by Mr. Walker; and have been sent to Egypt for the Viceroy's collection.—*Edward Newman.*

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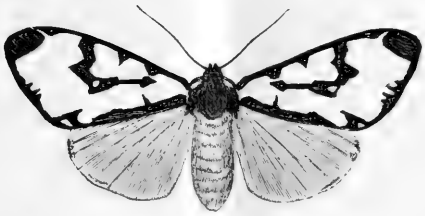


CHELONIA VILLICA (VARIETY).

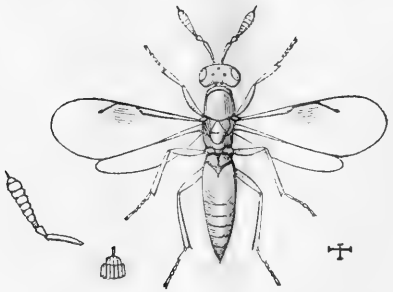
Variety of Chelonia villica.—The head, collar and disk of the mesothorax are black, the ordinary cream-coloured spot at the base of the fore wings being present, and of the usual size and shape. The abdomen is yellow at the base, gradually shading to pink, which colour occupies more than half its length; it has a medio-dorsal series of black spots, so small as to be scarcely perceptible, and on each side is a double series of black spots, considerably larger than the dorsal ones, but not visible from above. The fore wings are rich cream-coloured, with the under-mentioned black markings; the costal, hind, and inner margins, are almost continuously black; this is slightly interrupted in two places on the inner margin; on the costal margin this black border is united with five black spots; the first and second of these are somewhat triangular; the third is transverse, descending to the middle of the wing, and there being almost united to a longitudinal black spot, which extends to, but is not united with, the first triangular black spot; the fourth subcostal spot is small, and the fifth large, occupying the apical angle of the wing; other black markings are shown in the figure. The hind wings are rich fulvous, with a few very small black

marks, especially towards the apical angle. I am not aware of the locality of this specimen. It has been kindly lent me by Mr. Stevens, purposely for figuring in the 'Entomologist.'—*Edward Newman.*

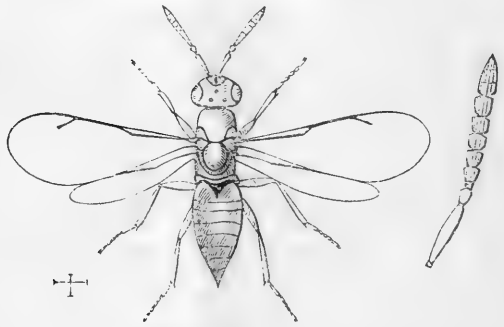
Economy of Chalcidiæ. By FRANCIS WALKER, Esq.

(Continued from p. 274.)

I HAVE mentioned in a recent publication the parasitism of Rhaphitelus maculatus on Hylesinus Spartii: I have seen



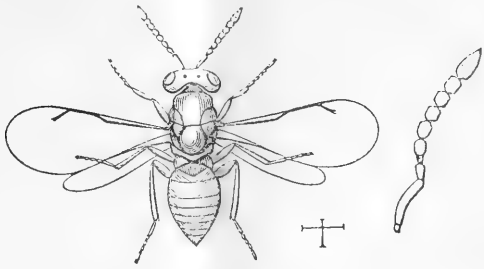
RHAPHITELUS MACULATUS.



SEMIOTUS VARIANS.

only one specimen of it in England. The genera Semiotus and Seladerma should be united, and the former name may be

annulled. The parasitism of Seladerma Capreæ was observed by Linnæus, and is mentioned in the Ann. Nat. Hist. 2nd Ser. ii. 218. A woody gall on the willow sometimes produces a Cecidomyia, more often S. Capreæ, and still more often a Platygaster. Whether the second and third species interfere with each other, or merely with the first, has not been ascertained. A Callimome, that lives in a gall on the leaf of the willow, was probably also specified by Linnæus as Cynips capreæ. The habits of Systasis are unknown: it belongs,



SYSTASIS ENCYRTOIDES.

like the two other genera, to the Hormoceridæ. I will conclude with the names of three Chalcids, whose ways of life were described long ago.

Cynips Gallarum, *Lin.* The description of this species is too short to apply the name with certainty, but it seems to have a general agreement with Pteromalus domesticus; and the substitution of Gallarum for Domesticus may soon be adopted as an amendment in nomenclature. The species described as Pt. domesticus must be generally well known, as it may frequently be seen on windows, and about the holes made in wood by other insects, and immense swarms of it sometimes occur in the neighbourhood of oak-trees, where it limits the multiplication of the little green oak moth, Tortrix viridana.

Ichneumon colon, *Linn.* This was known as Ich. quadrum, *Fabr.*, till A. H. Haliday identified it with the earlier name of Linnæus; and Cynips tripunctata, *Fourc.*, is another synonym of it. It has since been named Cheiropachys quadrum,

and more recently Pachychiru quadrum; and it was recorded long ago as a parasite on wood-eating beetles.

Ichneumon Puparum, *Lin.* This is the well-known Pteromalus Puparum, which introduces its eggs to the recently-formed chrysalis of a butterfly; and has been lately well received in North America, as a remedy to the encroachment of Pieris Rapæ. It was probably there in pre-historic times, but has now the means of making itself known.

FRANCIS WALKER.

Notes on Swiss Lepidoptera. By HENRY CHAS. LANG, Esq.

THE following is an account of the results of twelve days collecting in the Bernese Oberland; also in the district bordering on the Lake of Lucerne, and the pass of St. Gothard. My time was very limited, these observations only extending between the 9th and 22nd of August, 1871, during a short stay in this part of Switzerland. Circumstances also prevented me from doing exactly as much as I pleased with the Lepidoptera. My observations are, therefore, chiefly confined to the diurnal species, and these of course principally butterflies. However, these notes may have some interest, as they show what may be seen in a short time on an ordinary walking tour.

From the 9th to the 12th of August I employed the time in collecting near the shores of the lake, and in some of the lower forests of Mont Pilate. In the lower ground the most widely-distributed butterfly was Colias Hyale, which was much more abundant than its congener C. Edusa, though this occurred with its light *var.* C. Helice.

Generally distributed in the fields, &c., were P. Machaon, G. Rhamni, P. Rapæ, Napi and Brassicæ, P. Megæra, E. Janira, C. Pamphilus, P. Cardui, V. Urticæ and Io, A. Lathonia, L. Alexis and Tiresias, and Chrysophanus Dorilis. More locally in the lower districts and chiefly confined to the woods—Leucophasia Sinapis, P. Egeria, S. Semele, A. Paphia, M. Dictynna, P. Sylvanus and Linea.

In the more elevated woods, in addition to some of those just mentioned, I found M. Galatea, E. Medea, Ligea and Euryale, P. Mæra, Argynnis Ino, Adippe and Aglaia, S.

Malvæ, Comma and Tages. Apatura Iris was captured once in a wood close to Lucerne.

On the 12th we crossed the lake to Flullen, in order to walk up the pass of St. Gothard. The only insects noticed were V. Antiopa and C. Edusa; one specimen of each of these was seen flying over the lake.

The 13th was spent in the lovely village of Amstëg, situated on the St. Gothard, at a point where the river Reuss is joined by the Maderan, which rushes along a narrow, steep gorge between the mountains. On the steep side of this gorge Parnassius Apollo abounded; only, however, on the side of the stream exposed to the sun: it was accompanied by a few of P. Delius. Though this spot is at hardly any elevation, I found in abundance Erebia Medea, and the very beautiful E. Goante. Climbing the steep rocks was exciting, work as one had to look out for safe standing-room, as well as for insects, in order to avoid a hard and watery grave in the torrent below. On this account I was unable to take a fine specimen of the black variety of A. Paphia, which I watched for half an hour, sunning itself on some valerian close at hand, but in a position inaccessible to human feet. Melitæa Athalia occurred in some numbers. The other insects noticed in this locality were Pieris Brassicæ, Argynnis Ino, Vanessa Io and Urticæ, P. Mæra and Megæra, E. Janira and Hyperanthus, Chrysophanus Eurydice, P. Phlæas and Dorilis, and Lycæna Alexis. The following Zygænæ also occurred:—Z. Minos, Filipendulæ, Trifolii, and Loniceræ. Callimorpha Hera was a conspicuous object flying in the hot sunshine.

The next day, August 14th, was occupied in ascending the St. Gothard, as far as Hospenthal. The only insect, not noticed previously, was P. Atalanta. At Varsew, A. Adippe was common; and in some places P. Apollo. We noticed on the road, besides many common species, an occasional P. Machaon, E. Medea, and A. Lathonia.

On the 15th we turned off into the Turka pass, which ascends, during its entire course, through wide, open mountain pastures. Here Lepidoptera were very abundant; and, as the top of the pass was an elevation of about 8000 feet, we met with many species which are never found in the valleys. During the first part of the journey, Argynnis Adippe, Niobe and Aglaia abounded, with Erebia Ligea and Medea;

and, flying about in the long grass, Cœnonympha Satyrion and P. Eurydice. As we ascended, Erebia Cassiope, Euryale and Mnestra appeared; at one spot Lycæna Acis was taken. Now and then, and getting more numerous as we ascended, specimens of two of the mountain "clouded yellows," Colias Palæno and Phicomone, flew across the path. These two species, together with Pieris Callidice, Argynnis Pales, and a profusion of Erebia Tyndarus, were to be found at the highest parts of the pass; for although patches of snow lay about near the road, the day was a hot one, with a bright sun. Psodos trepidaria also occurred here abundantly, settling generally on the roads, together with a few of E. Cassiope, which, however, was not so abundant at this elevation as it was slightly lower down. I have found this Erebia and E. Tyndarus at a greater elevation than any of the other Erebiæ: a considerably elevated position seems to be necessary for their existence, as also for E. Mnestra. E. Ligea and Euryale seem to prefer situations comparatively but little elevated from the valleys, disappearing altogether above the height of 3000 feet or so; while E. Medea and Goante may sometimes be taken in the valleys, or but a very short distance up the mountain sides. The commonest of all the Erebia was E. Medea.

The next day, on the journey from the Rhone Glacier to Meyringen, over the Grimsel, we saw very few insects, chiefly on account of the bad weather, and partly owing also to the fact that the grandeur of the scenery claimed a large share of one's attention. We saw a few E. Cassiope, Colias Palæno, and Psodos trepidaria, on the higher ground; lower down, P. Rapæ, Arge Galatæa, and P. Cardui. Though we met only with these, I should imagine that this pass, so varied in all its natural features, was particularly rich in insects.

In the evening we reached Meyringen, after a hard day's walking; and spent the next day, and part of the 18th, at this village. The weather was intensely hot,—too hot, in fact, for active work in the way of collecting insects. Lepidoptera were very abundant, especially in the valley: here I met with unusual numbers of E. Janira, P. Megæra, P. Brassicæ, Rapæ and Napi; also with P. Machaon, C. Edusa and Hyale, V. Antiopa, Urticæ and Io, P. Cardui, A. Paphia and Lathonia, L. Ægon, Corydon, Tiresias and Alexis, P. Dorilis, P. Linea and Sylvanus. In the slightly elevated woods,

Erebia Medea and Ligea, A. Galathea, Thecla Acaciæ, Apatura Iris (once), and Limenitis Populi (seen once). Spilothyrus Lavateræ occurred here: I was surprised to find it so late in the season. On the Bruneg Pass most of the commoner species abounded: the most noteworthy were P. Machaon and D. Apollo. The only insect not taken by me before was Argynnis Dia.

On our return to Lucerne, the same insects as before were seen; P. Machaon, however, not very common. Curiously enough, I did not see one specimen of P. Podalirius during my whole stay in Switzerland; it must occur in this district.

On the 20th August I found Melitæa Dydima abundant in a field close to the town, accompanied by Polyommatus Damocles. Nothing else new occurred, except one specimen of Grapta C-Album.

I think these are all the species I had the opportunity of noticing whilst in Switzerland; of course I expect many escaped observation, as they must do in the hurry of a walking tour.

The chief interest to an English collector is, to my mind, the extreme abundance of species which are found commonly in England, and also the wide distribution of species which are so local here. Again, as in the case of P. Machaon, one meets with species in localities very different from those frequented by the same species in England. Another point of interest is the great number of species found at the same time and in the same place; but this is, of course, accounted for by the greater number of "broods" in the course of the year amongst continental species.

Out of the sixty-three species of butterflies met with, twenty-four do not occur in Britain.

HENRY CHAS. LANG.

University College, London.

Notes on some Insects of Italy and of South France, observed between the middle of May and the middle of July, 1872. By FRANCIS WALKER, Esq.

(Continued from p. 281.)

Avignon.—Coleoptera: Malachus rufus, M. marginellus, Omophilus lepturoides, Larinus Carlinæ, Coccinella bipunctata. Orthoptera: Œdipoda Insubrica. Hymenoptera:

Amasis læta. Hemiptera: Pirates stridulus, Chaitophorus Populi. Diptera: Pachyrhina cornicina, P. crocata, Bibio hortulanus.

Bibio Marci, St. Mark's fly, swarmed in and about Paris on May 9th, and was much numbed by the cold, in which state it was also at Lyons on May 11th.

Marseilles.—Coleoptera: Malachius viridis, Callidium variabile.

Nice.—Coleoptera: Brachytarsus scabrosus. Hemiptera: Rhaphigaster prasinus.

Genoa.—Coleoptera: Telephorus lœtus, T. Redtenbacheri, Drilus flavescens, Cionus Thapsi, Coccinella bipunctata.

Apis mellifica *var.* Ligustica occurred here and elsewhere in Italy. Spinola quotes various authors, beginning with Aristotle, who have noticed this Italian variety of the honey-bee. Its range southward and eastward from Italy, and its boundary line, have yet to be traced.

Pisa.—Coleoptera: Lucciola Italica, Malachius æneus, M. marginellus, Lagria hirta. Hemiptera: Miris ruficornis.

There is much pleasure in the sight of the brilliant fire-flies (Lucciola Italica), that flit in abundance amongst the shrubs or over the grass, at Bologna, Rome, Lucca. A few of the females were seen at the Baths of Lucca: it ceases to shine when approached. The male flies from one foot to three feet between each flash of light that it emits. It probably entered Italy from the east, and is hindered by the maritime alps from occupying the Mediterranean coast of France.

Rome.—Coleoptera: Corœbus elatus, Agrilus angustulus, Alaus limbatus, Athous longicollis, Cardiophorus ruficollis, Dolichosoma nobilis, Telephorus melanurus, T. Redtenbacheri, Malachius viridis, Lagria hirta, Œdemera cærulea, Œ. lurida, Epicausta verticalis, Mylabris 4-punctata, Zeugophora flavicollis, Luperus flavipes, Cassida viridis, Galeruca lineola, Podagrica fuscicornis, Crepidodera ferruginea, Sphæroderma testacea, Coccinella 19-punctata, C. variabilis, C. bipunctata. Neuroptera: Libellula depressa, Calopteryx virgo. Hemiptera: Eurygaster maurus, Ælia rostrata, Æ. acuminata, Rhaphigaster griseus, Pentatoma baccarum, P. sphacelata, Strachia festiva, Centrocoris spinigera, Gonocerus venator, Camptopus lateralis, Coreus denticulatus. Diptera: Medeterus notatus.

The black hue at the tips of the elytra of Telephorus melanurus covers more of the surface than it does in more northern specimens.

Naples.—Coleoptera: Coccinella bipunctata, Anthaxia funerula, Sitones gressorius. Orthoptera: Acridium Tataricum, Œdipoda cærulans. Diptera: Anthrax Iacchus.

Sitones gressorius was found on Vesuvius, at above half the height. Anthaxia funerula and Anthrax Iacchus were in Capri.

Florence.—Coleoptera: Ocypus oleus. Hemiptera: Rhaphigaster purpurascens, Strachia oleracea, Miris longicornis, Capsus Chenopodii.

Lucca.—Coleoptera: Lampyris Zenckeri, Dasytes bipustulatus, Larinus Carlinæ, Clytus floralis. Hemiptera: Coptosoma globus, Centrocoris spinigera, Coreus denticulatus, Therapha Hyoscyami, Miris longicornis, Capsus binotatus, C. scriptus, C. Chenopodii, C. miniatus.

Lampyris Zenckeri is a little larger and broader than the English glow-worm. The flight of the male begins rather earlier in the evening than that of the fire-fly.

Baths of Lucca.—Coleoptera: Athous longicollis. Hemiptera: Miris virgatus, M. holsatus, Phytocoris Ulmi, Capsus Chenopodii.

Ravenna.—Coleoptera: Larinus Carlinæ, Cleonus ophthalmicus. Orthoptera: Œdipoda flava. Hemiptera: Strachia picta.

Bellagio.—Neuroptera: Ephemera glaucops. Hemiptera: Miris longicornis, Capsus Chenopodii, C. scriptus, C. miniatus. Hymenoptera: Perilampus Italicus, Eucharis adscendens.

I am indebted to the Rev. A. E. Eaton for the name of Ephemera glaucops; the specimens seen were in the subimago state. One male and one female were all that I saw of Eucharis adscendens: Spinola says that it is almost gregarious in Populus tremula.

This author, whose writings have contributed so much to the knowledge of aculeate Hymenoptera and of Chalcidiæ, also observed Cynips and galls, but doubted whether his knowledge of them was clear:—"Much concerning Cynips and galls rests unobserved, and I do not dare deliver my disquisitions, because they seem to me immature, and very

many doubts are still inherent in me." Then he states three conclusions, which he does not doubt; more recent entomologists do not believe them. "1st. Each kind of gall originates from the same species of Cynips. 2nd. One Cynips inhabits domiciles, which are in many ways diverse by reason of their locality. 3rd. Each species of Cynips builds for itself the same gall in the same place. Thus I have found Cynips Quercusfolii, *Linn.*,—1st, in nut-sized galls on oak-leaves; 2nd, in pedunculated, fungous, one-chambered, crowned mespiliform galls on oak-twigs,—C. Surculi, *Schr.*; 3rd, in one-chambered, woolly, shaggy, bedeguar-like galls of oak-acorns. The Linnean name, therefore, does not suit all the specimens, for some inhabit twigs, some leaves, some fruit. Cynips Quercus-baccarum inhabits also the rounded, one-chambered, woody, very hard gall of oak-twigs. The gall of Quercus tojæ, frequent here, is fungous, round, one-chambered, crownless, and is fixed by a more or less long stalk to oak-twigs. Generally the galls of the same Cynips, which in one place are one-chambered or many-chambered, are found in all parts equally, but vary in form and substance according to the locality. The Linnean nomenclature is therefore manifestly faulty, and the history of each builder of galls, as yet shadowed in darkness, invites the attention of entomophilites."

A few more observations are required, in addition to what Spinola says of his Figites ruficornis, a black fly with testaceous head, antennæ and legs, and with black marks on the hips and thighs. This fly seems to be inquilinous; but the required change in its name, and also how far the history of the gall, about to be mentioned, corresponds with the history of the gall of Cynips argentea, may be left for future consideration. The gall, Spinola says, is "Galla tinctoria;" and Anthribus scabrosus, various Curculionidæ, Formica barbara (a female, with its wings lost), and Figites abbreviator, are companions in the gall of Figites ruficornis. The latter, he says, lives almost gregariously in a single gall, and builds for itself oblong habitations with almost woody walls, which are fixed by the base to the house of the legitimate master, whose monarchy then ceases; and its hut being thus straitened on all sides, the unhappy little animal perishes immaturely in deficient space. These invaders (in the case

of the crowned gall of C. argentea) are kept in check by other means, and there is yet much to be learned in the study of the limited company of insects in various galls, and in the way whereby the balance of power is maintained between them, these researches being inductive to others in the comparatively unlimited companies of insects elsewhere, and both leading to the knowledge of the mechanism which adjusts the agencies of the human race. Spinola relates the history of Osmia Gallarum, a bee that I have already mentioned as having been reared from the gall of Cynips argentea. It does, he says, no harm to the Cynips; but the lawful mistress having forsaken her habitation, it goes in by the way she came out; and having enlarged the empty space within, builds there from twelve to twenty-four huts, whose walls are smooth within, and are of ground oak-leaves, made adhesive by glutinous matter; and this substance closes the entrance into the gall. Each chamber includes an egg: thence comes the grub, which, as usual, is a pollen-eater; and having changed into a bee, goes out by the door before used. Perhaps Fœnus and Chrysis are agents in the second household, and not in the first, and do not direct their attention to the galls till they are tenanted by the Osmia. Leucospis intermedia has been also found in these galls, and may be a parasite of the Osmia. But there are other events which may happen in the domestic matters of this habitation. Supposing that a parasitic egg has been inserted into the Cynips larva of the central cell, before the latter has been surrounded by ante-chambers, then the destroyer would perish with the victim,—the M. giganteus would be immured with the Cynips. Supposing, also, that some of the minor Chalcids have visited the inquilines, then the nurseries of the latter become their graves, out of which the offspring of the Chalcids arise. The round hole in the gall is made by the legal Cynips, and through this hole it comes out; but how do the other kinds come out, and how are they introduced while they are eggs? The occupation by the Osmia indicates that the aboriginal Cynips has been unmolested; and it is probable that the cuckoo-flies, before mentioned, take an opportunity, when the Osmia is absent in search of materials for constructing its cells, to secure a maintenance for their own offspring. The Osmia, having assumed the bee-state,

unfastens the door, and goes out; and if it has been destroyed by a cuckoo-fly, it is probable that the latter has the instinct to escape in like manner. Supposing the first Osmia to return unexpectedly, and to find a Chrysis, a Fœnus, or a Leucospis, as the case might be, in its home, then there would be materials for another page in the history of the gall, and for an additional account of the agreements or disagreements in the little nest.

Many changes thus take place in a gall. Its first state, which is common to all galls, represents, in a small compass, the control of vegetation by insects. The second period, which is partial, shows the check of some insects by others, and in two ways: by outward or by inward agency,—by starvation without, or by consumption within. In the third period, the vegetation-eaters have ceased, and the carnivorous race alone survive. A new order begins when the gall has ceased to grow around its inmates, when the aboriginal Cynips has gone, and when the Osmia has taken possession and has provided stores for its young ones. The gall is lastly tenanted by mites, and is afterwards reduced to earth by the other elements.

FRANCIS WALKER.

Supplementary Note on the Genus Acentropus.

By J. W. DUNNING, M.A., F.L.S.

BY way of supplement to my notes (Trans. Ent. Soc.), I beg to give a few additional references and localities for Acentropus. To the list of localities there may be added:—

England (Sheerness, *J. J. Walker:* Peckham, *Cowley*).
Scotland (Loch Leven, Kinross, and Loch Gelly, Fife, *Syme*).
Sweden (Ifösjön, Ringsjön, Wombsjön, Farhult, *Wallengren*).
Belgium (Forest of Linthout, *Andries;* Brussels, *Fologne*).
Holland (Overween, and Texel, *Ritsema*).

And to the list of authors:—

1859. Fologne, Ant. Soc. Ent. Belg. iii. 134.
1870. „ „ xiii., Comptes Rendus, p. xxxvi.

1871. Syme, Scottish Naturalist, i. 20.
„ Wallengren, Ofv. Vetenskaps-Akad. Förhandl. xxviii. 973, 1009.
1872. J. J. Walker, Ent. Mo. Mag. viii. 185.
„ F. Walker, Entom. vi. 107 (in a note on Ophion).
„ Newman, Zool. S.S. 3117, and Entom. vi. 153.
„ J. P. Barrett, Entom. vi. 199.
„ Corbin, Entom. vi. 233 (misprinted *Atropus* niveus).
„ Roelofs, Ann. Soc. Ent. Belg., Compte Rendu, 6 July.

Ritsema has kindly sent me a print of his "Aanvulsel tot het geschiedkundig overzigt van het geslacht Acentropus," which will be published in 1873 in the 'Tidjschrift voor Entomologie,' vol. xvi. pp. 16—25. In a note on p. 25, he tells us that he captured male specimens of the moth at Overween as early as the 12th May, and (as also recorded by Roelofs) in the Island of Texel on the 29th May. In this country Boyd found it at Cheshunt on the 1st June; and Corbin at Ringwood, from the beginning of June to the end of August. The latter writer mentions various enemies that prey upon Acentropus. F. Walker and J. P. Barrett both record instances of the moth being attracted to light. Syme's capture of the insect in Scotland is interesting, as corroborating Leach; he mentions Potamogeton filiformis as the species of pondweed which it frequented, whilst J. J. Walker mentions P. pectinatus. Boyd found pupæ at Cheshunt on the American weed, Anacharis alsinastrum; the moth and the Anacharis were abundant, Potamogeton was very scarce in that locality; but there is as yet no evidence that the larvæ fed on Anacharis. The prominent lateral spiracles are not confined to the pupæ of Acentropus, but occur likewise in the pupæ of some at least of the Hydrocampidæ. As to the presence of tibial spurs in the perfect insect, see Snellen's observation quoted by Ritsema (Tidj. v. Ent. xvi. 19, n.), confirming what is stated previously. Wallengren, in his 'Skandinaviens Pyralider,' published in the twenty-eighth volume of the Stockholm 'Ofversigt,' places Acentropus in and at the end of the family Botydæ, distinguishing it (at p. 973) from the other sixteen genera by the characters—"legs without spurs; female wingless; ocelli and superior palpi wanting;" or, as it is expressed at p. 1009, "legs short

and thin, without spurs; the female with short pointed rudiments of wings." According to the same author (who thus confirms Reutti's statement), "the female is on the move by night, and swims on her back under the water; and for pairing she also draws down the male, which flies just over the surface of the water, and also runs pretty quickly on the water; the male is chiefly on the move by night, but flies also by day." Wallengren (referring to Nolcken's paper) adds, that there are probably several species of the genus, and that sometimes winged females occur; he, however, cites Kolenati's figure of A. Nevæ as identical with A. niveus. With reference to Newman's remark (Zool. S.S. 3122), that the conflict between the two descriptions of the eggs, noticed previously, is "sufficient to prove that the eggs described were scarcely those of a single species," I may observe that Newman has failed to notice that the conflicting descriptions were given of one and the same batch of eggs, deposited on one and the same Potamogeton leaf.

J. W. Dunning.

[This supplementary note, read before the Entomological Society, has been most kindly handed me by Mr. Dunning, and I presume concludes what that excellent entomologist has to offer on the difficult question—"What are the affinities of Acentropus?"

When I consider the position occupied by Mr. Doubleday among living entomologists, and the universal respect in which his judgment is held, not simply among ourselves in England, but also on the continent of Europe and in America, it is much to be desired that he would express his views. Beyond the fact that the genus Acentropus is not to be found in either Edition of his invaluable Synonymic List, we have no indication of Mr. Doubleday's opinion. The same may be said of M. Guenée, whose abstention from the discussion is equally to be lamented.—*Edward Newman.*]

Entomological Notes, Captures, &c.

Mosquitoes in the Great Lone Land.—"There came upon us dense swarms of musquitoes, humming and buzzing along with us as we journeyed on, and covering our faces and heads with their sharp stinging bites. They seemed to come with

us, after us, and against us, from above and from below, in volumes that ever increased.

"As soon as the sun had dipped beneath the sea of verdure, an ominous sound caused me to gallop on with increasing haste. The pony seemed to know the significance of that sound much better than its rider. He no longer lagged, nor needed the spur or whip to urge him to faster exertion, for darker and denser than on the previous night there rose around us vast numbers of mosquitoes,—choking masses of biting insects, no mere cloud thicker and denser in one place than in another, but one huge wall of never-ending insects, filling nostrils, ears, and eyes. Where they came from I cannot tell: the prairie seemed too small to hold them; the air too limited to yield them space. I have seen many vast accumulations of insect-life in lands old and new, but never anything that approached to this mountain of mosquitoes on the prairies of Dakota. To say that they covered the coat of the horse that I rode, would be to give but a faint idea of their numbers: they were literally six or eight deep upon his skin, and with a single sweep of the hand one could crush myriads from his neck. Their hum seemed to be in all things around. To ride for it was the sole resource. Darkness came quickly down, but the track knew no turn, and for seven miles I kept the pony at a gallop; my face, neck, and hands, cut and bleeding.

"It took us but little time to rush over the gangway and seek safety from our pursuers within the precincts of the steamboat. But they were not to be baffled easily: they came in after us in millions; like Bishop Haddo's rats, they came 'in at the windows and in at the doors,' until in a very short space of time the interior of the boat became perfectly black with insects. Attracted by the light they flocked into the saloon, covering walls and ceiling in one dark mass.

"It is no unusual event during a wet summer, in that portion of Minnesota and Dakota to which I refer, for oxen and horses to perish from the bites of mosquitoes. An exposure of a very few hours' duration is sufficient to cause death to these animals. It is said, too, that not many years ago the Sioux were in the habit of sometimes killing their captives by exposing them at night to the attacks of the mosquitoes: and any person who has experienced the full intensity of a mosquito night, along the American portion of the Red

River, will not have any difficulty in realizing how short a period would be necessary to cause death."—*From Capt. Butler's 'The Great Lone Land.'—Communicated by F. Walker.*

A Plague of Larvæ.—I know not whether it has been the case in other localities, but in this neighbourhood the abundance of larvæ of P. Brassicæ is unprecedented. All the cabbage tribe have been totally eaten up in some places, and nothing but the veins and stalks remain. Not content with that, the larvæ have entirely stripped the turnips of their leaves; and even the leaves of the horse-radish have been so eaten that only the stalks are left. Many of the gardens present a pitiable spectacle from the ravages of these voracious caterpillars. I have been rather amused at some of the remarks passed with regard to the abundance of these creatures, for it must be understood that Entomological knowledge is at rather a low ebb in this immediate neighbourhood. One old woman asked me if I did not suppose that these larvæ were like the locusts of which we read in Scripture, and were sent as a judgment for the sins of the nation? On another occasion a man, wishing to show his knowledge of the theory of metamorphosis, was explaining to his neighbour how quickly the *larvæ* propagated, and that the smaller ones were the offsprings of their larger brethren, and he added: "During the winter they hide in holes, and under the earth *in cases;* and next spring we shall be swarmed more than ever. Mr. Corbin says they come from butterflies; but *I* can *prove* he's wrong." Having overheard the latter conversation, I explained to my learned friend that a small and—by him—unobserved creature, in the form of a four-winged fly, was proving a great friend to him by destroying these caterpillars; in fact, I told him of the busy ichneumon fly and its work: but he received the facts with a shrug of the shoulder, and the words—"I am older than you." I have observed that as these larvæ prepare to pupate, quite two-thirds of them are "stung;" so I scarcely accept the conclusion that next season we shall have a still greater abundance. There did not appear to be an unusual number of the imago of Brassicæ in their season; in fact, they were not half so common as they were a few seasons ago, when they literally swarmed everywhere; so that I attribute the

abundance of the larvæ this season to the dry and warm weather about the time the eggs were hatching. At present, the little clusters of the small yellow cocoons of the parasite are much more frequently seen than the pupæ of Brassicæ. Strange to say, there a are few places, even in the midst of the destruction wrought by these caterpillars, which appear to have been untouched by them,—where the kale, &c., are flourishing,—and present a forcible contrast to the devastation around.—*G. B. Corbin.*

Lepidoptera of Ayrshire.—In sending you this list, I wish it to be understood that it is only a very small part of what I have really taken here, as I have omitted nearly all those species which have been reported as common in Scotland. I may also mention that the summer of 1872 has been a very bad one here for entomological pursuits, as many of the most common butterflies and moths were not even visible. Of butterflies I took none worth mentioning; but observed on September 4th, V. Antiopa, and in August, P. Cardui (one of each), both of which specimens I failed to capture, not having my net at the time.

Sphinges.

Stellatarum, July, one. Populi, last week in October, one.

Geometræ.

Betularia, one. Crepuscularia, not uncommon. Papilionaria, two. Trigeminata, a few. Clathrata, one. Pulveraria, abundant. Marginata, a few. Defoliaria, common. Affinitata, not uncommon. Viretata, one. Simulata, a few. Obeliscata, a few. Albicillata, common. Badiata, common. Dubitata (hybernated), two. Suffumata, common. Pyraliata, a few. Mensuraria, common. Palumbaria, not uncommon. Spartiata, two.

Cuspidates.

Bucephala, two (male and female). Camelina, June, one. Dodonæa, June, one.

Noctuæ.

Batis, June, common. Rurea, abundant. Lithoxylea, not uncommon. Ianthina, not uncommon. Fimbria, bred one from larva found on thorn. Gracilis, one. Munda, not uncommon. Cucubali, a few. Chi, one or two occasionally.

Oxyacanthæ, abundant. Aprilina, not uncommon. Meticulosa, September, a few. Nebulosa, common. Dentina, common. Lithorhiza, a few. Exoleta, abundant. Rhizolitha, one. Umbratica, common. Festucæ, a few. Chrysitis, a few. Bractea, one. Libatrix, a few. Maura, a few. Mi, a few.—*H. Anderson; Cloncaird Castle, January* 10, 1873.

Hybernating Specimen of Vanessa Antiopa.—Many of your readers will be interested to hear that a specimen of Vanessa Antiopa was taken here yesterday. A young lady was passing under some trees on her way home from church after morning service, when a large butterfly, which proves to be a Camberwell beauty, fell in a torpid state, though still living, upon her hat. You have recorded many instances last summer of the appearance of this rare butterfly, whose *annus mirabilis* in England has been 1872. But that it should have favoured us with its presence in January is a most extraordinary fact.—*J. N. Simpkinson; North Creake Rectory, January* 6, 1872.

Lycæna Arion at Barnwell Wold.—In answer to one of your correspondents' questions in last month's number of the 'Entomologist' (Entom. vi. 286) relative to Lycæna Arion, I can say that I lived near Barnwell Wold during the autumn of 1863 and the season of 1864; that I was daily on the spot during June and July, 1864, searching in vain; that I have repeatedly visited the spot since, in the season, unsuccessfully; and, although I have taken much trouble in making enquiries, I have not heard of the capture of one single specimen since 1860. In 1858 and 1859 Arion was unusually abundant; and the wet season of 1860, which did so much damage to insect-life generally, was not so fatal to Arion; but, as I am informed, dealers did their best in that year to assist the weather. L. Arion, like others of the genus, rests on the top of field-flowers and grasses in cloudy and wet weather, and in the open fields in the limited locality where this species was found: the insect at rest was a conspicuous and easy victim. I am told that one dealer in 1860 took two hundred specimens in this manner, many of which had never flown. I cannot believe, however, that collectors and dealers can utterly have extirpated the species in one year, as although the head-quarters of the insect were of limited extent, yet

stragglers had been repeatedly met with in the neighbourhood, especially by my relative the Rev. Wm. Bree, to whom we are indebted for our knowledge of this locality, and who showed me places some distance off where he had seen it. It is a curious fact that Pamphila Comma used to be abundant in the same fields as L. Arion; and, as far as my knowledge and experience goes, the species absolutely disappeared in the same season as Arion, and has not since appeared. Last time I was at Barnwell Wold the Arion fields were being "improved" by surface-burning, so I doubt your correspondent's ever finding it in that locality. My only hope is that, like most gregarious insects, Arion may only have removed its head-quarters, and be still existing a few miles off in similar localities, of which there are plenty, in the neighbourhood. I have observed a considerable difference in the Barnwell Wold specimens and their West of England brethren, the Barnwell Wold specimens being rather larger, with larger and less defined black spots, the wings more suffused with black, and the ground colour not so bright a blue.—*Thos. H. Briggs; 6, Old Buildings, Lincoln's Inn, January* 17, 1873.

Artificially-veined Specimen of Pieris Rapæ.—It may interest your correspondent, Mr. C. S. Gregson (Entom. vi. 286), to learn that I once possessed a continental specimen of the above insect with the veins of the hind wings coloured green in the manner described. Being at the time doubtful whether the peculiar markings were natural or artificial, I took the specimen to the British Museum, where my friend, Mr. A. G. Butler, examined it with a lens, and at once pronounced the green veinings to be artificial, and to have been produced by the running of liquid containing colouring matter in solution along the natural wing-veins.—*R. Meldola.*

[I have altered the generic name from Synchloe to Pieris, in accordance with ordinary nomenclature.—*E. Newman.*]

Pieris Brassicæ with Green Wing-rays.—Three years ago I took four specimens marked with green, very much the same markings as Mr. Gregson's specimen (Entom vi. 286); they are four females. The males I took the same year have no markings. It was my friend, Mr. Leather, who first noticed the markings. Being at that time only a beginner, I did not think the green was unusual.—*James Powall; Wallasay, Birkenhead.*

Yellow Specimen of Pieris Rapæ.—Yesterday, the 18th of January, a common white butterfly (Pieris Rapæ) was brought me, which had apparently only just emerged from its pupa. To-day its wings are full grown, and the butterfly is the most beautiful of its kind that I ever saw, having a deep yellow tinge all over it. Is it not rather a rarity for a butterfly to emerge so early? It could not have hybernated, because when it was brought me it had only just emerged, and to-day it is full grown.—*C. G. Vicary; Knowles, Newton Abbott, Devon, January* 19, 1873.

[I have seen several such yellow specimens as mentioned, Brit. But. p. 161; but this beautiful variety is far more common in Canada, where the species is naturalised, than in England, where it is strictly indigenous.—*E. Newman.*]

Deilephila Livornica at Bournemouth.—A specimen of this rare insect, which now graces my collection, was taken by Mr. Edmund Sandars, of The Cedars, Bournemouth, hovering over some flowers in his garden, in 1871. The specimen, with the exception of being rather eaten by mites, is in good preservation.—*G. H. Raynor; St. Philip's Vicarage, Stepney, January* 10, 1873.

Does M. stellatarum often Fly at Night?—I have always supposed that this insect was truly diurnal in its flight, until one evening, about the middle of September, as I was sitting near a bush of honeysuckle, I observed a moth come to one of the blossoms: it was one of the Sphingidæ, I could see by its beautiful flight, although it was nearly dark at the time. Having my net I tried to capture it, but failed. I then put myself in such a position that the honeysuckle-blossom hung between me and the sky, and in the increasing darkness I saw several P. Gamma come to the flower, and amongst them the moth I had previously seen: this time it went into my net; and on taking it out I was surprised to find it was a Stellatarum in capital condition. It is the first time I ever caught this pretty and interesting species *at night;* and I consider its capture, at such a time, a great departure from its usual habits. I have seen it in the early twilight, but never before at dark. Its companions at the honeysuckle are well known to be a pest day *and* night in most places.—*G. B. Corbin.*

D. Galii in Berkshire.—The other day I was in Henley,

and Mr. Stubbs, the post-master, showed me a beautiful specimen of D. Galii, bred from a larva found near that place on the Berkshire side of the river, about two years and a half ago. I believe that this is an entirely new locality for it.—*G. B. Hulme; Manor House, Newton Valence, near Alton, Hants.*

Smerinthus Populi in January.—I have just met a lad with a splendid specimen of Smerinthus Populi in his hand. He found it at the root of a poplar, and it was evidently just out of the chrysalis, the wings being quite limp.—*W. Simmond; 6, Townsend Road, Hertford, January* 20, 1873.

Is Bembeciformis in Pupa in January?—In the 'Entomologist' for last month, I see pupæ of Bembeciformis for sale. Can it be possible there are pupæ of this insect at this time of year. I do not know whether Bembeciformis goes into pupa in the south of England in winter; it certainly does not here. It is feeding in the larva state until May, and the imago comes out in June the same year.—*James Powall.*

F. conspicuata.—I think a few remarks on this very local little moth may prove interesting. It is double-brooded, appearing early in May and again in July; flies in the hot sunshine; and on wet or cloudy days may be found resting, with wings closed over its back, on the under side of the broom-bushes. I always beat the larvæ from the second week up to the end of September. They are a good deal infested with ichneumons, one large one emerging from a caterpillar. As far as my experience goes, it is a difficult insect to breed. In 1870 I took a female, in good condition, as late as September 17th, when brushing for the larvæ, which were very abundant, a good many being full fed. I know now but of two localities near here where Conspicuata can be taken with certainty; and in both these places, I am sorry to say, the broom is being gradually cut down. Spartiata (in abundance) and Obliquaria (much less commonly) are also natives of these localities.—*E. F. Bisshopp; Ipswich, January* 1, 1873.

Nola centonalis at Freshwater.—When in the Isle of Wight, last July, I took what I then passed over as Cristulalis; but now that the busy time is over I find, on looking carefully through the work of the past season, that I have a much rarer species, namely, Nola centonalis. On comparing Centonalis

with Cristulalis, you will find that the first named is a much whiter-looking insect, with shorter and broader wings, and the costal margin much straighter; the first line more decidedly angled, and the second, or elbow line runs parallel to hind margin, and *not* bent back on costal margin towards the base, as in Cristulalis; the palpi much longer; face, head and thorax, pure white; hind wings white, of a slight pearly hue.—*W. H. Tugwell;* 3, *Lewisham Road, Greenwich.*

Description of a Lepidopterous Insect (*Ephestia Roxburghii*) *New to Science.*—Expands from 7 to 9 lines. Form broad, costa rounded, wings obtuse. Head, face, palpi and thorax gray; first third of fore wings gray; then a broad, distinct, slightly-waved, silvery line across the wing, pointing inwards, followed by rich, deep, brownish gray (darkest outside the light line), extending to the cilia, but cut beyond the second third of the wing by a well-defined, light gray streak pointing outwards, which streak is edged with dark suffused lines; then near the cilia is a well-defined dark streak, and on the disk of the wing are two dark spots, one under the other; cilia broad, gray, intersected by a light line in it, inclined to ochreous; hind wings ample, obtuse, light silvery gray, darkest along the cilia, which springs from a light ochrey line outside the dark inner edge of the wing, giving the appearance of a double cilia; abdomen bright silvery gray. This grand addition to our collections was bred by Mr. Roxburgh. They fed upon *débris* of old Lepidoptera, &c., in a neglected drawer: how the eggs came there is not known; but it is suspected they were introduced with dried fruits. Several specimens were shown to me last year; and this summer Mr. Roxburgh gave me the specimen from which this description is drawn. I feel some doubt as to its being a true Ephestia. Its general appearance and form (not colour), in small specimens, point to Interpunctella as a near ally, but it is larger, and has full, rounded costa; and its short, curved palpi lead me to think I may have a word to say on this point another time. I have much pleasure in proposing to name this beautiful species after, I may say, the most liberal, energetic and successful collector we have in this district.—*C. S. Gregson; Rose Bank, Fletcher Grove, Liverpool, December* 24, 1872.

Mites.—(1) Can you inform me to what species the mite which infests insect-cabinets is referable? Also any account of its economy would be acceptable. (2) Does the species infest Lepidoptera when at large, and, remaining in the body whilst on the setting-boards, get introduced in this way into cabinets? (3) How are the mites propagated when once introduced? (4) I have tried camphor, benzine, mite-destroying fluids and chemical preparations, without any marked success. The pests are certainly diminished, but I should be afraid to say that there is a drawer in my cabinet which does not contain half a dozen at least, and this notwithstanding constant attention and immediate annihilation of mites errant. I saw some time since a recommendation, in some Entomological book, to invert all the drawers, so that the mites would find difficulty in walking head downwards. When going to Cambridge in October last, I adopted this plan, and hoped to find my cabinet free from mites on my return in December, but was disappointed in this also. A great objection to daubing the bodies of insects over with liquids, as benzine and creosote, is that it generally leaves the down on the thorax, feathered antennæ, and several parts of the body, matted together, thus spoiling the appearance of the specimen.—*G. H. Raynor.*

[(1) The mite which usually infests insects in cabinets is Acarus destructor: it has not been observed, so far as I am aware, on living Lepidoptera. (2 & 3) Its economy is that of hundreds of cognate species; the egg is attached to some hard and fixed object, and when mature the perfect mite escapes, and begins to feed on any dried substances it finds at hand. (4) I think the difficulty in applying solutions or liquids of any kind is rather from want of experience, which no instructions of mine can supply. I have never tried to make mites walk head downwards. I should be inclined to disregard such advice, wherever I heard or read it.—*Edward Newman.*]

Work on Coleoptera.—Please to state in the next number of the 'Entomologist' if there be any work on Coleoptera published, which is of a like form to those of yours on Lepidoptera.—*W. B. Slater.*

[There is no work of the kind, so far as I am aware. Will other correspondents take this as a reply to similar queries.—*Edward Newman.*]

Kensington Entomological Society.—The first meeting of this Society took place on the 10th of January, under the presidency of Mr. Andrew Murray, F.L.S.

Mr. Murray exhibited and described a number of the varieties of the oak-gall—Cynips.

Mr. Stock exhibited a case of insects, all of which were taken in Kensington Gardens.

Mr. H. Moore, a number of beautifully-executed water-colour drawings of larvæ.

Mr. W. H. Kennell, a large case of insects, all of which he had taken in his garden close to Kensington High Street.

Either Mr. Kennell, Hornton Cottage, Hornton Street, Kensington, or myself, will with pleasure communicate with anyone wishing to become a member. The Rooms are at the School House, Allen Street, Kensington. The subscription is small.—*William Wells, jun.;* 12, *Phillimore Terrace, Kensington, January* 24, 1873.

West London Entomological Society.—This Society held their special opening meeting at the Rooms in Tichbourne Street, Edgware Road, on January 8th, and it was largely attended. A large quantity of insects were exhibited.—*E. W. Timms, Secretary.*

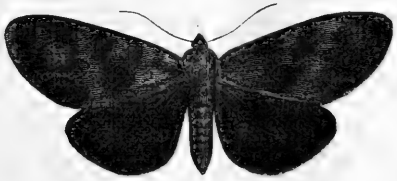
The Aims of Local Entomological Societies.—Science cannot fail to benefit by the multiplication of societies which tend to spread Entomological knowledge, and bring about a greater feeling of cordiality between collectors and observers; and also, it is to be hoped, make some of us less mercantile in our views. These societies may, and do, embrace a variety of objects; but there are two things at which, I think, they should particularly aim, nor are they of much less importance than the interchange of information and the formation of a library for reference. Such a society should endeavour to form a local museum, which should have—not series of necessity, but representatives of the insects occurring in the district, including both the present and past; and, also, it ought to endeavour to check the too hasty and extensive destruction of rare and local Lepidoptera, which is injuring our native Fauna almost as much as the thinning of our woodlands and the rapid increase of towns.—*J. R. S. Clifford;* 59, *Robert Street, Chelsea.*

THE ENTOMOLOGIST.

No. 114.] MARCH, MDCCCLXXIII. [Price 6d.

ARCTIA MENDICA (VARIETY).

Variety of Arctia mendica.—This specimen of the female Mendica differs chiefly from the normal character in the greater number and size of the black spots. I am not aware of the locality in which the specimen was taken; but it is in the cabinet of Mr. Stevens, and has been kindly lent me for figuring in the 'Entomologist.'—*Edward Newman.*



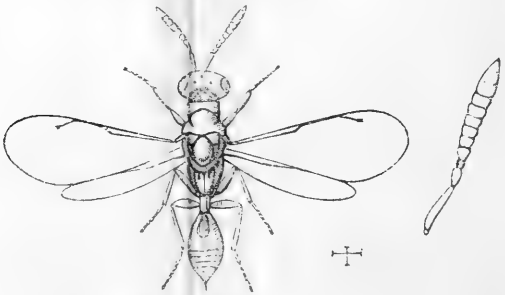
CALLIMORPHA DOMINULA (MELANIC VARIETY).

Variety of Callimorpha dominula.—The head, antennæ, thorax and body, are of the same metallic green-black, which is the normal colour of the fore wings; the fore wings are of the same colour, except where the white and yellow markings occur on ordinary specimens, and these are transformed to the most intense opaque black, exhibiting perhaps the most complete instance of melanic variation that occurs in any

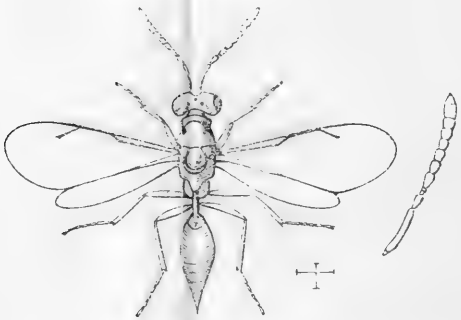
lepidopteron. It is a recurrent variation. Similar specimens exist in several cabinets; there is a fine example in Mr. Doubleday's. The specimen figured was bred from a larva found at St. Margaret's Bay, Dover, 1872, and has been kindly lent me by Mr. Stevens for figuring in the 'Entomologist.'—*Edward Newman.*

Economy of Chalcidiæ. By Francis Walker, Esq.

(Continued from p. 300.)



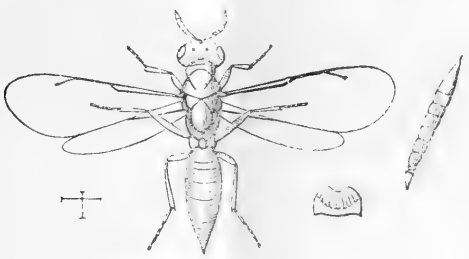
SYNTOMOPUS THORACICUS.



SPHEGIGASTER FLAVICORNIS.

The accompanying three figures represent three genera of Sphegigasteridæ. The economy of Sphegigaster and of Merisus

is unknown, and Syntomopus has been lately mentioned in the 'Entomologist,' and may therefore be passed by with the remark that the species on which it and Elatus are founded should be united to Chrysolampus, and that the names Syntomopus and Elatus should be annulled.



MERISUS SPLENDIDUS.

The genus Asaphes has been placed with the Sphegigasteridæ, but its biarticulate palpi indicate its affinity to the Spalangidæ. Its representative is the Ichneumon Aphidum of Geoffroy, or the Cynips Aphidum of Fourcroy and Olivier, which is said to lay its egg in an Aphis which has been already the victim of an Aphidius; and it is also said that the larva of the Cynips Aphidum, being contiguous to that of the Aphidius, kills and feeds on the latter.

In 1829 Asaphes Aphidum was printed as Mesosela elongata, in Curtis's 'Guide to an Arrangement of British Insects,' but no description was then published. In 1834 it was described as Eurytoma ænea by Nees, in his Monogr. Hym. Ichneum. aff., and this author suggests that it may be Spinola's Decatoma metallica; but as the latter species is undescribed, any notice of it is needless. In 1835 it appeared as Asaphes vulgaris in the Ent. Mag., which name was altered to A. ænea in the B. M. Cat. Chal., published in 1846.

Nees observed it in the act of egg-laying in Aphides of the rose, already dead, these having been the prey of Aphidius varius. The original name of the latter is Ichneumon Aphidum, by which designation, as before mentioned, its destroyer was

afterwards distinguished. This Aphidius varius, like a few other names, was in some degree a nebula, or included several species, which were afterwards distinctly separated from each other. The Aphidius must have the faculty of ascertaining whether the Aphis which it visits has previously received an egg from another Aphidius, and the Asaphes must instinctively know, when it inspects the shell of an Aphis including an Aphidius-grub, whether the latter has been already punctured by another Asaphes; or if the Aphidius be as yet unmolested, the Asaphes will know the amount of progress which it has made towards maturity, and whether it is in a suitable state for the maintenance of the Asaphes-larva. In this little lateral branch of creation (vegetation, Aphis, Aphidius, Asaphes) each succeeding one controls its predecessor. The compact structure of the Asaphes is in strong contrast with that of the Aphidius, the lowest or most imperfect form of the Ichneumon tribe. The occurrence of the Asaphes in South America, as well as in Europe, infers a probability that it also inhabits North America, where Aphides are numerous. It is the genus Isocratus of Foerster.

It may be occasionally found throughout the year, and frequents the leaves of the spruce-fir in the middle of winter; these leaves are a shelter for several species of insects, though not equal to the protection afforded by the cypress, which numerous Pteromali use as their winter home.

FRANCIS WALKER.

A List of the Butterflies inhabiting Guernsey and Sark, with Notes of their Occurrence. By W. A. LUFF.

Argynnis Aglaia.—Very common in Sark on the slopes of the hills near the sea. My earliest date of capture was on June 19th, 1871, when I took a beautiful specimen. They were still on the wing towards the end of August of the same year, but were then very much worn. I have never taken it in Guernsey, or met with those who have.

A. Lathonia.—I captured a fine specimen in Sark on August 12th of last year (1872). Mrs. Boley took another in Guernsey the September following.

Melitæa Cinxia.—Abundant both in Guernsey and Sark. The earliest date I have of its appearance is May 8th, 1870. In 1872 I did not observe one on the wing until the 27th of May, and then they were in nothing like the abundance of the previous seasons. I noticed a couple of battered females on the wing as late as the 26th of July. They are met with all around the southern coast of Guernsey, from Fermain Bay to Pleinmont Point, but are never found far from the sea-coast.

Grapta C-Album.—A specimen was captured in Sark by Mrs. Boley.

Vanessa Urticæ.—Extremely abundant in Guernsey and Sark.

V. Polychloros.—I have taken it in both Guernsey and Sark, but never in any numbers. Earliest date of capture July 7th.

V. Io.—Is not a common Guernsey insect, but I have found it very abundantly in Sark.

Pyrameis Atalanta.—Common in Guernsey and Sark.

P. Cardui.—Usually common in Guernsey and Sark, but in 1871 I did not observe a single specimen, although they were most abundant in the clover-fields in the three previous seasons. They were again common in 1872, when the larvæ were particularly abundant on thistles.

Pyrarga Egeria.—Abundant in Guernsey and Sark. Earliest date of capture April 12th, 1871.

P. Megæra.—Very common in Guernsey and Sark.

Satyrus Semele.—Common in both Guernsey and Sark, but particularly abundant in the latter island, where they are by far the commonest butterfly. Last year (1872) they were still on the wing on August 12th in large numbers, but it was then impossible to find a perfect specimen.

Epinephele Janira.—Abundant in Guernsey and Sark.

E. Tithonus.—Swarming on the blackberry blossoms in both Guernsey and Sark.

Cœnonympha Pamphilus.—Very abundant in Sark, and also in the little island of Herm, but I have never met with it in Guernsey. Several other collectors have had the like experience.

Thecla Rubi.—Common in Guernsey and Sark. In 1871 I took a specimen fresh from the chrysalis as early as the 6th of April.

Polyommatus Phlæas.—Exceedingly abundant everywhere in Guernsey and Sark.

Lycæna Ægon.—Common on the southern coast of Guernsey; abundant everywhere in Sark.

L. Medon.—Common in Guernsey and Sark.

L. Icarus.—Abundant in Guernsey and Sark.

L. Argiolus.—Common in Guernsey and Sark. The earliest date I have of its occurrence is May 1st, 1871. They were extremely abundant in Sark on the 8th of August, 1872.

Colias Hyale.—Rare in Guernsey. In the autumn of 1868 they were extremely abundant in Sark, but I have not captured one there since.

C. Edusa.—Abundant in Guernsey and Sark in some seasons. In 1871 and 1872 I observed very few specimens, although they were abundant in the previous seasons.

Rhodocera Rhamni.—Rare in Guernsey, but by no means rare in Sark.

Pieris Napi.—Swarming in damp meadows in Guernsey and Sark.

P. Rapæ.—Extremely abundant everywhere in both Guernsey and Sark.

P. Brassicæ.—Common in Guernsey and Sark.

Mr. Piquet once informed me that he had taken Daplidice, Lathonia, G. C-Album, and T. W-Album, in Jersey; also Edusa *var.* Helice.

You will perhaps be surprised at the absence of all the Hesperidæ from this list. I have never seen a single specimen of either species in Guernsey or Sark; but Linea and Sylvanus were extremely abundant in Jersey on the occasion of my last visit on the 21st June, 1871.

W. A. Luff.

[It is intended to follow up this paper with a list of the nocturnal Macro-Lepidoptera of these islands; and I hope some entomologist resident in Jersey may do the same by that interesting island. We seem to have ignored this portion of the United Kingdom in everything but plants and mollusks. —*Edward Newman.*]

Central African Blood-sucking Flies.

By Francis Walker, Esq.

In 'How I found Livingstone,' Stanley mentions three of these, as follows:—

"There were three different species of flies which sought shelter in my tent, which, unitedly, kept up a continual chorus of sounds: one performed the basso profondo; another a tenor; and the third a weak contralto.

"The first emanated from a voracious and fierce fly, an inch long, having a ventral capacity for blood quite astonishing. My men unanimously stated that its bite was fatal to horses as well as to donkeys. It is called 'mabunga' by the natives.

"The second fly, which sang the tenor note, more nearly resembled in size and description the tsetze. It was exceedingly nimble, and it occupied three soldiers nearly an hour to capture a specimen; and, when it was finally caught, it stung most ravenously the hand, and never ceased its efforts to attack until it was pinned through. It had three or four white marks across the after-part of its body; but the biting parts of this fly consisted of two black antennæ, and an opal-coloured style, which folded away under the neck. When about to bite this style was shot out straight, and the antennæ embraced it closely. After death the fly lost its distinctive white marks.

"The third fly, called 'chufwa,' pitched a weak alto-crescendo note, was a third larger than the house-fly, and had long wings. If this insect sang the feeblest note, it certainly did the most work, and inflicted the most injury: horses and donkeys streamed with blood, and reared and kicked through the pain. So determined was it not to be driven away before it obtained its fill, that it was easily despatched: but this dreadful enemy to cattle constantly increased in numbers.

"The three species above named are, according to natives, fatal to cattle; and this perhaps may be the reason why such a vast expanse of first-class pasture is without domestic cattle of any kind, a few goats only being kept by the villagers. This fly I subsequently found to be the 'tsetze.'"

The first fly is quite obviously a Tabanus, or horse-fly; and therefore Stanley's description of it is omitted. The description of the sucker of the second indicates its affinity to Stomoxys. The third is Glossina longipalpis, *Wiedemann*, or the tsetze; and by this name it is probable that some other kinds of flies have been lately noticed in books.

The tsetze was unknown in Europe by name, till it was called Glossina longipalpis in 1830. There were then two specimens of it in the British Museum, and these I recorded in the B. M. Cat. of Diptera, 1849: one (from the Congo) I named G. longipalpis? and the other—which was paler and much larger than the first, and whose locality was unknown —I named G. fusca. In both the markings of the abdomen had disappeared; but several other specimens which are now in the British Museum, and which agree exactly with Wiedemann's description, show clearly that they are all one species, and that the name G. fusca must be annulled. Some specimens are hardly larger than the house-fly; others are much larger. It ranges from Sierra Leone to South Africa, and thence to East Africa and to the interior; and Stanley does not mention that it is poisonous. The genera Prosena and Glossina may be united to Stomoxys, the differences being very slight. Stomoxys Cytorus, from West Africa, is quite different from G. longipalpis; and S. Æno, from New Zealand, hardly differs from S. irritans, a common English species, which is often supposed to be Musca domestica, the house-fly.

FRANCIS WALKER.

On some Amurland Insects (Part III.).—The Linnean genus, Diopsis, is composed of some well-known flies, with eyes at the ends of long stalks; and the purpose of this adaptation has not been much investigated. Its region is in or near to the tropics on both sides of the equator, and extends from Sierra Leone to Natal, and from thence to South Asia and to the Eastern Isles. Achias is another and less-known genus, which is found in South America and in the Eastern Isles, and has also the sides of the head lengthened and attenuated into shafts, which are terminated by the eyes; but these appendages are not quite like those of Diopsis in structure.

A connecting link between these two genera (or it may be said the counterpart of the common ancestor of them both, such assertions, as in other cases, being merely fanciful) occurs in Sphyracephala, *Say*, of which Diopsis brevicornis, a North-American species, is the type, and to it Diopsis Hearseyanus may be added. Another species has been discovered in North-Eastern Asia. I was first informed of it by M. Fedtschenko; and I afterwards saw it among other Amurland insects. There may be a fourth and undescribed species of this genus from West Africa. It thus has a much wider range than that of Diopsis, though it is composed of far fewer species, and it is not less interesting than Diopsis and Achias, though of smaller size, and with less development of the peculiar characters.—*Francis Walker.*

Entomological Notes, Captures, &c.

Does Antiopa ever Emerge from the Pupa with a White Border?—To the question in your January number of the 'Entomologist,' "Does Antiopa ever emerge from the pupa with a white border?" I would answer that in the Atlantic district of the United States, the "spring variety," as it is called, has always a white, or at least a very light-coloured border. The summer variety has a border of deep brimstone-yellow. I believe that in this district Antiopa generally hybernates in the imago state, although such broods as do not feed up till late in the fall undoubtedly pass the winter in the pupa state. Perhaps it may be interesting to brother entomologists at home, to know that Antiopa is one of our earliest butterflies, appearing sometimes before the snow is off the ground.—*W. V. Andrews; Room* 4, *No.* 117, *Broadway, New York, January* 30, 1873.

C. Hyale and Helice near Reading.—In 1870 I captured two male Hyale, on the Oxon side of the Thames, and also took one female on the Berks side. Last year (1872) I again took one male in the same place where I took the former ones, and saw on the Great Western Railway bank a specimen of Helice, which I had the pleasure of chasing for two miles, and then missing. I have never before heard of the occurrence of either of these insects in the neighbourhood of

Reading, though Edusa is generally common on the railway banks.—*E. B. Poulton; Victoria Villa, Reading, February* 8, 1873.

Hybernal Emergence and Cannibalism of the Larvæ of Machaon.—I was in Norfolk last July, and took a number of the larvæ of Machaon; it was on the 10th of the month. Many of the larvæ were full fed, and changed into pupæ in a day or two. I supposed they would remain in that state until next spring; but on the eleventh day, from the time the first larva changed into a pupa, to my astonishment I found in my box a beautiful specimen of the butterfly; ten in all came out in a few days. The remainder of the pupæ (about a hundred) I have still by me. You will remember the weather at the time I allude to was especially hot, which may account for the early development of the matured insect. I discovered some of the pupæ, before the shells were hardened, in a broken condition, as well as diminished in size. I could not understand the cause of this, and therefore watched my cage very narrowly, when I discovered the newly-changed pupæ being eaten by the larvæ. This I witnessed; and I had to use great precaution or I should have lost all my treasures. I should have written to you at the time, but thinking possibly my experience was not uncommon, I delayed doing so.—[*Rev.*] *Frederick Clere; Brighton, January* 29, 1873.

Migration of Butterflies.—In a late number of the 'Field' newspaper Mr. Holdsworth contributed a most valuable paper on the "Migration of Butterflies in Ceylon," and stated in the course of his observations that they flew against the wind. To this statement Dr. Boyd Moss takes strong objection, averring that it is contrary to his experience of the same country. To Dr. Moss's objection Mr. Holdsworth makes the following rejoinder in the 'Field' of December 28. My opinion is that Mr. Holdsworth is far too good an observer to be mistaken as to facts, and in that belief I transferred his letter to a previous number of the 'Entomologist.'

"I submit with becoming humility to Dr. Boyd Moss's somewhat heavy lash for having said that the migration of butterflies in Ceylon is always made against the wind. I should have added—what I certainly meant when I wrote—within my experience. With this addition, then, I present

my letter of last June once more for his consideration, and I can assure him that the flights of butterflies I have seen at Colombo in November and December—I have seen many of them—have invariably been travelling against the wind. I can give him one particular instance, with the date. On Advent Sunday, December 3, 1865, when the people were coming out of the Galle Face Church at about half-past twelve, the Galle Face was almost overshadowed by a great cloud of yellow and white butterflies; they were coming in thousands up the Colpetty Road, and flying in the direction of the fort. Dr. Moss should know that the N.E. monsoon sets in early in November, and that it blows hard at Colombo in December; against this wind the butterflies were fighting their way, and making fair but unsteady progress. During my visit to Ceylon I was frequently staying at the Galle Face Hotel, sometimes for weeks together, and I generally had one of the rooms close to the beach. From that position I have repeatedly seen scores of Papilio Hector and many P. Darsius, in company with numbers of the smaller yellow and white species, struggling successfully to make head against the 'long-shore' wind, many of them keeping outside of the belt of cocoa-nut trees, and flying low and close to the beach. I have mentioned having seen during three seasons flights of P. Hector many miles from land, and flying towards the Ceylon coast from the direction of India. Dr. Moss says the large varieties of butterflies are never seen migrating, but are what he would call local, passing their lives where they are born. Does he consider P. Hector a large variety or a small one? I am quite content to believe Dr. Moss's statement that butterflies never fly against the wind when they get among the monsoon gusts on his estate on the hills in the centre of the island; they seem to lose their heads there, and go wherever the wind drives them, but that is no reason why they should not move with some definite purpose in the neighbourhood of the coast; and the fact that I have always seen them there flying head to wind, when the wind blows in nearly the same direction for months at a time, seems to imply some meaning in these migrations. Let me suggest to Dr. Moss that he should make inquiries of some of his Colombo friends, or persuade some of his planter neighbours, when they are staying at the Galle Face Hotel, to make some

observations on the subject. The manager of the hotel used to be an insect-man, and would, I am sure, be ready to help. Perhaps if Dr. Moss had made these inquiries before now, he would not have written to the 'Field,' and come down so heavily on my unhappy letter." (*E. W. H. Holdsworth*).—*E. Newman.*

Migration of Urania Leilus.—Our readers are familiar with migrations of butterflies; and now we see noticed in 'Nature' the migrations in "amazing numbers" of Urania Leilus, which mimic butterflies, not only in their size and disposition and colours of their scales, but also in this habit of swarming, which we do not remember to have seen noticed in other moths. This Urania was seen flying in swarms across the Isthmus of Panama, and also by another person near Para, Pernambuco, and Rio Janeiro:—"From an early hour in the morning until nearly dark these insects passed along the shore in amazing numbers, but most numerously in the evening; it was very seldom that one was seen in the opposite direction."—'*American Naturalist.*'

[This is strongly corroborative of my view adopted from our best systematists, that the Uranidæ are butterflies and not moths. I accept it as a valuable addition to our knowledge of this transcendantly beautiful family of Lepidoptera. —*Edward Newman.*]

D. Galii in Berkshire.—A friend of mine, some three or four years ago, had three larvæ brought him, which he believed to be Elpenor. They were taken up the Bath Road, off Fuchsia, and quite close to Reading. Two came out splendidly, and proved to be Galii. The third unfortunately died. I have seen the two insects and the empty pupa-cases. I have taken its near relative, Livornica, in our own garden, and in such a condition as pointed to its being only just emerged.—*E. B. Poulton.*

Macroglossa Stellatarum Flying by Night.—I observe in the 'Entomologist' (Entom. vi. 316) a notice, headed—"Does M. Stellatarum Fly by Night?" I can confirm the observation of its doing so, which follows, by adding my own experience of a similar circumstance. On my first visit to Ilfracombe, about six years ago, the time being the month of September, I took up my temporary abode at a cottage, situated on an eminence that overlooked the harbour, and

also Hillsborough Terrace; from this spot the whole town is overlooked: on the right is Hillsborough, to the left the Tors; whilst in front stretch the waters of the Bristol Channel, the Welsh coast forming the horizontal line of the view. The cottage in which I resided had its front entirely covered with roses and honeysuckle. One night—a brilliant moonlight one—I was standing at the cottage door, when I observed numerous insects flying about and settling on the flowers. On observing them more closely, I thought I noticed a specimen of M. Stellatarum. To make sure of this I fetched my net, and soon captured a specimen of that moth. Having satisfied myself on the point of identity, I gave the moth its liberty, and then noticed several others hovering over the flowers. This observation was repeated two or three nights in succession.—*Frederick Smith; British Museum, February* 1, 1873.

Varieties of Jacobeæ, Mesomella, and Strigillaria.—On the 17th of June last, whilst in the New Forest seeking for Caliginosa, with my friend Mr. Tawell, I was fortunate in capturing a splendid, perfect variety of Jacobeæ. The usual type of this pretty species was abundant about its food-plant the ragwort, and amongst them was the variety I caught, which was easily detected whilst on the wing. It was apparently fresh from the pupa, though at first sight in my cabinet it appears to be an exceedingly worn and washed-out looking specimen. Its fore wings are of a paler blackish gray than the common form, whilst the usual costal stripe, the two spots on hind margin, as well as the stripe on the inner margin, are not so large as usual, and instead of crimson are of a dull grayish pink; the hind wings are of the same hue, with a black fringe; in fact, the whole of the markings seem to be almost obliterated: indeed, a friend, who looked through my cabinet a short time ago, accused me, with a smile, of having passed the specimen up and down the chimney a few times. I do not for a moment suppose the specimen is unique, but I gather that it is not a *usual* variety, from the fact that all who have seen it pronounce it to be the first which has come under their observation. I am aware that several of our moths—as Trifolii and Loniceræ, Caja, Dominula, &c.—occasionally have their red or crimson markings replaced by yellow; in fact, I have bred such a

Dominula. Last summer I met with a male of L. mesomella, with wings the same pale yellow colour as the paler specimens of L. stramineola, and a female of A. strigillaria, in which the space between the first and second bars of the fore wings is filled up with the same colour as the bars themselves, thus forming a brown and very conspicuous band.—*G. B. Corbin.*

Alucita Polydactyla.—To all who dabble in the preservation of birds and quadrupeds, it is well known—often from sad experience—that they have many insect-enemies to combat with, whose ravages to fur or feathers are sometimes as insidious as they are destructive. It is not a pleasant sight, after a bird or small quadruped has been in a case for three or four years, apparently in a perfect state of preservation, to see a Tinea tapetzella, or some other less-decidedly marked or smaller example of the army of so-called clothes'-moths, settled upon the inside of the glass, as it is well known that its presence there betokens mischief. Occasionally, however, such a thing will happen, even with our most carefully-preserved and mounted specimens. Some five years ago I fitted up a case of sea-gulls, which remain unaltered; but during December last I was surprised to see a moth settled upon the inside of the glass. A closer inspection did not reveal a specimen of Pellionella, Fenestrella, or any other of our usually-recognized enemies, but an example of Alucita polydactyla. Our books tell us that the larva of this insect feeds inside the buds of honeysuckle, so I do not wish in the least to bring the accusation against this pretty little insect that it had lived on any part of my birds; but the question arises, In what stage of its transformation had it passed the more than five years of imprisonment, as the case had never been opened, and there are decidedly no means of ingress or egress? If the egg could have in any way been inadvertently introduced with the rock-work, &c., with which the case is filled up, I scarcely think it would have laid dormant so long a time, and supposing it had hatched, what could the larva have eaten? and although we are all aware that the perfect insect hybernates very freely, yet such a protracted hybernation seems scarcely compatible with what we know of the general hybernation of insects in the perfect state. Longevity in the

pupa state is also well known to be common to several species,—as Lanestris, P. Populi, Vinula, Trepida, &c.,—but is it so with the "Plume" in question?—*G. B. Corbin.*

Captures in Epping Forest in 1872.—Notodonta trepida, and Chaonia: larvæ, comparatively common, end of June. C. angustalis and S. truncicolalis were both common, but local. P. marmorella and Suavella occurred but rarely among sloe, Advenella on hawthorn, and H. eluviella and P. dilutella among thistles. Early in June I took P. obtusana, S. puncticostana and Redimitana; and in July D. Grotiana, S. achatana, P. ochroleucana, S. rosæcolana, S. cespitana, S. alternana, and O. funebrana; in August I met with H. albistrigalis, P. cristana, T. caudana, and S. spiniana and Janthinana. During the season I also captured the following:—S. cratægella, H. scabrella and Nemorella, Y. sylvella, Gelechia Gerronella, Basaltinella, Rhombella, Maculella, Nanella, Albipalpella, Vulgella, Leucatella, Mouffetella, Gemmella, and Ericinella, and a fair series of Laverna Stephensiella. A. albistria were abundant among sloe, Mendicella common, and Semifusca rare; Semitestacella occurred sparingly among beeches, Andereggiella and Curvella among wild apple, and Glaucinella on trunks of oak; one specimen of X. Aurago was beaten out of beech, one of Col. hemerobiella from wild apple, and several of P. acanthodactylus from rest-harrow.—*William Machin.*

Preserving Lepidoptera from Mould or Mites (Entom. vi. 284).—I may inform your correspondent, Mr. Meason, that the usual proportions of the mercury and alcohol are six grains to one ounce of the spirit,—at least I use such for the preservation of other objects of Natural History beside Lepidoptera. The solution must be used very carefully upon insects of a green colour, or the parts "touched" will become a dirty yellow; if too strong it also has an injurious effect upon the colours of G. Rhamni, &c., but probably this advice is unneeded.—*G. B. Corbin.*

Catocala Fraxini at Sandown.—In the summer of 1868, I found a specimen of C. Fraxini at Sandown, Isle of Wight, under rather peculiar circumstances. We had taken a house for some time in the middle of the summer, and upon going in we found a specimen of this beautiful moth, rather rubbed, in a dying state, on the mantelpiece of the dining-room.—*G. B. Hulme.*

Food of Eristalis and other Diptera.—As to flies, it has been until now generally admitted that they are exclusively destined to fluid nutriment; but, in the summer of 1867, I was surprised, while observing in my garden an Eristalis tenax upon a flower of Œnothera media, to discover that it was eating the pollen. Resting upon its middle and hind legs, it thrust out its fleshy proboscis like an arm, seized a morsel of pollen with the two valves which terminate the proboscis, and tore it away from the anther. Since the pollen granules of Œnothera are tied together by elastic threads, that bit of pollen torn from the anther was attached to others by a band of threads, and the insect, in order to free its mouth from that inconvenient appendage, began to use its fore legs. Raising both together towards its mouth, it seized between them the cordon of threads, and rapidly rubbing them one against the other, much as we do in washing our hands, succeeded in cutting the threads, and clearing them from its mouth and legs; then it raised them again, and seized the two valves of the proboscis, thoroughly cleaning them of pollen, and the threads yet adhering to it; and in about three seconds this work of cleaning was complete. At the same time, the valves of the proboscis, by rubbing against each other, had masticated the morsel of pollen, and had conveyed the single granules into the channel of the labium, whence they were pushed into the mouth. It had hardly finished cleaning its proboscis and eating the first mouthful of pollen when it seized another portion, and repeated each and all the operations I have described. It was so intent upon its meal that I was able to observe it in the closest proximity without its manifesting the slightest fear. The quantity of pollen which an Eristalis can devour in this way is surprising. Upon making a section of one and examining the stomach, it appeared very large, and was full of a yellow substance, which consisted of hundreds of thousands of pollen-grains. I have had since then many opportunities to observe this eating of pollen, not only in all the species of Eristalis, but also in the genera Rhingia, Syrphus, Volucella, and Scatophaga. This chewing of pollen alternates with sucking honey, if the flowers have any; and I am of the opinion that the singular structure of the proboscis of flies cannot be fully explained without taking into account its

double function of sucking honey and eating pollen. In the Tipulariæ, and also in those flies which do not eat pollen, but live exclusively upon juices, for instance, Bombylius, the two valves of the proboscis serve no other purpose than to protect and guide the sucking-tubes; but in the flies which devour pollen, besides this formation there is also that of grinding the pollen, for which they have special adaptations, for the margins of the two valves at the point of union are transversely dentate with fine and parallel bands of chitine. Probably the greater or less distance of these bands in different species is related to the different size of the pollen upon which they feed.—*Discourse delivered by Dr. Erm. Müller, of Lippstadt, to the Twenty-sixth General Assembly of the Naturhistorischen Verein fur Rheinsland und Westphalen*, 1869. *Translated into Italian from the German, with annotations by Professor Frederic Delpino. Translated for the 'American Naturalist' by. R. L. Packard.*

[My kind friend, Mr. A. W. Bennett, who is now engaged in studying the fertilisation of plants by insects, has supplied me with the above extract, in reference to my note, intituled the "Food of Eristalis," in the January number of the 'Entomologist' (Entom. vi. 291). It is wonderful that we should be compelled to gain information of this kind through such a variety of channels,—German, Italian, and American,—when the phenomena described are to be observed daily in our own gardens, at our own doors. Even at the present hour some of our leaders in Entomology are contending the facts, because at variance with their own hypotheses. The duty assigned to insects of fecundating hermaphrodite flowers has been observed by Müller, Darwin, and many others; but its *modus operandi* has certainly not been clearly explained. The great office of such pollen-chewing Diptera as Eristalis is not to fecundate the individual blossom which appears to undergo this spoliation, but to transfer the fecundating principle from one plant to another. In accordance with a law which is revealed in every variety, race, or species, depauperation is always at work, and no gardener, whatever his views, can possibly overlook the fact that if he attempt to produce continuously any particular species or variety from the seed of one plant he will fail, because of this tendency. The various beautiful asters, or

"Michaelmas daisies," are preserved pure, because they are herbaceous: the various portions of a herbaceous plant constitute but one individual, whereas every seed originates a new and independent individual. Well, then, if an Eristalis confines its attention to one plant of aster, it only distributes the pollen on that one plant, and the descendants of that plant will resemble the parent, not only in superficial appearance, but also in inheriting the principle of depauperation. Nature endeavours to arrest this principle by causing the Eristalis, when loaded with the pollen of one plant, to fly off to a second plant of aster, and distribute its treasure on this second plant, and the pollen which to the flower which produced it was simply a principle of maintenance, when transferred to another flower becomes a principle of renovation. My friend Mr. Deane is most kindly assisting me in this enquiry, and I trust, by his assistance, to explain these phenomena more fully hereafter.—*Edward Newman.*]

Oak Galls.—In allusion to the subject of oak-galls growing in the similitude of acorns, a view which has been repeatedly advocated by the Natural-History Editor of the 'Field,' and ably controverted by Mr. Inchbald in the same paper, the following remarks by Mr. Parfitt are very apposite:—

"Having paid considerable attention to these galls and their cause, *viz.*, Cynips Kollari, I venture to put a word into the discussion between Mr. Inchbald and yourself. I have myself combated the assertion that these galls were produced at the expense of the crop of acorns, for the simple reason that they were, as a rule, produced on the young shoots and bushy growths of the oak, and that the range of the insect was between the ground and ten feet elevation; and the nearer the ground the more numerous were the galls, showing, as I believe, that they require a warmer position than being elevated aloft in the higher trees. And, to bear this out, I have observed that where trees of moderate growth, but too high for the insect to attack when placed on even ground, grew in a hollow or narrow gorge, the insects have attacked these as they had done those of low growth,—a proof, I think, that they require a warmer stratum of air, which the heat radiated from the ground would give, than there is to be obtained at a greater height. Now it is well known to all observers of the oak that it is not these young saplings that

produce acorns, but it is these very saplings that are selected in preference by the Cynips; this then supports Mr. Inchbald's observations and my own assertions, made some years ago,—I think in the 'Cottage Gardener' about 1860, but I have not that paper to refer to,—and this so far is a fact. But the question resolves itself into this: How are these acknowledged wood-buds transformed into fructifying buds, if the galls are produced at the expense of the acorns? In this way: the buds, say, were in a normal condition, and would have produced in their normal state leaves and shoots, as the case might be; but they are changed into what I will call abnormal buds by the insertion of a foreign body, namely, the egg of the Cynips, and with the egg probably some fluid which exerts some influence over the flow of sap around the deposited egg. Now the insertion of this egg, &c., would cause the particular buds selected by the insect to exert themselves, and call forth greater energy, if I may use this term, to overcome an intrusion, and a comparatively debilitated condition brought about by the intrusion of this egg, &c., into the bud; and the only natural result would be the production of the fruit natural to the tree. It is an effort of Nature put forth, and which is ever lying in wait, to produce her like through an effort of fructification; we see this in every species of plant. Take an apple- or a pear-tree and half sever a branch, or if anything has happened to its roots so as to cause a semi-stagnation to the free flow of the sap, what is the result? The tree makes an effort to propagate its like in producing an abnormal abundance of fruit. Again, we wound a tree by cutting a ring of bark off its trunk, or off a branch only, and it brings about the same result, namely, an abnormal condition (you must please to take the use of this word "abnormal" in the sense here implied, and not as it is generally used). We see now how it is that these normal oak-buds are converted into fructifying buds by the very effort of Nature to secure and hold her own against an opposing force; and, as producing fruit is her main point to be obtained, the insertion thus of this egg into the bud causes the otherwise wood-bud to be converted into a fruit-bearing bud, and by this means the galls are produced at the expense of the acorns. At the same time this is rather paradoxical, as there would not be any acorns if the insect had not

attacked the tree, and now, when it has attacked the tree there are no acorns produced. Still in a physiological point of view the former is right, as I conceive it to be. Physiologically we know that most of our fruits are metamorphosed wood-buds, or swollen calyces, &c.; but, as this is not a treatise on vegetable physiology, we need not go into that." —*Edward Parfitt; in 'Field' of December* 28, 1872.

[It is a source of peculiar pleasure to me to find an experienced entomologist like Mr. Parfitt giving even a qualified assent to a proposition that appears so opposed to what we have been accustomed to regard as the order which Nature ought to observe. It is to the patient, pains-taking disciple that Nature reveals all her secrets; and it is ever the pleasure of such disciples to sit attentive at her feet and listen to her teachings. Mr. Inchbald, in the discussion to which Mr. Parfitt alludes, has set forth observations and difficulties that have occurred to all of us. I have always seen that the bearing of acorns on these younger shoots is not the course that the oak takes by choice; nor is it the course which the learned would prescribe for her; and in this consists the great interest of the case. It is evident that by the introduction of a foreign element the oak can be compelled to adopt a course equally foreign to her custom. I have pointed out similar aberrant proceedings on the part of Pyrus japonica, which at the bidding of a minute insect, a mere touch on its accidentally-exposed roots, produces bright red blossoms in that strange situation; also on the part of the pear, forced into bearing by the insidious dealing of the larva of Zeuzera Æsculi with its solid wood; and again with the apple, obeying, with obvious reluctance, the command of Sesia myopæformis to produce apples in the most unlikely situations and at the most improper seasons. Such proceedings are now established as facts, but certainly facts not dreamed of in our philosophy.—*Edward Newman.*]

Setting Lepidoptera.—I am going to commence collecting again, and wish to know whether you would recommend me to set flat or round. I incline to flat setting. It is what nearly everyone would do if not shown round setting, and were unbiassed by custom and the force of imitation. It is more natural; it is simpler; the boards are more easily made; and the having the wings well raised above the cork

is, I know, a great advantage. I left a collection, made by me when at Winchester school about sixteen years ago, in London, for years not looked at: when I opened the drawers there was hardly an insect injured. They were set flat.—*J. S. Wesley; Wetherby, Tadcaster, February* 18, 1873.

[I have never seen a British collection set on the flat plan, so I feel scarcely competent to offer an opinion on the comparative merits of the two plans. As a general rule, I would recommend no one to commence a practice so contrary to English prejudices as flat setting. I do not urge any higher ground. Mr. Greene's 'Insect-Hunter's Companion' is *the* authority on such points.—*Edward Newman.*]

Extracts from the Proceedings of the Entomological Society, November 18, 1872, *to January* 6, 1873.

Crambus verellus.—Mr. Howard Vaughan exhibited Crambus verellus, a species recently detected as British, captured by Mr. C. A. Briggs at Folkestone, in July; and he stated that he had seen two other British examples in the collections of Mr. S. Stevens and Mr. H. R. Cox respectively. He also exhibited varieties of Pyrameis Cardui and Vanessa Atalanta.

Nephopteryx argyrella.—Mr. Meek exhibited Nephopteryx argyrella, a species of Phycidæ not in the British Lists, which he said had been captured by Mr. Button near Gravesend; also varieties of Arctia caja and other Lepidoptera.

Varieties of British Lepidoptera.—Mr. Bond exhibited varieties of the following British Lepidoptera:—(1) Lycæna Ægon, female, having the right-hand wings plain brown, whereas those on the left-hand were blue: he at first thought it was what is commonly called a hermaphrodite, but it really was a female combining the two varieties of that sex in one individual: this was from the New Forest, (2) A fine variety of Notodonta dodonea, captured at Tunbridge in 1872. (3) A *black* specimen of Acronycta megacephala, bred near London in 1872. (4) A curious variety of Miselia Oxyacanthæ, taken at Portsdown in 1872.

New British Ichneumon.—Mr. Bond also exhibited a new British species of Ichneumonidæ (Anomalon fasciatum), bred by Mr. Mitford from the cocoons of the supposed variety of Lasiocampa Trifolii obtained from larvæ found at Romney, Hants.

Do Queen Bees Sting?—Mr. Smith stated that Major Munn had asked him whether queen bees ever sting? Mr. Smith said that he had once had a queen bee on his hand for some time without the insect making the slightest attempt to sting; and Prof. Westwood said he had never been stung by one.

New British Coleoptera.—Mr. Champion exhibited two species of Coleoptera recently captured by him, and new to Britain, *viz.* Thyamis distinguenda, *Rye*, from Box Hill, and Lithocaris picea, *Kraatz*, from Beauly.

Figures of Stylopidæ.—Prof. Westwood exhibited drawings of Stylopidæ, intended to illustrate Mr. S. S. Saunders' recently-published monograph of the group.

Drawings of Japanese Sphingidæ.—Mr. M'Lachlan exhibited (on behalf of Mr. George Lewis) a magnificent collection of coloured drawings of the metamorphoses of twenty-one species of Japanese Sphingidæ. These drawings had been executed, under the direction of Mr. Lewis, by a native artist, and were remarkable for the full details shown of the various states; in some cases three different varieties of the same larva were figured. Mr. Lewis requested it to be announced that he was willing to present the drawings to any member of the Society who would undertake to publish them.

Reticulated Lepidopterous Cocoon.—Prof. Westwood exhibited the beautiful net-work cocoon of a species of small moth from New Granada. This was attached to, or suspended from, a leaf on which was also a species of Hesperiidæ strongly affected by fungoid growths.

New Buprestidæ.—Mr. E. Saunders exhibited two species of Buprestidæ, from the Pelew and Caroline Islands respectively, which appeared to pertain to a new genus, notwithstanding that they bore much external resemblance to two species of Chrysodema from the East India Islands.

New British Coleoptera.—Mr. Champion exhibited Nanophyes gracilis and Apion sanguineum, two species of Coleoptera rare, or recently detected, in Britain.

Phylloxera vastatrix.—Mr. Müller called attention to a recently-issued Government Report, intituled "Papers respecting the Phylloxera vastatrix, or new vine-scourge," detailing an account of the ravages of this insect in various

continental districts, and the means that had, with more or less success, been adopted for preventing its spread. Prof. Westwood stated that the occurrence of the insect in England had been noticed by him in 1862, in a paper read before the Ashmolean Society.

Water Beetles of Japan.—Dr. Sharp communicated a list of the water-beetles of Japan, chiefly drawn up from materials collected by Mr. George Lewis, with remarks on the distribution of the said insects.

Colydiidæ and Cossonidæ from Japan.—Mr. Wollaston communicated two papers. First, on a new genus (Pseudotarphius) of Colydiidæ from Japan; and secondly, on the Cossonidæ of the same islands. In the latter paper the author commented upon the apparent absence of European types in the districts of Japan visited by Mr. Lewis, and stated that their place seemed to be taken by representative forms. Mr. Pascoe thought the fauna of Japan might be indicated as "satellite" (like that of Madagascar, &c.), having a quantity of peculiar species mixed with others; and a great deal in common with the coasts of China and Siberia. Mr. H. W. Bates asked that judgment upon the affinities of the Japanese fauna be suspended pending further information. He said that although there were many Western European species found also in Japan, the collective faunas of the two regions were totally distinct.

Annual Meeting, January 27, 1873.—The council presented the following report, in accordance with the bye-laws. During the past year there have been two deaths among our members, *viz.*, Professor Pictet, one of the honorary members, and Mr. Charles Horne, an ordinary member.. But the number of members and subscribers elected is in excess of the losses caused by death and resignation. The vacancy in the list of honorary members, occasioned by the death of Prof. Pictet has been filled up by the election of his distinguished relative Dr. Henri de Saussure. The meetings of the Society have been exceedingly well attended. According to the librarian's report, it appears that the library has been extensively made use of by the members and subscribers, thirty of whom, during the year, borrowed books amounting in the aggregate to 195 volumes. One composition in lieu of annual subscriptions has been received and invested. The

income and expenditure for the year may be roughly estimated as follows:—Receipts, £317; Payments, £303. The volume of 'Transactions,' published in 1872, is thinner than usual, owing to several suitable papers not having been read in time; but this is counterbalanced by the number of expensive coloured plates. The receipts from the sale of publications again show a considerable diminution, especially as regards the sale of back stock. A further and very bulky part of the proposed general catalogue of the insects of the British Isles (enumerating the Ichneumonidæ, Braconidæ, &c., compiled by the Rev. T. A. Marshall) has recently appeared. The following gentlemen were elected members of council for 1873:—Messrs. H. W. Bates, Butler, Grut, M'Lachlan, Müller, S. S. Saunders, F. Smith, Stainton, Stevens, Verrall, C. O. Waterhouse, Weir, and Westwood. The following officers for 1873 were subsequently elected:—President, Prof. Westwood; Treasurer, Mr. R. M'Lachlan; Secretaries, Messrs. F. Grut and G. H. Verrall; Librarian, Mr. E. W. Janson. The president read a voluminous and exhaustive address on the present state of Entomology, for which thanks were returned, and which was ordered to be printed.

Newcastle-on-Tyne Entomological Society.—The annual meeting of this Society was held on Tuesday, 11th February, in the curator's room of the museum. Mr. C. Eales read a paper on his captures during the past season, amongst which was a Tortricina, which has been found to be Cacochroa Grandœvana of Staudinger and Wocke's list; Mr. Eales stated that the particulars would be published in the magazines through the kindness of Mr. C. G. Barrett.—*J. Hamilton, Secretary;* 13, *Union Street, Newcastle.*

South London Entomological Society, 104, *Westminster Bridge Road.*—At the meeting of this Society, held on Thursday, February 6th, a highly interesting and instructive paper was read by Dr. Lucas, upon "Botany and Entomology." He exhibited a large number of dried plants, and furnished notes of the various Lepidopterous larvæ found upon them; and, in order to comply with the wishes of the members present, he kindly promised to continue the paper on Thursday, March 6th.

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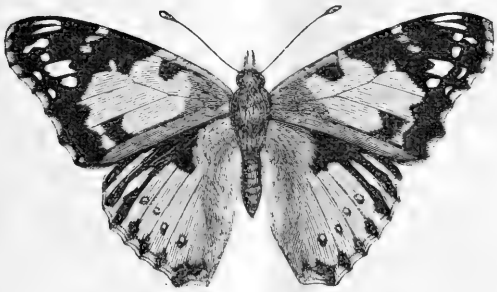
No. 115.] APRIL, MDCCCLXXIII. [Price 6d.

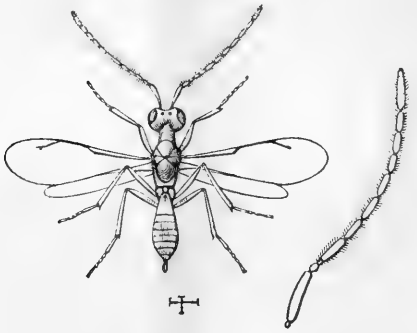


PYRAMEIS CARDUI (VARIETY).

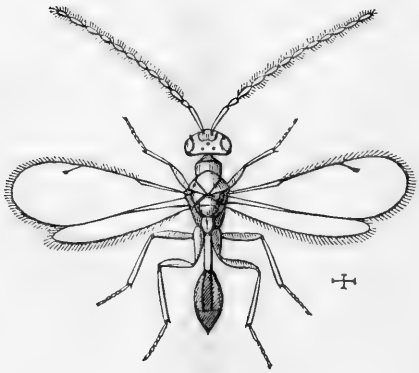
Variety of Pyrameis Cardui.—This variation, or certain modifications thereof, have been represented in Herrich-Schaffer's 'Schmetterlinge von Europe,' pp. 157, 158, and in my 'British Butterflies,' p. 64, the lower figure: the present is, however, by far the most beautiful and striking example I have seen; the three usual colours are present, and occupy something like their normal position, but their limits are widely different; the apical white markings have lost their normal form; the usual red colour approaching brick-red, which commonly occupies so large a central portion of each wing, is present, but changed to the most lovely rose-colour; the figure very plainly exhibits the limits of this most beautiful tint. The specimen was taken at Dover in September, 1872, and is in the cabinet of Mr. Stevens, who has kindly lent it for figuring in the 'Entomologist.'—*Edward Newman.*

Economy of Chalcidiæ. By Francis Walker, Esq.

(Continued from p. 324.)



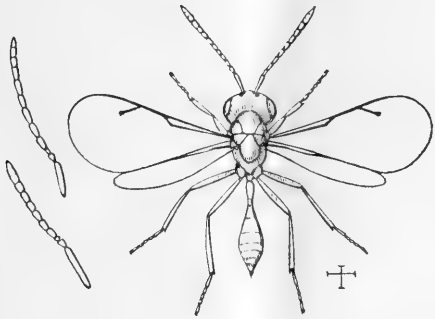
MEROSTENUS PHEDYMA.



DIPARA PETIOLATA.

The economy of Merostenus and of Dipara is unknown; the close affinity of the former to Trigonoderus is very apparent, and the isolation of the latter from all other Chalcidiæ by its peculiar characters has been already noticed. Dipara

and Coryna are included in the Sphegigasteridæ, and C. clavata is supposed to be identical with the Chrysolampus suspensus of Nees, which that author states to live during its metamorphose in the larva of Aphidius Rosarum, from which he saw it in the act of emerging. But he does not mention what progress the Aphidius had made in the consumption of the Aphis before it was checked by the Coryna, and became



CORYNA CLAVATA.

subject to the like process. The history of the parasitism of Chalcidiæ must be unavoidably accumulated by fragments, such as the above notice, and these in due time will be set in order, and a Catalogue, preceded by comparative examination of every kind, will be a ground-work requisite for a knowledge of the natural history of the tribe by means of successive investigations. Much has been lately published on the herbivorous habits of some species; and the tribe, as regards their food, may be divided into three classes, thus:— controllers of vegetation, controllers of vegetarian insects, controllers of insectivorous insects.

Very numerous species of British Chalcidiæ have not yet appeared in print, and a revision is required of many which have been published, and thereby the Catalogues of them are unavoidably incomplete. These are three in number, and I will mention them shortly in succession, as they will not be noticed after the issue of a new Catalogue. The first is in 'A Guide to an Arrangement of British Insects,' by John

Curtis, 1829. It includes several generic names which have not been mentioned since, as in most instances, before an opportunity occurred of making their characters known, they were published elsewhere under other names, and in some instances they were afterwards considered as useless subdivisions. I will recall them from oblivion for a little while, and perhaps they will not be again disturbed in the graves to which they will shortly return. The seventeen following were formed by me:—Maretus, Leptomeres, Entranus, Microma, Menalus, Eucercus, Sterinus, Redenus, Tromenus, Brenerus, Ceranisus, Tranus, Tranosoma, Tranocera, Cemolus, Euderus, Erythrus. Thysamus in this list is a misprint for Thysanus; and Menalus, of which the type is Encyrtus Pini, is more entitled than some of the rest to be considered as a genus, but the subdivisions of Encyrtus are already too many. Stenoderus constitutes the first division of Pteromalus in my descriptions of the species of that genus. Entelus is a misprint for Eutelus, and, like Seranomus, Isomus, and Eusela, is a section of Pteromalus.

A. H. Haliday is the author of the following names:—Cyllomus, Omphale, Diozus, Pterocelis, Platypelmus (attributed by mistake to me), and Phagonia. Pterocelis and Platypelmus are divisions of Pteromalus, and may be reunited to that genus. The species arranged in this Catalogue under Halticoptera, *Spinola*, were afterwards described as species of Lamprotatus or of Miscogaster. Halticoptera, as it was originally constituted, includes other genera, such as Pteromalus, but a definite outline was given to it by A. H. Haliday. Colax, *Curtis* (afterwards Gnatho, *Curtis*), should be considered as a synonym of Pteromalus.

The second Catalogue of British Chalcidiæ appeared in 1853, and is one of the publications of the British Museum. It is transcribed from a general list of Chalcidiæ in the British Museum, that was prepared in 1846—1848. A few words in it are mis-spelt, but there is no occasion here to notice these mistakes.

The third Catalogue of British Chalcidiæ is included in a Catalogue of British Insects, by the Rev. F. O. Morris, 1865. It is nearly all a reprint of the second Catalogue, and there are the following typographical errors in it:—Smiera, instead of Smicra; Halticilla, instead of Haltichella; cornutum,

instead of cornuta; Laothois, instead of Laothoe; Monodontomerus, *Walk.*, instead of Monodontomerus, *Westw.*; Enderus, instead of Euderus. Some Pteromali, which were separated from Pteromalus without sufficient consideration, are reunited to that genus in this list.

FRANCIS WALKER.

"*The Origin and Distribution of the Insects of the British Isles.*" By EDWIN BIRCHALL, Esq.

Read to the Leeds Naturalists' Field-Club and Scientific Association, on the 25th of February, 1873.

MR. BIRCHALL began by stating that his object was to offer some suggestions as to *whence* the insects of the British Islands have been derived.

Fossil insects were first adverted to, and the earliest-known forms from the carboniferous rocks described. In England, insects have been most abundantly found in rocks of the wealden and oolitic periods; of these a large proportion are Coleoptera, mostly of modern genera, and some cannot be distinguished from species still existing in England. "The poor beetle that we tread upon" surely deserves a better fate, when we consider that he has walked the earth unchanged since the days of the iguanodon and pterodactyle. Compared with his, how short the pedigree of the proudest noble, or even of the human race; to the dor-beetle (Geotrupes stercorarius) probably belongs the title of "the oldest inhabitant" of the earth.

The Lepidoptera of the secondary period in England, so far as is known, were of a tropical character, and it seems useless to look for traces of any of our present forms until after the glacial epoch; the conditions of climate during that period of desolation must have been such as to destroy or compel the migration southward of all existing species.

In the main, Mr. Birchall agreed with the propositions laid down by the late Professor Edward Forbes, in his essay on "The Geological Relations of the Existing Fauna and Flora of the British Isles," published in 1846, and considered that the great bulk of our species have been derived from Central Europe, as there is not a species which is universally

distributed in these islands which is not equally so in Germany, but that traces still exist of several more ancient Faunas and Floras which are now confined to small and separate areas.

Forbes argued for the existence of four such sub-Floras :—

1. A Mediterranean Flora in the west of Ireland, derived from Spain, over land which we must suppose formerly bridged the gulf of seven hundred miles, which now separates Ireland from the Iberian peninsula.

2. The Flora of the mountain-tops of Scotland, Cumberland, Wales, and the North-west of Ireland, derived from Scandinavia and Iceland, and supposed to have reached our shores either by means of icebergs or over land of which the Orkney, Shetland and Færoe Islands are the last remains above water.

3. A Kentish, or chalk Flora.

4. A Norman Flora, confined to South-western England and South-eastern Ireland.

Mr. Birchall suggested that the following species [of Lepidoptera], several of which occur in the utmost profusion in the district of Western Ireland, where the peculiar Spanish Flora is found, and are scarce or non-existent outside that very limited area, are remnants of the old Peninsular or Mediterranean Fauna :—Zygæna nubigena, Erastria argentula, E. fuscula, Lithosia caniola, Dianthœcia Nisus, D. Cæsia, and Notodonta bicolor.

He exhibited a number of Lepidoptera from the mountain regions of England, Scotland, and Ireland, and was of opinion that such species as Crymodes exulis, Zygæna exulans, Pachnobia alpina, Psodos trepidaria, Anarta cordigera, A. melanopa, and many others, had certainly reached our shores from Scandinavia and Iceland.

As regards Forbes's third and fourth subdivisions, he did not think any evidence was to be obtained by a consideration of the Lepidoptera inhabiting the district in question. There was, no doubt, a general similarity in the species found on the opposite sides of the English Channel, and there are a few conspicuous insects, probably of French origin, which do not wander far from our southern coast, but there seems no reason to assign a remote date for the naturalization of such insects as Sphinx Nerii, Deilephila Euphorbiæ, Plusia

orichalcea, Phlogophora empyrea, Pieris Daplidice, and Argynnis Lathonia, which possess powers of flight sufficient at any time to enable them to cross the "silver streak."

Mr. Birchall also exhibited a large number of British Lepidoptera, contrasted with continental examples of the same species, and pointed out that the variation from the continental (or what may be considered the original) type was so great, that in a large proportion of our species it is easy to say, at a glance, whether a specimen is British or foreign; thus indicating that the lapse of time, since the migration or insulation took place, has been sufficiently long to allow of great changes of form and colour, in many cases amounting to what we can scarcely refuse to call the development of a new species.

Specimens from the Isle of Man appeared to indicate that insular conditions have there operated with exceptional force.

Corsican and Sardinian Lepidoptera were also compared with continental examples of the same insect, and were found to vary from the original types still more than British insects do, thus probably indicating a longer period of isolation.

Specimens were also shown of Nonagria concolor, Noctua subrosea, and Dianthœcia Barrettii, the only three British Macro-Lepidoptera not known to have occurred on the continent of Europe.

W. D. Roebuck (*Sec. to the Club*).

A List of the Nocturnal Macro-Lepidoptera inhabiting Guernsey and Sark, with Notes of their Occurrence. By W. A. Luff, Esq.

(See p. 324 for the Butterflies: to these must be added Argynnis Paphia, of which Mrs. Boley took specimens in Sark several years ago.)

Sphinges.

Smerinthus ocellatus.—I have seen several specimens which were taken in Guernsey.

S. Populi.—The larvæ are common in the autumn on poplar trees in Guernsey, and I have found them feeding on laurustinus in the hedges.

Acherontia Atropos.—Common in Guernsey and Sark. The larvæ were abundant in the potato-fields in 1868, but I have not often met with them since.

Sphinx Convolvuli.—In the autumn of 1868 this species was very abundant in Guernsey, and a specimen was sent me from Alderney. I have only taken two specimens since; one in 1870, and the other in 1871.

S. Ligustri.—Not very common. I have taken a few larvæ in Guernsey, feeding on privet, and one in Sark on laurel.

Chœrocampa Celerio.—Mrs. Boley reared two specimens, from larvæ found feeding on the vine in Guernsey.

Macroglossa Stellatarum.—Abundant in Guernsey and Sark.

Sesia tipuliformis.—Common in gardens, wherever its food-plant is cultivated, in Guernsey and Sark.

NOCTURNI.

Cossus ligniperda.—But too common in Guernsey, where the larvæ have destroyed many elm trees.

Hepialus lupulinus.—Abundant in Guernsey.

H. sylvanus.—Not uncommon in Guernsey.

Procris Statices.—Mrs. Boley found this species very abundantly several years ago on the Guernsey cliffs, but occupying a very limited area. I have not taken it myself or heard of any captures since. It must be very local.

Zygæna Lonicerœ.—Abundant on the Guernsey cliffs, and also in Sark.

Z. Trifolii.—I have taken several specimens in Sark.

Z. Filipendulæ.—Not uncommon in Sark.

Calligenia miniata.—I have beaten it from hedges, and taken it commonly at sugar, in Guernsey, towards the end of July.

Lithosia complanula.—Abundant in Guernsey and Sark. They appear a little before midsummer, and continue till September.

L. griseola.—Took one specimen in Guernsey, June 26th, 1871.

L. rubricollis.—I took two in Guernsey on June 26th, 1870.

Euchelia Jacobææ.—Extremely abundant in Guernsey and Sark. The larvæ swarm everywhere on the ragwort in August.

Callimorpha Hera.—Plentiful in both Guernsey and Sark. I have always found them more abundant near the coast, where they are fond of settling on the sides of the cliffs, and concealing themselves under projecting pieces of rock. They fly in the morning in the sunshine, and also after dark in the evening. They have several times flown to the light of my lantern. I have only taken them twice at sugar. The yellow variety (Lutescens) is much commoner in Sark than in Guernsey. I have never observed Hera on the wing before the 20th of July. They are in full force during the first week or two in August, and continue to the end of the month. The eggs are hatched in about twelve days after they are laid. I have only twice found the full-grown larvæ. I once took several off dead nettle (Lamium album), and on another occasion I found one feeding on whitethorn at night. I have reared them from the egg, feeding them on lettuce, which they preferred to their proper food-plants.

[This beautiful species is figured and described at p. 33 of this volume of the 'Entomologist.'—*E. Newman.*]

Euthemonia russula.—Common amongst the furze on the Guernsey cliffs in June. I have only taken males.

Chelonia caja.—I have taken it in Guernsey, though not commonly.

C. villica.—Common in Guernsey and Sark.

Arctia fuliginosa.—Not rare in Guernsey.

A. mendica.—The larvæ common on dock in Guernsey.

A. lubricepeda.—Abundant in Guernsey and Sark.

A. Menthastri.—In Guernsey. I have never found it abundantly.

Liparis auriflua.—Common in Guernsey and Sark. I once found several larvæ feeding on holly.

Orgyia pudibunda.—The larvæ very common in Guernsey on lime trees in the autumn.

O. fascelina.—I have found the larvæ feeding on the furze growing on the Guernsey cliffs.

Bombyx Quercus.—Common in Guernsey and Sark during July and August.

B. Trifolii.—The larvæ are found commonly in Guernsey and Sark all around the coast, feeding on various grasses and on clover. They will eat anything in confinement, even whitethorn, blackthorn, and oak. I received more than a

hundred full-grown larvæ from Alderney in August, 1871, but most of them were ichneumoned.

Odonestis potatoria.—I have only seen one Guernsey specimen, which was captured by Mrs. Boley.

Lasiocampa quercifolia.—Not uncommon in Guernsey. The larvæ feed on blackthorn and whitethorn.

Saturnia Carpini.—I have found them much more commonly in Sark than in Guernsey. All the larvæ I have had were found feeding on bramble.

Geometræ.

Uropteryx sambucaria.—Very common in Guernsey, especially on the south side of the island.

Epione apiciaria.—I took two specimens in Guernsey on July 6th, 1872.

Rumia cratægata.—Abundant in Guernsey and Sark. In 1872 I took specimens as early as April 13th. They are constantly on the wing throughout the summer and autumn.

Venilia maculata.—I have only seen a single Guernsey specimen, which was captured by Mrs. Boley.

Angerona prunaria.—Not uncommon in Guernsey. Earliest capture, 6th of June.

Selenia illunaria.—Both the spring and autumn broods to be met with in Guernsey.

Crocallis elinguaria.—Common in Guernsey and Sark.

Amphydasis betularia.—I have only seen two Guernsey specimens.

Hemerophila abruptaria.—Two specimens taken by Mrs. Boley in Guernsey; they flew to light.

Boarmia repandata.—Rather common in Guernsey.

B. rhomboidaria.—Not so common as the preceding species, but still not rare in Guernsey.

Tephrosia crepuscularia.—I have taken three specimens in Guernsey.

Gnophos obscurata.—One specimen taken in Sark, August 8th, 1872.

Geometra papilionaria.—One specimen taken in Guernsey.

Iodis lactearia.—I have taken several specimens in Guernsey.

Hemithea thymiaria.—Exceedingly abundant in Guernsey and Sark.

Acidalia scutulata.—Not uncommon in Guernsey.

A. bisetata.—I have taken a few in Guernsey, near the coast.

A. rusticata.—Very common in Guernsey and Sark during July and August. They appear particularly partial to the flowers of the ragwort near the coast.

A. incanaria.—I took two specimens in Sark on the 10th of July, 1872.

A. promutata.—Not uncommon in Guernsey. It is fond of settling on rocks covered with a gray lichen, where they are with difficulty detected.

A. subsericeata.—I took one specimen in Sark, in June, 1870.

A. imitaria.—Very common in Guernsey during July and August.

A. aversata.—Both varieties are common in Guernsey.

Timandra amataria.—One specimen taken in Guernsey by Mrs. Boley.

Cabera pusaria.—Common in Guernsey.

Strenia clathrata.—One specimen taken by Mrs. Boley, at light, in Guernsey.

Selidosema plumaria.—Common on the southern cliff-coast of Guernsey. I have only taken males.

Aspilates citraria.—Common in Guernsey and Sark, especially near the coast. I have taken both broods. I have found the larvæ feeding on spurge.

Abraxas grossulariata.—Swarming everywhere in Guernsey and Sark in July.

Lomaspilis marginata.—Common in Guernsey in July and August. Very variable in its markings.

Hybernia leucophearia.—Not uncommon in Guernsey.

Anisopteryx Æscularia.—Common in Guernsey.

Larentia olivata.—One specimen taken in Guernsey on July 9th, 1870.

L. pectinitaria.—Common in Guernsey in June.

Emmelesia decolorata.—Abundant in Guernsey and Sark.

Eupithecia linariata.—Two specimens taken in Sark.

E. centaureata.—Not uncommon in Guernsey and Sark.

E. subnotata.—I took several specimens in Sark on July 10th, 1872.

E. vulgata.—Common in Guernsey and Sark.

Lobophora viretata.—One specimen taken in Guernsey, by my friend Mr. Dawson, during June, 1872.

Ypsipetes elutata.—Mrs. Boley has taken one in Guernsey.

Melanthia rubiginata.—Not uncommon in Guernsey.

M. ocellata.—Common in Guernsey and Sark. There must be two broods in a year, as I have taken fresh specimens in both June and August.

Melanippe hastata.—One specimen taken by Mrs. Boley in Guernsey.

M. galiata.—Common in Guernsey in June and August.

M. montanata.—Mrs. Boley has taken it in Guernsey.

M. fluctuata.—Found commonly in gardens in Guernsey.

Anticlea berberata.—Rather common in Guernsey, especially near the coast. It is certainly double-brooded here.

Coremia ferrugata.—I have taken it in Guernsey in August.

C. unidentata.—Mrs. Boley has captured one specimen in Guernsey.

Camptogramma bilineata.—This is the commonest moth in Guernsey and Sark, and many have a very dark bar across the fore wings.

Scotosia dubitata.—I have seen Guernsey specimens, taken by Mrs. Boley.

S. rhamnata.—Mrs. Boley has taken several specimens in Guernsey.

Cidaria russata.—Common in Guernsey in May and August. Very variable.

C. immanata.—Not so common as the preceding species in Guernsey.

C. ribesaria.—Very common in gardens during July in Guernsey.

C. testata.—Several specimens taken in Guernsey or Sark by Mrs. Boley.

C. fulvata. Taken in Guernsey by Mrs. Boley.

C. pyraliata.—I have taken it in Guernsey not uncommonly, always near the coast, in June and July.

Eubolia mensuraria.—I have taken it but sparingly in Guernsey. In Sark, on August 10th, 1872, they were flying up by scores, as I disturbed them, out of the grass on the top of the cliff, at dusk.

Anaitis plagiata.—I took one in Guernsey during August, 1871.

A. præformata.—I took a specimen at sugar in Guernsey. I forget the exact date, but I think it was early in the season. Mrs. Boley has also taken one; and I noticed two amongst some insects captured by Mr. Dawson.

[It may perhaps save some trouble if I state that the species here indicated is the Anaitis præformata (*Vill.*), Guenée, 'Uranides et Phalænites,' p. 499, not the Præformata of Stephens, iii. p. 140, or the Performata of Wood, fig. 597, which name must be annulled, after what Guenée has said on the subject, *l. c.*—*E. Newman.*]

Tanagra chærophyllata.—Mrs. Boley has taken one or two specimens in Guernsey.

W. A. Luff.

Entomologoical Notes from South Australia.

By H. Ramsay Cox, Esq.

(Continued from p. 209.)

I have succeeded in getting some more of my South Australian Lepidoptera named, of which the following is a list.

Petiolati.

1. *Belenois Teutonia.*—One specimen captured by Mrs. Cox, at Nairne.
2. *Xenica Achanta.*—One, near Adelaide.
3. *Pyrameis Itea.*—A few, at the base of Mount Barker.
4. *Synemon Sophia.*—Common at Mount Barker and near Kanmantoo, always at a considerable elevation. This species flies for a short time at mid-day only, and seldom when the thermometer is lower than 145° Fahr., which, added to their wild flight and to the rocky ground of the mountain, makes their capture a matter of great fatigue and labour.

Sessiliventres.

5. *Pollanisus viridipulverulentus.*—Generally common in the densest scrub.
6. *P. apicalis.*—Near Hahndorf. Rare.
7. *Chœrocampa Scrofa.*—Two, in vineries, at Nairne.
8. *Opsirhina fervens.*—One, brought to me at Nairne.

9. *Pielus* —— ?—One specimen, of a species very nearly allied to Atripalpis, at light. "Hay Valley," Nairne.

10. *Dasypolia solenophora.*—Common, at sugar and in houses. Adelaide and Nairne.

11. *Apina Callistro.*—Abundant, at Nairne; flying madly during the hottest sunshine.

12. *A. Feisthamelii.*—Common, at Woodside, Echunga, and Hahndorf. The females are very difficult to capture, owing to their wild flight.

13. *Acyphas tristis.*—Not common. Hahndorf. Among the thickest scrub, flying like Testudo.

14. *Chlenias arietaria.*—Abundant. Nairne.

15. *Nyctemera annulata.*—Common everywhere, especially in outhouses, stables, &c.

16. *Leucania extranea.*—This was the commonest insect at sugar, being most abundant near Nairne; also flying in long grass in the daytime, near Strathalbyn.

17. *Heliothis armiger.*—A few flying in kangaroo grass, at Woodside, Crafers, &c.

18. *Cosmodes elegans.*—Two, at Nairne.

19. *Agrotis spina.*—Two, at sugar, at Nairne.

20. *Pantydia recondita.*—Two.

21. *Hypochroma occultaria.*—Scarce. Nairne.

22. *Chlorochroma carenaria.*—Scarce. Nairne.

22. *Camptogramma strangulata.*—Abundant everywhere.

23. *Acidalia? rubraria.*—Abundant, at Hahndorf, but very local.

24. *Acidalia? repletaria.*—A few, at Hahndorf.

25. *Cidaria metaxanthata?*—The only difference between my specimens and those at the British Museum under this name is, that the central band in the fore wing is slightly broader in mine. Not common. Charlestown, Nairne, &c.

26. *Melanodes atriplena.*—One, by Mrs. Cox, near "Hay Valley."

27. *Mecyna reversalis.*—Common. Nairne, Mount Torrens, &c.

Besides the above I have taken about twenty species of moths, neither of which are in the British Museum lists. With the exception of one very large Geometra they are mostly dingy and insignificant species.

At the Cape of Good Hope I captured Lampides Hintza

and Leptoneura Cytus *var.* Tisiphone, the latter very abundantly round Table Mountain.

Mrs. Cox also captured a species of Lampides resembling Palemon, but with the anal spot in the hind wing larger and farther removed from the body.

I have also eight other species of diurnal Lepidoptera (chiefly Lycæna), of which, at present, I can find no types in any museum.

H. Ramsay Cox.

West Dulwich, London, S.E.

On some Amurland Insects (Part IV.).—The genus Sirex is associated with the pine forests which traverse the northern latitudes of Europe, Asia, and America, and with the cedars on Mount Lebanon. The species are few, and part of them have a wide range, and blend into one of the Faunas of the regions above mentioned. S. gigas inhabits Europe and North America, and its occurrence in Amurland is as yet only a probability. S. albicornis has been found in Nova Scotia, Canada, Georgia, and British Columbia; and in the examples from these regions the black hue of the antennæ is limited to three or four joints; in a specimen from Amurland it extends over some more joints. S. Juvencus dwells in Nova Scotia and in Amurland, and inhabits North Europe generally. S. Spectrum inhabits Nova Scotia and the district of Hudson's Bay, as well as Amurland and North Europe, and has been found in Algeria. S. flavicornis inhabits Amurland and various parts of North America. It thus appears that in this genus the Faunas of Europe, Amurland, and America are generally alike, or that the two latter have more resemblance to each other than the second has to the first.—*Francis Walker.*

Entomological Notes, Captures, &c.

Vanessa Antiopa in the United States of North America.—Mr. Andrews will, I trust, excuse me if I say that I cannot consider his note in the 'Entomologist' for March (Entom. vi. 329) an entirely satisfactory or conclusive reply to my enquiry in the January number:—"Does Antiopa ever

emerge from the pupa with a white border?" (Entom. vi. 285). Perhaps he will be kind enough to say whether he has actually observed Antiopa to pass the winter in the pupa state? I am not aware that any European Vanessa does so, but presume there is trustworthy evidence that such is the habit of Antiopa in the United States, as Mr. Andrews speaks of it as an undoubted fact. From the appearance of the butterfly in early spring, "before the snow is off the ground," we should, in England, infer that the insect had hybernated in the imago, not in the pupa state.—*Edwin Birchall; March* 12, 1873.

A. Æscularia on the 14th of February.—I took a specimen of this moth off a lamp-post here at this date; and my brother, at Winchester, bred one from a dug pupa about the same time. The time for the appearance of this species is given in the books as considerably later than this.—*Gilbert H. Raynor; St. John's College, Cambridge, March* 3, 1873.

Pieris Rapæ in February.—In connection with early appearance, I may mention the receipt of several specimens of Pieris Rapæ during February.—*E. Newman.*

Description of the Larva of Plutella annulatella.—Length about half an inch; attenuate towards both extremities; head and second segment irrorated with fine dots; general colour light green; dorsal region darker; spiracular region lighter. An active larva, which feeds in June when young upon the seeds and pods of the scurvy grass (Cochlearia), which grows on the rocky coast at Howth, Ireland; at Penmaenbach, North Wales; and in the Isle of Man. When older it eats the fleshy leaves, principally from the under side, making round holes and blotches in or on the leaf. When full fed it spins an open net-like web, and changes to a beautiful light green pupa therein, appearing in the perfect state in about fourteen days.—*C. S. Gregson.*

Description of the Larva of Sciaphila penziana.—Three-quarters of an inch long, rather stout; colour dark, dull brown; head horny, dark; thorax black; single black subdorsal spots on the front segment; then two spots on remaining segments above and two below, one placed above the other, out of these spots spring single hairs; feet black, horny; anal segment small. Feeds upon sea-pink and sheep's fescue-grass (Festuca ovina), and spins a fine, white

silky tubular web, about two inches long, in which it lives and becomes a dark, robust pupa amongst its food-plant, or often between its food-plant and a loose stone. Feeds freely on the coast at Howth, at the Isle of Man, and at Witherslack, Westmoreland, remaining in pupa about two weeks, and appearing end of June and throughout July.—*C. S. Gregson.*

Description of the Larva of Alucita polydactyla.—Length three-eighths to half an inch when stretched; when at rest rather stout, fleshy, attenuated at both extremities; colour bright yellowish, pink or salmon-colour, slightly pellucid, and without any markings or hair; head yellow, narrow; snout rather darker; feet small and colourless. Sometimes the larva is light, pellucid yellow. Feeds on the flowers of the honeysuckle in July, and spins a slight web to make up in, and remains about twelve days in pupa. Misled by our books, saying this larva fed in buds of honeysuckle, I had much trouble before I discovered its economy.—*Id.*

Description of the Larva of Eubolia mensuraria.—In the middle of June last Mr. Greasley, of Wallasey, sent me a supply of full-grown larvæ of this species, from which I took down notes, as follows:—Length about an inch, and rather stout in proportion. Head the same width as the second, but narrower than the third segment; it has the lobes rounded, but the face is square and flat; there is a slight notch on the crown. The body has the sides swollen into a puckered spiracular ridge, which gives it a rather flattened appearance, both from above and below; the middle segments are the widest, and it tapers considerably towards the head anteriorly, and from the tenth segment posteriorly. The segments overlap, making the divisions distinct. Skin tough and puckered. The ground is pinkish gray, tinged with plate slaty blue; head pinkish gray, freckled with black. Medio-dorsal line slaty blue; subdorsal lines pale ochreous-yellow, narrowly edged above and below with pale brown; the swollen ridge along the spiracles pinkish; spiracles and dorsal dots black. Ground colour of the ventral surface pale slaty gray; there is a pale ochreous, medio-ventral stripe, throughout which extends a narrow pinkish line; and between this medio-ventral stripe and the spiracular region is another pale ochreous stripe, edged on each side with black, the outer line being broader and more distinct than the inner; legs and claspers

pinkish gray. Feeds on Vicia, and probably a number of low plants and grasses. The imagos appeared from July 9th to 31st.—*Geo. T. Porritt; Huddersfield, March* 3, 1873.

Bombyx Cynthia.—Having reared a good number of cocoons of this species last summer, I placed them along with some cocoons of B. Cecropia and E. versicolor in a cold cellar to pass the winter. Having occasion to visit the cage in which they were, on the 24th of December last, I was surprised to find one pretty perfect living imago of Cynthia; and a few days after two more made their appearance. I examined the remaining cocoons in the cage, but found no signs of hatching, and till now no more imagos have appeared. —*Samuel Doncaster; Broom Hall Park, Sheffield, February* 19, 1873.

Agrotis cinerea.—In June, 1870, I took in this neighbourhood a fine specimen of Agrotis cinerea, at rest, on common scabious, in the day-time.—*C. L. Raynor; The College, Winchester, February* 20, 1873.

To rear Dasypolia Templi.—I had a live specimen of D. Templi (female) brought to me the other day. Can you give me any recent additions to the breeding of this species beyond your description in 'British Moths?' If she proves impregnated, is Heracleum sphondylium the only food-plant, and how would you advise me to proceed?—*John Harrison.*

[All the information I possess on this subject is published at p. 277 of 'British Moths.'—*E. Newman.*]

Chœrocampa Celerio at Brighton.—A friend of mine obtained a live specimen of C. Celerio, on the 7th of last October, from a man who had found it in his house at the east end of this town. The moth was in excellent condition, but unfortunately the tip of the right fore wing was broken in its capture.—*Frederick Clere; Brighton, March* 3, 1873.

Yellow Variety of Zygæna Filipendulæ.—Your correspondent, Mr. Corbin, in speaking of a variety of Jacobææ he obtained last summer in the New Forest, says:—"I am aware that several of our moths, as Trifolii, Loniceræ, Caja, Dominula, &c., occasionally have their red or crimson markings replaced by yellow." To the list of moths so varying allow me to add yet another, Z. Filipendulæ, a variety of which, in which the crimson markings on all the wings were replaced by a dullish yellow, occurred in some

abundance here (Winchester) about five years ago (1868), and of which individuals have occasionally been taken since, especially during the past season, when they occurred in some plenty. They were not merely faded specimens, as some might be induced to say, because I myself have bred at least one such individual, which, when just out of the chrysalis, was of the yellow colour: it is also worth notice that specimens occurred partly red and partly yellow.—*W. A. Forbes; Culverlea, Winchester, March* 1, 1873.

Variety of Iodis vernaria, &c.—Another insect, which I have taken here sometimes, has also puzzled me not a little. It appears to be a variety of Iodis vernaria, which is abundant here, but the usual green of the fore wings is replaced by a pale yellowish green, in which the usual markings are nearly obliterated, approaching in one specimen I have to a pale yellow stone-colour; the hind wings are of the usual beautiful green. This, however, after all, may possibly be only a faded specimen, the hind wings, which of course are protected by the upper ones when at rest, having escaped fading, whilst the fore wings have not. Amongst insects, which I have taken here during the past season, may be mentioned Anticlea sinuata, Epione advenaria, and Diasemia literalis, which have all occurred once, either in or near Crabbe Wood. Erastria fuscula and Aventia flexula have also been taken: the former in the Hursley Woods; the latter, I believe, in Crabbe Wood.—*Id.*

Dasycampa rubiginea.—I had the good fortune to take three specimens of Rubiginea at sugar here last October, two one night at the same tree. E. nigra and X. rhizolitha were fairly common about the same time. Satellitia, Vaccinii, and Spadicea, were positively a nuisance. Last season was as bad as it could be, if I except the heath insects, which were common enough, Cribrum being abundant in its locality. The warm weather is fast bringing the larvæ out of their winter quarters: Villica, B. Rubi, Littoralis, and several common species, being on the move. Larvæ of B. Rubi that I hybernated out of doors are flourishing, but those that I tried to feed through the winter in-doors have died, to a caterpillar. So I conclude that a warm, dry air is not so good for them as roughing it, and that they have not the power of spinning until after hybernation.—[*Rev.*] *A. C. Hervey; Pokesdown.*

Butalis chenopodiella.—I am not aware that this species has been taken in any number. It occurred last summer in our garden in abundance; scores of pairs, *in cop.*, were at rest on the walls of the house and garden fences. The larva is not particular in feeding on various garden plants, and somewhat resembles that of a Depressaria, spinning a white, silky web when changing to pupa: possibly its proper food-plant is one of the Chenopodiums.—*F. O. Standish; 1, Glendale Villas, King's Road North, Cheltenham, Gloucestershire.*

Nola albulalis.—Last July I was fortunate in taking a very fine specimen of this pretty and once rare species; and in giving a friendly hint to the worthy and energetic Mr. Packman, who since turned it up in tolerably round numbers.—*Id.*

Pterophorus rhododactylus.—Last year I captured several of this pretty, and doubtless the most beautiful of the British, species, being the second year I have taken several. My first discovery of it was by accidentally taking a plume larva out of my net, and diligently watching its changes (which proved successful) led me to its whereabouts, and the capture of many others.—*Id.*

Chelonia villica.—Observing the pretty variety figured in the 'Entomologist' for February, it may be interesting to know that I have one very similar in my collection, except that it is rather more destitute of the black, and has therefore more of the cream colour. The specimen was bred from a larva taken, I believe, at Willesden.—*Id.*

Liparis dispar in the City.—Four or five years ago I took a good male specimen at rest in Mincing Lane, City. Might this have been a Wandsworth example?—*Id.*

Liparis auriflua Double-brooded.—This species, like many others, may occasionally be double-brooded in unusually warm seasons. In the month of October, 1868, I took a female specimen, measuring one inch when set, and it is marked with the brown patch, which is usually the case in the male.—*Id.*

Eubolia peribolata in Jersey.—During a tour in this island early in September, 1864, I found this pretty species not uncommon on the heathy hills of Grève de Lecq. I also noticed Charæas Graminis, and the larva of Acronycta tridens on elm.—*Id.*

Pupæ in Birch and Oak.—I send with this pieces of small branches of birch and oak, each containing pupæ of a Coleopteron. The wood from which the pieces were taken formed part of some fagots cut from a young wood here rather more than three years ago, and since lain stacked in my garden. About every third or fourth piece I come to contains one or more of these pupæ, and, judging from the extent of the minings, the injury to the living tree must be considerable. The wood in my possession is nearly exclusively birch, but the few pieces of oak intermixed appear to have suffered in an equal degree. I should be glad if you would kindly tell me the name of the species.—*Wm. J. Argent; Wanstead, March* 22, 1873.

[I prefer waiting for their emergence before I pronounce a decided opinion: it cannot be long before they declare themselves.—*E. Newman.*]

Blind Cave Beetles.—M. Pouchet having received from M. Perez, of Bordeaux, some living specimens of Anophthalmus Leschenaultii, with a view to continuing his observations on the influence of light on insects deprived of the external organs of vision,—having been compelled from various causes to abandon this study for a time,—has placed them in my hands, and I have made some observations on these insects which may possibly be useful to others. I put them in a little box and kept them in a cave, with a view of imitating their natural condition, and expecting by this means to obtain eggs, from which to rear larvæ; unfortunately, three out of the four specimens which M. Pouchet had transmitted to me having died, I abandoned this project, and decided on publishing at once his observations on their habits and conduct in captivity. M. Pouchet began to feed his specimens on bodies of Musca Cæsar, which he deprived of their head and wings: two of the Anophthalmus at first seemed satisfied with this provender, but very soon they refused any longer to partake of it, although they often passed over the body of this fly; they absolutely refused to notice juvenile spiders, woodlice, and minute beetles, although they constantly passed by the side of these delicacies, and even mounted upon them, without seeming to notice their presence. On the contrary, they comforted themselves greatly with those little mud-worms, or blood-

worms, so well known to fishermen; and although they would sometimes pass over these worms without stopping, yet whenever they touched one with their palpi they stopped abruptly, seized the worm with their mandibles, plunged both these and their maxillæ into the body of the worm, and sucked greedily, a fact of which one might easily be assured, not only by the distension of the abdomen, which in this state protruded beyond the elytra, but also by the red colouring which this nourishment imparted to the alimentary canal. It seems probable, then, that in a state of nature these insects feed on annelides, and perhaps on larvæ of like consistence; but neither Arachnida nor Coleoptera seem to be their prey. They run with great activity, and at first sight present no evidence of blindness, passing by other insects without seeming to perceive them: in passing one another they do not stop, but, if they happen to touch each other's antennæ in their excursion, they fall to fighting immediately, seizing one another with their mandibles, but, after a brief turn at fighting, each passing on one side; and indeed they often pass without a fight. Whenever they meet with an obstacle, or attempt to enter a crack, their antennæ bend and turn back, without this action seeming to incommode them. M. Pouchet having deprived one of its antennæ could not perceive that the loss made any difference in its behaviour. They seemed entirely insensible to light; but heat, or the breath, or the least shock, made them retreat instantly. I have mentioned that when they passed over food provided for them they paid no attention to it, unless they touched it with their palpi, and that they disregarded entirely contact with their antennæ: this seems to indicate that the sense of smell had its seat in the palpi rather than the antennæ. As for the antennæ they seem to be, under certain conditions, very imperfect organs of feeling, for when they touch with these any motionless insect, they pass over it just as though it were a lump of earth.—*Editor of 'Petites Nouvelles Entomologiques,' February* 15, 1873.

Food-plant of Diphthera Orion.—A friend of mine who has, during last July, taken this moth very plentifully in a locality on the south coast (which he desires shall not be mentioned) says, there was in the wood not one birch tree to five hundred oaks. Does not this to some degree settle the question?—*E. B. Poulton; Victoria Villa, Reading.*

Food of the Ailanthus Silkworm.—M. Hignel, the manager of the silk-culture establishment of Siclæ, in the neighbourhood of Warsaw, noticed that some of his larvæ, which had fallen accidentally from the Ailanthus on to a poisonous plant, Datura Stramonium, growing close by, began to feed greedily on its leaves, and on being returned to the Ailanthus refused to spin. Next year M. Hignel intends to try this new food for this silkworm, which is now completely naturalized at Warsaw, and will publish the result of his experiments.—*Bembowski,* '*Petites Nouvelles Entomologiques,*' *February* 15, 1873.

[It will place the cultivation of this silkworm within the reach of everyone if the Datura answers the purpose, for it is an annual which grows so freely in all our gardens as sometimes to become a troublesome weed.—*E. Newman.*]

Method of Preserving Insect-pins from Oxidation.—Entomologists, and especially those who collect the smaller insects, and cannot, as in the instance of the Micro-Lepidoptera, gum them on cards, are annoyed with the oxidation of the pins, which so often involves the loss of Entomological collections. Many plans of obviating this difficulty have been suggested and tried, more particularly the use of silver and platinum wire, and of the varnished Vienna pins. For minute insects platinum wire is certainly the best. The objection to the large varnished Vienna pins is to be obviated by the following process, which has the additional recommendation of being extremely simple. Having furnished myself with a colourless varnish, capable of resisting the oxidation of metals, I take hold of the pin near its point with the forceps, and dip it in the varnish from the head as far as the place where the forceps hold it, so that the point may not be wetted with the varnish; then turning the end I stick it on the cork. When I have served a sufficient number of pins in this way I repeat the operation, so that the coat of varnish may be rendered thicker. This operation being performed cold, the pin retains its elasticity, whereas by the German method, of using black varnish and linseed oil, and baking the pins in a hot oven, the wire becomes rigid, and loses its elasticity. The colourless varnish has, moreover, the advantage of being perfectly invisible. I am indebted to Mr. Gogordan for the knowledge

of this method; and to this entomologist are due the thanks of those entomologists who have found the utility of pins prepared in this manner. I beg here to repeat mine for having thus enabled me to get rid of the ugly and inconvenient black-varnished pins of Germany.—*Goosens.*

[It would be an additional advantage if M. Goosens would state the composition of the varnish he recommends.—*E. Newman.*]

C. Lilly.—The larva sent is that of Tryphæna pronuba; the pupa that of Helops cæruleus.—*E. Newman.*

Hybernated Antiopa.—A specimen of this insect has just been taken on some rock-work in our garden, at Woodbine Lodge, West End, Hampstead.—*J. Edward Wilbey; March* 26, 1873.

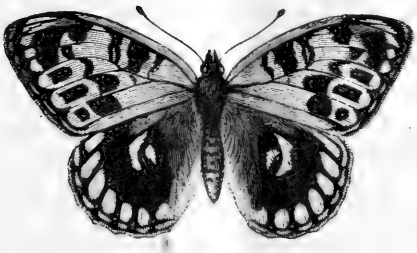
Mr. Crotch's Expedition.—This enthusiastic and energetic entomologist left Philadelphia, on his way to California, on the 14th of February. While in Philadelphia he examined all the collections of Dytiscidæ, Chrysomelidæ, Coccinellidæ, Erotylidæ, and Silphidæ, in that city. He has prepared a Catalogue of American Coleoptera, and written a number of papers, which will appear in scientific journals.—*E. Newman.*

A New Entomological Society.—A new Entomological Society has started under the auspices of the Clifden Institute, Goldsmith's Row, named the Clifden Entomological Society, and will hold weekly meetings every Tuesday evening. The first night of meeting was March 18th, beginning with thirteen members, and a speedy promise of more.—*P. C. Boulden, Secretary; 4, Martha Street, Haggerstone.*

Death of M. Wencker.—Mr. J. A. Wencker died on the 20th of February, at Viterne, after an illness which had long interrupted his Entomological studies and his correspondence with his fellow-labourers on the subject of Coleoptera. His premature death, at the age of forty-nine, has deprived us of the continuation of his most careful labours. All our Coleopterists will recollect his monograph of the genus Apion, and will admit that it was the work of a master-hand. Had he lived this would certainly not have been the last to which he devoted his rare intervals of leisure.—*E. Newman.*

THE ENTOMOLOGIST.

No. 116.] MAY, MDCCCLXXIII. [Price 6d.



ARGYNNIS AGLAIA (VARIETY).

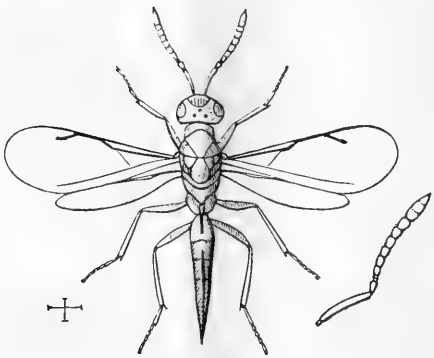
Variety of Argynnis Aglaia.—The deviation from normal position and shape of the black markings in this specimen is more clearly shown by Mr. Willis's excellent figure than they could be described by words. The two colours, bright sienna-brown and black, occupy the entire area of the wings, but their proportions are extremely different. The specimen belongs to Mr. Stevens, and has been kindly lent me for figuring in the 'Entomologist.'—*Edward Newman.*

Economy of Chalcidiæ. By Francis Walker, Esq.

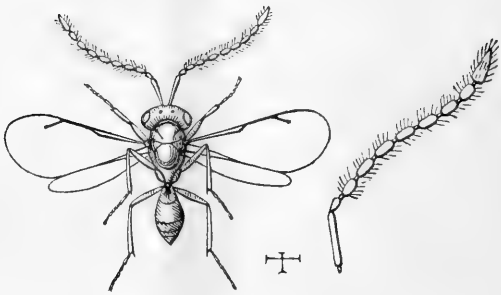
(Continued from p. 349.)

The name of the first of the accompanying species indicates where it is to be sought for. Very many

years have passed since I have seen it alive; and when I found it, it appeared to be limited to the heath in



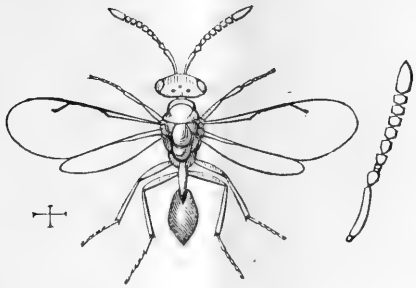
TOXEUMA ERICÆ.



PSILOCERA OBSCURA.

one spot near London. The second and third appear to be of very unusual occurrence, as I believe that I have not seen more than three living specimens of either of them. While waiting for an opportunity of studying again the names, structure, and habits of Chalcidiæ, I will mention with reference to them what has appeared elsewhere, and will

conclude with a borrowed notice of them in relation to Aphides, allusion having been made to that subject in p. 347.



PROSODES ATER.

Dr. Reinhardt gives the following names of Chalcidiæ that are connected with Aphides, either immediately or by an intervening link:—

"(1) Coryna clavata, *Walk.;* (2) Cyrtogaster vulgaris, *Walk.;* (3) Diplolepis aphidis, *Bouché;* (4) Chrysolampus suspensus, *Nees;* (5) Eurytoma ænea, *Nees;* (6) Pteromalus aphidivorus, *Foerst.;* (7) Mesosela elongata, *Walk.;* (8) Agonioneurus subflavescens, *Westw.;* (9) Chrysolampus aphidiphagus, *Ratz.;* (10) Chrysolampus æneus, *Ratz.;* (11) Tridymus Aphidum, *Ratz.;* (12) Myina Chaonia, *Walk.;* (13) Callimome auratus, *Enc. M.;* (14) Spalangia nigra, *Latr.;* (15) Hypsicamara Ratzeburgi, *Foerst.;* (16) Agonioneurus flavicornis, *Foerst.*"

The same author partly supplies what is wanting in this list,—the priority of the names, the adjustment of the number of species, and what part they take in the mutually antagonistic agencies by which the balance of created life is maintained, or what species destroy Aphides, and what are, as he terms them, "after-parasites," or limit the number of these destroyers.

FRANCIS WALKER.

Controlling Sex in Butterflies. By Mrs. Mary Treat.*

That sex can be controlled in butterflies I think I have demonstrated by careful experiment the past season; accident first prompted the experiment. Two years ago this past summer I was feeding a few larvæ of Papilio Asterias for the cabinet, when one of my specimens wandered from its food, and rested upon a book to undergo its transformations. Not feeling inclined to give up the book to this purpose, I placed the larva on a fresh stem of caraway: upon removing it from the book I found its feet were entangled in silk, and that it was in position for a chrysalis, but not yet fastened; so I was surprised to see it commence eating. It continued eating some days longer, before changing to a chrysalis. I then tried others in the same way, and also took off quite a number of larvæ, shutting them away from food. Some of the larvæ that I deprived of food in this first experiment died, but all that completed their transformations were males; while those that I induced to go on feeding, by tempting them with the best and freshest food, proved to be females.

This season (1872) I commenced with the larvæ the 17th of June, and continued feeding broods of different ages through the month of July. Early in July I had about two hundred larvæ feeding at the same time. The room in which I conducted my experiment faced east and south, and toward noon, of each of those excessively hot days in the early part of July, it was several degrees warmer than in the outside air. The food-plant on which I fed the various broods was placed in jars of water, which were set in a large box partly filled with earth, the whole being covered with deep blue mosquito-netting; heat and moisture seemed favourable to health and rapid growth.

On the 25th of June one lot of eggs hatched, on the 10th of July they were chrysalides, and on the 18th of the same month the butterflies appeared, only requiring twenty-three days for the complete transformation. On the other hand, I have had this same Asterias butterfly eleven months in coming to maturity; some larvæ that hatched in August,

* Reprinted from the 'American Naturalist,' vol. vii. p. 129.

1871, I fed eight weeks, but the nights were cool, and some days were absolutely cold, when the larvæ would not eat. These chrysalides I preserved during the winter, and early in June, 1872, I put them in this same warm room in which the larvæ grew so rapidly, and they were in this room some two weeks before the first larvæ of this season were hatched; and, strange as it may appear, some half dozen butterflies of this year's brood came out before these last year's chrysalides produced butterflies.

Very soon after the last moult I shut a number of the larvæ away from food, putting them in paper boxes, from five to ten in a box, carefully labelled. If, at the end of two or three days, the larvæ were still wandering about, I fed them sparingly. In this way I did not lose a single specimen in the larva state by shutting away from food; a few of the chrysalides died.

It was with the most intense interest that I watched the coming forth of the butterflies, which began to appear in about eight days after assuming the chrysalis stage. Thirty-four males came from my male boxes, and then a rather small female made its appearance. Out of seventy-nine specimens that I labelled males, three females were produced; on the other hand, those that I fed up, keeping them on a good supply of fresh food, I labelled females, and placed them in separate boxes. Out of these boxes sixty-eight females came, and four males.

There were some boxes that I marked doubtful, which I do not include in the above figures. For instance, I took five larvæ that were eating vigorously: if let alone they probably would have eaten a day or two longer, but I wished to try them in all stages of growth, and these were of quite a large size; out of these five, four were males.

Soon after the last moult I took twenty larvæ, and shut them away from food for twenty-four hours. At the end of that time I replaced ten on a good supply of food, watched them carefully, and kept them eating, until they attained a large size: they became chrysalides within a few hours of each other, and emerged as butterflies eight days after. One of these chrysalides was accidentally crushed; the remaining nine were females. Of the starved ones, eight males came out; the remaining two chysalides died.

The butterflies, as fast as they made their appearance, were killed and pinned up; the males arranged on one side, the females on the other: a most brilliant display, covering a much larger space than one would be apt to imagine.

It would seem, then, as the result of the whole experiment, that sex is not determined in the egg of insects, and that the female requires more nourishment than the male. Nor does this appear strange, when we consider the reproductive nature of the female. It has frequently been said to me:—"If your theory is true, it makes the female higher in the scale—superior to the male." I believe it has always been admitted that the female gives birth to the young. If this is considered superiority, then the female is superior; but if beauty of form and colour is taken into account, then the male insect is superior; the same as with birds and the higher animals. Carry the analogy further,—up to human beings,—and still we find the principle holds good. To which sex belong all our great inventors, statesmen, and philosophers? I believe woman is physically incapable, other things being equal, of becoming as profound a philosopher, as deep a thinker, as man. I do not wish it understood that I deem woman inferior to man; there is no inferiority, no superiority. If this matter were better appreciated, we should hear less of "woman's rights," and equality of the sexes, and woman would quietly take her place by the side of her brother, with no contention for rights.

But to return to some corroborations. Toward the last of May some twenty half-grown larvæ of Vanessa Antiopa were brought to me. I placed the branch on which they were feeding in a jar of water, turning a wooden box over them, and thought no more of them for over a week, when I uncovered them, and found the branch had fallen from the jar, and the leaves were so dry I could powder them in my hand. More than half of the larvæ were dead; eight poor, starved-looking specimens were alive, and completed their transformations. With this butterfly it is difficult to distinguish the sex by the marking on the wings, so I dissected them, and the result proved them males.

Again, I found a larva, new to me, feeding on the soft maple. I obtained thirty-three good specimens. I was very anxious to rear these, so I watched them closely, and plied

them with fresh, good food: if one fell or wandered from its food I replaced it, and continued this treatment until they would eat no longer. They went into the earth to undergo transformation, and in ten or twelve days thereafter, the rare, beautiful moth, Dryocampa rubicunda, made its appearance. Of these there were twenty-nine females, and two males. The remaining two either escaped or died in the earth.

About the time these moths came out, another lot of the same Dryocampa caterpillars was brought to me, but these were purposely neglected. I found them more than once wandering about the box in quest of food. Some of these were killed by a parasite, others died from lack of food; so that the result proved only seven males, and no female.

MARY TREAT.

A List of the Nocturnal Macro-Lepidoptera inhabiting Guernsey and Sark, with Notes of their Occurrence. By W. A. LUFF, Esq.

(Continued from p. 357.)

CUSPIDATÆ.

Cilix spinula.—Both broods are common in Guernsey and Sark, wherever the whitethorn is plentiful.

Dicranura vinula.—Mrs. Boley has found the larvæ on willow in Guernsey.

Pygæra bucephala.—The larvæ are extremely abundant in Guernsey on lime and elm.

Notodonta ziczac.—I have taken one specimen at light in Guernsey.

NOCTUÆ.

Gonophora derasa.—In Guernsey, at sugar; not uncommon.

Thyatira batis.—I have only taken one specimen in Guernsey; this was at sugar.

Bryophila glandifera.—Very common on most of the lichen-covered walls of Guernsey and Sark. The largest specimen I have met with measures barely an inch across the wings; they are usually much smaller.

B. Perla.—Very abundant in Guernsey and Sark. These are also small, never measuring an inch across the wings.

Acronycta Psi.—Common in Guernsey. Larvæ on elm; perfect insect at sugar.

A. megacephala.—Mrs. Boley has found the larvæ not uncommonly in Guernsey, feeding on poplar.

A. Rumicis.—Very common at sugar in Guernsey.

Leucania lithargyria.—Abundant in Guernsey during July.

L. putrescens.—I took two specimens at sugar on July 14th, 1870, in Guernsey.

L. impura.—Common in Guernsey, at sugar.

L. pallens.—I have taken it in Guernsey, in fields, sitting on the stems of grass.

L. L-album.—I took one specimen near the coast in Guernsey, at sugar, on September 6th, 1871. It was in fine condition, apparently not long emerged from the chrysalis. I have since repeatedly sugared in the same locality, but without success.

Xylophasia polyodon.—Quite a nuisance, at sugar, in Guernsey and Sark.

Heliophobus hispidus.—I have taken three specimens in Guernsey, one of them at sugar, on September 10th, 1872.

Cerigo Cytherea. In Guernsey, at sugar, though not very abundant.

Luperina testacea.—One specimen taken in Guernsey, at sugar.

Mamestra Brassicæ.—The larvæ abundant in Guernsey and Sark.

M. Persicariæ.—Not rare in Guernsey, and yet by no means abundant.

Apamea basilinea.—Not uncommon in Guernsey.

A. gemina.—I have taken two specimens in Guernsey.

A. oculea.—This is by far the commonest insect, at sugar, in Guernsey. I have taken it in Sark. They are very variable.

Miana strigilis.—Almost as common as Oculea, at sugar. In 1872 I took specimens as early as the 20th of May.

M. fasciuncula.—I have taken several in Guernsey.

M. Furuncula.—Occurs in Guernsey, though not abundantly.

Caradrina Morpheus.—I have taken one specimen in Guernsey.

C. cubicularis.—I have taken a few in Guernsey.

Agrotis puta.—Not uncommon in Guernsey during August and September.

A. suffusa.—Occurs freely, at sugar, in Guernsey, on the hills near the coast.

A. saucia.—I have taken several, at sugar, in Guernsey. I have only met with it late in the autumn.

A. Segetum.—Abundant in Guernsey and Sark.

A. exclamationis.—Not uncommon in Guernsey.

A. corticea.—Not rare in Guernsey. I have taken a specimen in Sark.

A. nigricans.—Common in Guernsey.

Tryphæna janthina.—I have reared several specimens from larvæ, found feeding on geraniums, in Guernsey.

T. orbona.—Abundant in Guernsey and Sark.

T. interjecta.—Two specimens taken in Guernsey, at sugar.

T. pronuba.—Common in Guernsey and Sark.

Noctua Augur.—Mrs. Boley has captured a specimen in Guernsey.

N. glareosa.—In most seasons common, in Guernsey, at ivy bloom; but in 1872 I took but one specimen.

N. plecta.—Not uncommon in Guernsey.

N. C-nigrum.—Common in Guernsey, at sugar. I have only taken it in the autumn.

N. festiva.—Several specimens taken at sugar in Guernsey.

N. conflua.—One specimen taken in Guernsey by my friend Mr. Dawson.

N. xanthographa.—Exceedingly abundant in Guernsey and Sark, and quite a nuisance at sugar.

Tæniocampa gothica.—I have bred several specimens. The larvæ fed on privet. Guernsey.

T. instabilis.—Common at sallow-bloom in Guernsey.

T. stabilis.—Common at sallow-bloom in Guernsey.

T. cruda.—Abundant at sallow-bloom in Guernsey. I have taken specimens in Sark.

Orthosia lota.—I have taken a few, at ivy, in Guernsey.

Anchocelis pistacina.—Very common at ivy-bloom in Guernsey.

A. lunosa.—Abundant at ivy in Guernsey.

Scopelosoma satellitia.—I have taken a few at ivy-bloom in September, in Guernsey.

Xanthia ferruginea.—Abundant in Guernsey at ivy-bloom.

Cosmia trapezina.—Not uncommon in Guernsey.

C. affinis.—I have met with one specimen in Guernsey.

Dianthœcia carpophaga.—I have taken one specimen on the Guernsey cliffs. It was flying in the sunshine in June.

D. capsincola.—I have seen a Guernsey specimen, and am informed the larvæ are common on the red campion (Lychnis dioica).

Polia flavocincta.—Common in Guernsey at ivy-bloom. I have reared specimens from larvæ feeding on groundsel.

Epunda nigra.—Not uncommon in Guernsey at ivy-bloom.

E. lichenea.—I have reared specimens, from larvæ collected in early spring in Guernsey.

Miselia Oxyacanthæ.—Not uncommon in Guernsey at ivy-bloom.

Agriopis aprilina.—Mrs. Boley has taken a specimen in Guernsey.

Phlogophora meticulosa.—Both broods extremely abundant in Guernsey.

Euplexia lucipara.—Common in Guernsey, at sugar.

Aplecta nebulosa.—One specimen, taken by Mr. Dawson in Guernsey.

Polyphœnis sericina.—In 1872 Mr. Dawson took one, and I took four specimens at sugar, during July and August, in Guernsey.

Hadena dentina.—Two specimens, taken in Guernsey at sugar.

Hadena Chenopodii.—Common in Guernsey.

H. oleracea.—Very abundant in Guernsey and Sark in June.

H. Pisi.—I have taken several specimens in Sark, and Mrs. Boley has taken one in Guernsey.

Xylocampa lithorhiza.—I have taken a few specimens in Guernsey.

Cucullia Verbasci.—I took two off a fence in Guernsey.

C. Asteris.—Mrs. Boley has captured several in Guernsey.

C. umbratica.—Common in Guernsey. Often resting on the tops of tarred fences, where they are easily detected.

Abrostola Urticæ.—Not uncommon in Guernsey.

Plusia chrysitis.—Common in Guernsey and Sark. I have observed both broods.

P. Gamma.—Exceedingly abundant in Guernsey and Sark at all times of the year.

Gonoptera Libatrix.—I once found several larvæ feeding on sallow in Guernsey.

Amphipyra pyramidea.—Two specimens taken in Guernsey, August, 1872, at sugar.

A. Tragopogonis.—Not uncommon in Guernsey.

Mania maura.—I have seen Guernsey specimens.

Catocala Fraxini.—Mrs. Boley captured a very fine specimen in Guernsey, in her garden, several years ago.

C. nupta.—In Guernsey, though not very common.

W. A. Luff.

[Three species only are added to our ordinary British List, and two of these, Callimorpha Hera and Anaitis præformata, have already been impatiently knocking at the door for admission; the third is a novelty, Polyphænis sericina, a Noctua of great beauty, and somewhat resembling Cerigo Cytherea.—*E. Newman.*]

A List of the Macro-Lepidoptera taken at Buckingham or in its Immediate Neighbourhood, with Notes of their Occurrence. By W. Slade, Esq.

The following list of Lepidoptera, taken at Buckingham and in the immediate neighbourhood during the years 1869—1872, is, I believe, as far at least as the commoner species are concerned, a tolerably complete representation of the Lepidoptera occurring in that locality. I hope it will interest the readers of the 'Entomologist.'

Butterflies.

Argynnis Adippe.—Claydon Woods, not common.

A. Euphrosyne and Selene.—Claydon Woods, common.

A. Paphia.—In all woods in the neighbourhood.

Grapta C-Album.—Said to have been abundant formerly in Whittlebury Forest; not seen elsewhere.

Vanessa Urticæ.—Abundant everywhere.

V. Polychloros.—A number of pupæ taken in 1872 by myself and others, within a few yards of the same spot; probably of one brood.

V. Io and Pyrameis Atalanta.—Common everywhere.

P. Cardui.—Abundant in clover-fields in September, 1872. I have usually seen this species every autumn, but not so plentifully.

Apatura Iris.—Occurs in Claydon Woods. I have not taken it.

Melanagria Galathea.—Swarming in a narrow meadow between two woods at Claydon, in 1871; a single specimen only in any other locality.

Pyrarga Egeria and Megæra.—Common.

Epinephele Janira and Tithonus.—Abundant.

E. Hyperanthus.—Common in several woods.

Cœnonympha Pamphilus.—Abundant.

Thecla Quercus.—Abundant in all the woods I have visited, but frequently confined to particular spots in these woods.

T. W-Album.—Scarce; one or two taken in gardens surrounded with old elms.

Polyommatus Phlæas and Lycæna Icarus.—Abundant.

L. Argiolus.—Rare. The "blues" seem very badly represented in the neighbourhood of Buckingham. There are one or two localities where one might expect to find Arion, but I have never been fortunate enough to fall in with it.

Colias Edusa.—Common in September, 1870. I have not seen it since.

Rhodocera Rhamni.—Abundant in the early spring; seldom seen in the autumn.

Leucophasia Sinapis.—Scarce; I have seen two specimens only.

Anthocharis Cardamines and Pieris Napi.—Abundant.

P. Rapæ and Brassicæ.—Abundant. Very much too abundant in gardens in the town, which are much more infested with the larvæ than those in the open country.

Hesperia Malvæ, Tages, and Sylvanus.—Common on railway-banks.

H. Linea.—Common.

Sphinges.

Smerinthus ocellatus and Populi.—Common.

S. Tiliæ.—Common in the imago state. I have never taken the larvæ here, nor have I heard of its being taken by others.

Acherontia Atropos.—The larvæ have been frequently brought me by boys, from the potato-fields.

Sphinx Ligustri.—Not uncommon.

Chœrocampa Elpenor.—The larvæ abundant in 1872, feeding on willow-herb on the banks of the Ouse.

Macroglossa Stellatarum.—Abundant in 1869. I have seen it occasionally since.

NOCTURNI.

Sesia Tipuliformis.—Common in old gardens.

S. Bembeciformis.—A few taken in an osier-bed, 1872. These are the only "clearwings" I have seen or heard of in the neighbourhood.

Zeuzera Æsculi.—Occurs, but not commonly.

Cossus Ligniperda.—Very common. Pollard willows and pollard ash-trees are bored by it everywhere.

Hepialus lupulinus.—Abundant.

H. Humuli.—Common.

Procris Statices.—Common, but local.

Zygæna Trifolii.—Common in an old stone-pit. Not met with elsewhere.

Z. Filipendulæ.—Common on railway-banks.

Lithosia complanula.—Common. The only "footman" which appears to occur.

Euchelia Jacobææ.—Common. The larva of this insect occurs every year, feeding on coltsfoot, in the old stone-pit above mentioned; I have taken it in my garden, feeding on the common groundsel (at which I am not surprised). I bred the moth from both localities: they are not to be distinguished; it does not seem to vary.

Chelonia caja.—Abundant.

Arctia mendica.—Female common. I have seen the male.

A. lubricipeda and Menthastri.—Common.

Liparis auriflua.—Abundant.

L. Salicis.—Not common.

Orgyia pudibunda.—Common. I have bred from the egg larvæ of this common moth so dark in colour as to be taken for those of fascelina.

O. antiqua.—Not by any means abundant.

Pœcilocampa Populi.—Scarce.

Eriogaster lanestris.—Common. A friend, in the year 1869, found a nest of the larvæ, and bred about one hundred pupæ: about fifteen came out the following February, twelve the next, and a few have made their appearance, as the season has come round, every year since; those left are still alive.

Bombyx neustria.—This insect does not appear to be so common as it used to be. I remember it, as a boy, a perfect pest in gardens in Kent.

B. Quercus.—Abundant on every whitethorn-hedge in the larva state. I have never seen the moth on the wing, except as "assembling" to a bred female.

Odonestis potatoria.—Abundant.

Lasiocampa Quercifolia.—Rare.

GEOMETRÆ.

Uropteryx sambucata.—Abundant.

Epione apiciaria.—Two, at light, when sugaring.

Rumia cratægata.—Abundant.

Metrocampa margaritaria, Pericallia syringaria and Selenia illunaria.—Common.

Crocallis elinguaria.—Not uncommon.

Ennomos tiliaria.—One found in the house; probably attracted by light.

E. fuscantaria.—One bred from larva beaten from ash.

E. angularia and Himera pennaria.—One each.

Phigalia pilosaria and Biston hirtaria.—Not common.

Amphydasis prodromaria.—Not rare.

A. betularia and Hemerophila abruptaria.—Common.

Cleora lichenaria.—Not uncommon.

Boarmia repandata.—Common.

B. rhomboidaria.—Abundant.

Tephrosia extersaria.—Two or three taken by a lad, and brought me to name.

Iodis lactearia.—Several taken, 1872.

Hemithea thymiaria.—Common.

Note.—The Ephyridæ appear to be conspicuous by their absence near Buckingham.

Asthena candidata.—Not common.

Acidalia imitaria.—Not uncommon.

A. aversata and remutata.—Both varieties occur, remutata being the more common.

Timandra amataria and Cabera pusaria.—Common.

C. exanthemaria.—Abundant.

Macaria liturata.—One.

Halia wavaria.—Common.

Strenia clathrata.—Common on railway-banks.

Abraxas grossulariata.—I have seen hundreds of the larvæ of this common garden-insect feeding on osier.

Lomaspilis marginata.—Common, and in this locality tolerably constant in the arrangement of the black markings.

Hybernia progemmaria, Anisopteryx æscularia, Chimatobia brumata, and Larentia didymata.—Common.

L. olivata.—One.

Emmelesia decolorata.—Taken occasionally.

Eupithecia venosata.—Two.

E. centaureata.—Common.

E. exiguata.—Two.

E. vulgata.—Common.

Ypsipetes elutata and Melanthia rubiginata.—Not uncommon.

M. ocellata.—Two.

Melanippe subtristata.—Common.

M. montanata and fluctuata.—Abundant.

Anticlea badiata and derivata.—Not uncommon.

Coremia ferrugata and unidentata.—I believe both these are common. I have never bred them, and do not like to speak positively respecting them in the perfect state.

Camptogramma bilineata.—The most abundant moth in the district.

Scotosia dubitata? and certata?—One or other of these insects common.

S. rhamnata.—Not uncommon.

Eucosmia undulata.—One.

Cidaria miata, russata, ribesiaria, testata, fulvata, and pyraliata.—Common.

C. dotata.—Not uncommon.

Eubolia mensuraria.—Abundant.

Tanagra chærophyllata.—Swarming on the sloping bank of a railway-cutting. A few only seen in one other locality.

Cuspidatæ.

Platypteryx unguicula.—One.

Cilix spinula.—Common.

Dicranura furcula.—One.

D. bifida.—I have often seen the empty cocoon (as I have supposed) of this moth on the trunks of poplars, but have never been so fortunate as to meet with the insect itself.

D. vinula and Pygæra bucephala.—Common.

Philodontis palpina.—One.

Diloba cæruleocephala.—Common.

NOCTUÆ.

Gonophora derasa.—Taken occasionally.

Bryophila perla.—Abundant.

Acronycta tridens, Psi, Rumicis, Leucania conigera and lithargyria.—Common.

L. comma.—Not common.

L. pallens.—Abundant.

Axylia putris and Xylophasia rurea.—Not common.

X. lithoxylea.—Common.

X. sublustris.—One.

X. polyodon.—Abundant. One nearly black specimen (female) taken at sugar, 1870.

X. hepatica.—Common.

Neuria Saponariæ.—A number taken at sugar by a lad in 1872.

Heliophobus popularis and Cerigo cytherea.—Taken occasionally.

Mamestra Brassicæ.—A common garden pest.

Apamea oculea, Miana strigilis, Grammesia trilinea, Caradrina blandina and cubicularis.—Common.

Rusina tenebrosa.—Taken occasionally.

Agrotis suffusa and exclamationis.—Common.

Tryphæna janthina.—Not uncommon.

T. fimbria.—I have frequently taken the larvæ of this moth at night feeding on the newly-expanded leaves of osiers in the early spring, in company with Janthina, N. triangulum and Augur.

T. orbona.—Common.

T. pronuba.—Abundant.

Noctua Augur.—Common.

N. C-nigrum.—Taken occasionally.

N. triangulum and brunnea.—Common.

N. festiva.—Abundant.

N. umbrosa.—One.

N. baja.—Not uncommon.
N. xanthographa.—Abundant.
Tæniocampa gothica.—Abundant at sallow-blossom.
T. rubricosa.—Not uncommon at sallow-blossom.
T. instabilis and stabilis.—Abundant at sallow-blossom.
T. gracilis.—Not uncommon at sallow-blossom.
Orthosia lota and Anchocelis lunosa.—Common.
Cerastis spadicea.—Common at ivy-bloom.
Scopelosoma satellitia.—Common.
Xanthia citrago.—One.
X. ferruginea.—Common.
Dicycla Oo.—One.
Cosmia trapezina.—Common.
C. diffinis.—Not uncommon.
Hecatera serena.—One.
Polia flavocincta.—Common.
Miselia Oxyacanthæ.—Taken occasionally.
Phlogophora meticulosa.—Abundant.
Calocampa vetusta.—Taken occasionally.
Cucullia Verbasci and Scrophulariæ.—Common.
C. Chamomillæ.—One.
C. umbratica and Heliodes Arbuti.—Taken occasionally.
Brephos notha.—One.
Abrostola Urticæ and triplasia, Plusia chrysitis and Iota.—Common.
P. Gamma.—Abundant.
Gonoptera libatrix.—Common.
Amphipyra pyramidea.—Taken occasionally.
A. Tragopogonis.—Not uncommon.
Mania typica and maura.—Common.
Catocala nupta.—Not uncommon.
Euclidia Mi and glyphica.—Common.

W. Slade.

Fallowfield, Manchester,
February 10, 1873.

Description of the Larva of Tephrosia biundularia.—Several correspondents have at different times sent me eggs of this species, but I had never had an opportunity of describing the adult larva until last year, when I was enabled

to do so from two specimens received from Mr. J. R. Wellman, of London, on the 12th of June. The eggs are deposited early in May, are slightly oval, and in colour bright green. The larvæ feed on oak, and become full grown about the middle of June. Length about an inch and a quarter, and of average bulk in proportion; head retractile, flattened, about the same width as the second, but narrower than the third segment, which segment is swollen on each side into a lateral hump; the remaining segments are of about equal width until the 12th is reached, on which there is a slight dorsal ridge; segmental divisions tolerably distinct. The skin along the sides rather puckered; the 4th segment is swollen ventrally, which makes the third pair of legs appear longer than the rest. The ground colour is dull reddish brown; from the 10th to the 13th segments reddish ochreous, and the 6th, 7th and 8th segments dull dirty black. Head pale ochreous-brown, spotted and marked with dark brown; medio-dorsal line dull dark green; subdorsal stripes dark brown, with indistinct paler central line; there are no perceptible spiracular lines. Just above and a little in front of the first pair of claspers is an ochreous-yellow mark; and on the 7th and 8th segments, just below the dorsal line, is a pale gray lateral mark. Spiracles small, grayish brown, encircled with dark brown. The ventral surface is dark purplish brown, with ochreous-yellow medio-ventral stripe. These two larvæ were much darker and redder than a brood I had reared to moderate size the year previous, which were much more nearly like the pale grayish variety of the larva of Crepuscularia. Probably the larvæ of Biundularia vary as much as do those of that species.—*Geo. T. Porritt; Huddersfield, April* 8, 1873.

Entomological Notes, Captures, &c.

Vanessa Antiopa near Carlisle.—I took a specimen of V. Antiopa at Orton, near Carlisle, on April 21st, and after looking at it I found that the upper wings were very much damaged, and the under wings much worn. I let it go again. I think this is the first ever taken in this locality.—*George Dawson; 6, English Street, Carlisle, April* 23, 1873.

Vanessa Antiopa near Grantham.—I had the pleasure of capturing a fine specimen of Vanessa Antiopa on the side of the canal, in the neighbourhood of Grantham. The border is white.—*Thomas Walpole; Westgate, Grantham, April* 18, 1873.

Vanessa Antiopa in Suffolk, and Variety of C. ridens.—A very fair Antiopa was taken in Assington Park, Suffolk, last week, and was brought to me to set. This morning I found a magnificent variety of C. ridens in one of my breeding-cages: it is almost white, with a broad central bar of the usual colour.—*W. H. Harwood; St. Peter's, Colchester, April* 21, 1873.

Vanessa Polychloros at Doncaster.—Your subscribers in this part of the kingdom will be delighted to learn that I have had the good fortune to capture a beautiful specimen of Vanessa Polychloros. I believe it is fifteen or sixteen years since this species was taken in this neighbourhood, and that it was bought by the late Hugh Reid,—a most enthusiastic naturalist, and a very successful entomologist. How it happens that insects after so many years' absence suddenly reappear, perhaps never has been satisfactorily accounted for. The specimen is much lighter coloured than the series in my cabinet. I took it on the 28th of March; evidently a hybernated specimen: this may be a reason for its light hue. As it is a female, and apparently full of eggs, I have decided to let it go again, so that we have a prospect of its having successors.—*T. Potts; 79, Spring Gardens, Doncaster.*

Eupithecia irriguata.—On April 9th I was agreeably surprised by the appearance of Eupithecia irriguata in one of my breeding-cages. I was not aware that I had had the caterpillar. This is the second time that the same moth has put in an unexpected appearance.—[*Rev.*] *A. H. Wratislaw; School Hall, Bury St. Edmunds.*

T. Gothica and Stabilis.—A few nights ago, when visiting the sallows in a wood near this place, I was much surprised to take a female T. Gothica *in cop.* with a male Stabilis. Is not this rather an unusual occurrence? I of course brought them home, and the Gothica has laid about fifty eggs, which are of a bright green colour, and from which I hope to be able to breed the hybrid insect next spring.—*R. E. Brameld; Notts Bank, Retford, April* 17, 1873.

Name of a Bee.—Will you kindly name, in the 'Entomologist,' the enclosed bees.—*Robert Kay; 2, Spring Street, Bury, April* 18, 1873.

[The bees are Andrena nigroænea of Kirby. On this species Mr. Kirby discovered his Stylops Melillæ.—*Edward Newman.*]

On Turkestan Diptera.—The Diptera of Central Asia will probably be soon well known, in consequence of the events occurring in that region, and the history of them will supply some of the links between the Diptera of Europe and those of Amurland and of Japan. The Diptera of Turkestan have been already investigated by Alexis Fedtschenko, whose discoveries therein will shortly be published. I am indebted to him for the following summary of the Turkestan species of some families of this order. Two hundred and forty-three species represent the following families:—Xylophagidæ, Therevidæ, Scenopinidæ, Cyrtidæ, Leptidæ, Nemestrinidæ, Bombylidæ, Asilidæ, Stratiomyidæ, and Tabanidæ. The Bombylidæ include ninety-three species; the Asilidæ, sixty-two species; and the Nemestrinidæ, ten species. This last family takes the lead in Diptera as regards the development of the wing-veins, and culminates on the coast of South Africa.—*Francis Walker.*

Apion apricans and Clover Seed.—In the 'Entomologist' for September, 1872 (Entom. vi. 177), you answered some enquiries I made as to what insect infested the heads of cow-grass seed (T. pratense) I sent you. I think it may be interesting to you to know the effects of the mischief caused by the insect (Apion apricans) to the field of seed I sent you the heads from, and to show the loss sustained by farmers from the weevils when the crop is infected; and I am sorry to say the infected crops were greatly in excess of good ones last year. The following will show the difference in the yield of seed grown in the years 1869 and 1872, when the former was free from the Apion. In 1869, eleven and a quarter acres produced 7647 lbs., which sold for £268 14*s.* 7*d.* In 1872, eleven and a quarter acres produced only 2361 lbs., which sold for £88 14*s.* 6*d.* Showing a discrepancy of 5286 lbs. in seed, and £180 0*s.* 1*d.* in the value; the two pieces being equally good as to crop and quality of the seed, and sold at the same price, namely 9*d.* per lb. The whole of the loss I

think must be placed to the debit of the Apion, as the few heads of clover free from the attack were perfectly full of seed.—*W. H. Herbert; Wyfield Manor, Newbury, March* 18, 1873.

Galls on the Twigs of Willows.—I enclose some galls, which my son collected this week in Teesdale; their causing the twig to make a sharp angle struck me as curious.—*Edwin Birchall.*

["The gall is caused by Cecidomyia Salicis. I have not seen it growing for some years. So far as I recollect, the twig on which it occurs is often straight. Very many of the larvæ are destroyed by two parasites, Seladerma Capreæ and a species of Platygaster, but the oviposition of these, and the way in which they feed on the grub, are unknown. I have mentioned them in the 'Annals of Natural History,' second series, vol. ii. p. 218" (*Francis Walker*, in a letter to E. Newman). I observe that almost every one of these galls, which are about the size of hazel-nuts, has been pecked by a bird, probably a titmouse, and the grub extracted. Every one of the specimens sent by Mr. Birchall has the twig bent in the manner described by him, and one of them bears a leaf-bud on the surface of the gall. It would be interesting to know whether a bud could open in such a situation.—*Edward Newman.*]

Food of Diphthera Orion.—I took, June 15th, 1872, a female D. Orion at rest on the trunk of an oak-tree, in a chip-box, in which I placed an oak-leaf, hoping to obtain eggs. Next morning I found about fifty eggs attached to the leaf, all close together. The eggs were white and echinus-shaped, and through a lens appeared rayed or fluted. They hatched on June 22nd, and I put the young larvæ on a birch-leaf, and placed the leaf in a test-tube, putting in also a leaf of oak. Next morning they had all left the birch, and were feeding on the oak. They commenced near the stem on the under side of the leaf, forming two companies, getting their heads together and marching forward, skeletonising the leaf. They never left the leaf till all but the veins were consumed. When they emerged from the egg they were semitransparent and of a pale green colour, the segments being much separated; a darker line showed itself on the back, and a few hairs were visible on each segment. On the sixth day

they changed their skins. They grew very rapidly, and finally assumed the appearance described at p. 248 of 'British Moths;' they "went down" July 24th, 25th and 26th. I occasionally placed a sprig of birch with their food, but it was never eaten by them. I also tried plum.—*Henry Miller, jun.*

Harvesting Ants.—Mr. J. Moggridge, in a little book lately published by L. Reeve & Co., has some highly interesting observations on ants, confirming the statements of classical writers as to the storing of grain during the past and present years. We have had brief notices on his discoveries, but these have been uniformly discredited by the would-be dictators of Entomological Science. Mr. Moggridge has seen ants climbing the stems of cereal and other plants, gathering the seeds, detaching them from the husks, and finally storing them away in granaries. After rain he has seen them bring the seeds from these granaries, spread them in the sun to dry, and again return them to the store-house when in good condition. The species on which these observations were made are Pheidole megacephala, Atta Structor, and Atta barbara; the seeds of more than thirty species of plants were found in the granaries, but none of these were cereals. This, however, is not uniformly the case, for, at Hyères, M. St. Pierre found cereals stored by ants in such quantities that he thinks these ants might cause great loss to cultivators. In accordance with the course of all such observations, these facts were known and proclaimed by our remote ancestors, rejected and denied by men whom we consider our scientific instructors,—Latreille, Kirby, Blanchard, and Huber,—and are now in every detail confirmed by observers of unquestionable veracity, and might have been observed without the slightest trouble by every traveller in the South of France.—*Edward Newman.*

Trap-door Spiders.—Mr. Moggridge has also turned his attention to these interesting creatures, whose curious nests would have been long since "put down" by scientific authority, had they not been preserved in abundance, and thus become familiar to all our museum men. I extract from Mr. Wallace's notice of the book, in 'Nature,' the following novel particulars. "The nests previously known have a hinged door at the upper end of the tubular nest, but

Mr. Moggridge found another kind with a second door lower down, and also one with a lateral chamber, the opening to which, as well as the main tube, is closed by the second door. In these nests the lower door is strong, and fits closely, and can be held fast by the spider on the inside, while the upper door is for concealment only, being very thin, but almost always closely resembling the surrounding surface. In many cases it is overgrown with living moss and lichens, and Mr. Moggridge thinks that the spider plants or sows the mosses, having found little bits of moss stuck on to a newly-made door. A curious and instructive observation occurs as to the simple manner in which a protective adaptation may be brought about unconsciously. Having cut away the top of one of these nests, and thus left the tube exposed on a surface of bare earth, the spider made a new door, on which it stuck pieces of moss from the neighbouring moss-covered bank, thus making its nest very conspicuous by the round patch of green on a surface of fresh earth. The simple and natural habit of covering the door of the nest with any material that grows or lies around it, usually leads to concealment, but the above example shows that in doing so the insect does not consciously work with this object. Even more curious is the fact that little spiders only a few days old construct nests exactly like those of the parent,—tubes excavated in the earth, lined with silk, and provided with one or two doors and lateral passages."—*Edward Newman.*

Setting Lepidoptera.—Let me venture to advise your correspondent, Mr. Wesley, to set his insects on the round plan, but to thrust the pin far enough through the thorax, and to raise the specimen completely off the cork when removed from the setting-board, thereby, as I conceive, combining the advantages of both systems.—*H. Jenner-Fust, jun.; Hill Court, Falfield, March* 8, 1873.

Varnished Pins.—In the 'Entomologist' (Entom. vi. 367) I see a paragraph on varnishing pins. I have done this for years. I do it in this way: take a dozen bottle-corks, stick a dozen pins one-third of their length into the small ends, dip the head and body into the solution in an egg-cup; put the corks big end down until the metals are dry, then give them a second dip; they then remain smooth and clear, and never after change their appearance. My varnish is simply shellac

dissolved in spirits of wine, and just made a little warm; the results are most satisfactory.—*T. Potts;* 79, *Spring Gardens, Doncaster.*

Extracts from the Proceedings of the Entomological Society, February 3, 1873.

Supposed Case of a Trichopterous Insect.—Mr. M'Lachlan exhibited the quadrangular case of the larva of a species of Trichopterous insect, together with the larva itself, preserved in glycerine. These had been placed in his hands by the Rev. A. E. Eaton, who found them in the Dove, a swiftly running stream in Derbyshire. He supposed it to pertain to Brachycentrus subnubilus, as the larvæ of that species were not known to manufacture quadrangular cases. Mr. Eaton, however, stated that he was not quite satisfied that the case and larva found by him were actually those of Brachycentrus, for he had never seen that genus in the part of the Dove in which he found them, though it occurred lower down the stream.

Large Fleas in a Mouse's Nest.—Mr. Champion exhibited specimens of a large species of Pulex, found by Mr. F. Walker in a mouse's nest in the Isle of Sheppy.

Cerastis erythrocephalus.—Mr. Bird exhibited the specimen of Cerastis erythrocephalus, taken on the 28th of October last at Darenth Wood, and recorded, Entom. vi. 264.

Impaled Noctua.—Mr. Meldola showed a specimen of a Noctua impaled on a thorn, supposed to have been done by a shrike. Mr. Weir was inclined to think that, in this case, the insect was so impaled; but he believed that insects were frequently impaled by other means.

Fireflies in the South of France.—Mr. Pascoe called attention to a remark made by Mr. Walker in the February part of the 'Entomologist' (Entom. vi. 304), to the effect that the fireflies (Succiola Italica), seen in abundance in Italy, had probably entered that country from the East, and were hindered by the Maritime Alps from occupying the Mediterranean coast of France. He (Mr. Pascoe) had seen the insect in abundance in France, between Cannes and the Var, and was desirous of ascertaining if any entomologist had noticed it further westward in France.

THE ENTOMOLOGIST.

No. 117.] JUNE, MDCCCLXXIII. [Price 6d.

VARIETY OF ARGYNNIS LATHONIA (MALE).

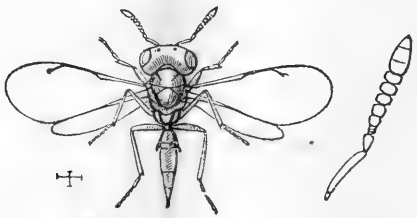
Variety of Argynnis Lathonia (*Male*).—The male specimens taken last year in the vicinity of Dover are so much smaller than usual, and so much darker in colour, especially about the base of the wings, that I have thought it desirable to figure one of them. It is useless to describe the markings, seeing they are so well represented in Mr. Willis's figure, which, like all in the series, is exactly of the natural size. The specimen was taken by Mr. Stevens on the 18th of August, 1872, in the Castle Field, at Dover, and has been kindly lent me for the purpose of figuring in the 'Entomologist.' For particulars of Mr. Stevens's wonderful success, see page 219 of the present volume.

The capture of Lathonia and Daplidice in unusual numbers during the past season must not be regarded as supporting any particular hypothesis; I regard it rather as the necessary consequence of a combination of favourable circumstances. Our entomologists now know the exact time and place to seek these species; and the weather was remarkably propitious for their appearance.—*E. Newman.*

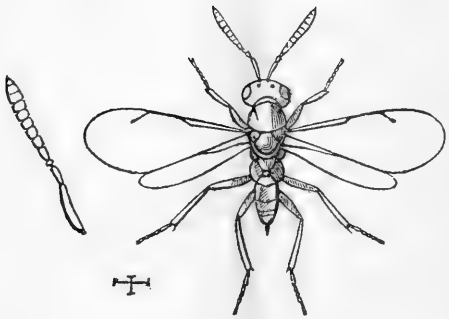
Economy of Chalcidiæ, and Characters of a few undescribed Species. By FRANCIS WALKER, Esq.

(Continued from p. 369.)

THE first of these figures represents the female of Psilocera obscura, and has been described as Metopon atrum, which



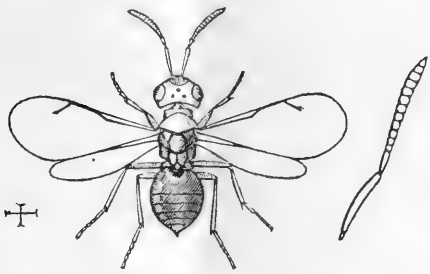
PSILOCERA OBSCURA (FEMALE).



PTEROMALUS IMMACULATUS.

name is now annulled. The species in the second figure was described as Eutelus immaculatus; the name Eutelus may also be annulled, and its constituents should be considered as a division of Pteromalus: the species of this genus are

exceedingly numerous, and one of them, Pt. latus, is represented in the third figure. The great abundance of some



PTEROMALUS LATUS.

species of Pteromalus also indicates its importance in regulating the increase of life in other forms; but very little has yet been ascertained as to how these agencies are employed, except in the well-known consumers of the chrysalis, of the oak-apple grub (Teras Quercus-terminalis), and of the grub of the corn-fly (Chlorops). Reserving more of the parasitism of this genus for another opportunity, I will return to the Eurytomidæ, with which these notes began. Additional observations on the species seem to lead to the conclusion that the name Isosoma should be discontinued, and that its species should be annexed to Eurytoma, in which some of them were formerly comprehended. However, for the present I will retain the name in the descriptions of new species, and will begin with one which is larger than all the other species of Isosoma, and, as regards the female, seems to be the European representative of the Canadian I. Vitis: it has some resemblance to I. eximia and to I. sociabilis, and exceeds all the three in the slenderness of the antennæ and in the length of the abdomen. It was found near the baths of Caracalla.

Isosoma Romana.—Fœm. Nigra, longissima; caput et thorax sat aspere punctata; caput prothorace æquilatum; antennæ gracillimæ, fere filiformes, basi flavæ; prothoracis latera fulva; petiolus brevissimus; abdomen lanceolatum,

apice flavum, thorace multo longius; pedes flavi, femoribus tibiisque nigricante subfasciatis; alæ diaphanæ, venis pallide flavis.

Female. Black, elongate. Head and thorax thickly and rather roughly punctured. Head as broad as the prothorax. Antennæ slender, almost filiform; first and second joints yellow, following joints fusiform, setulose; club composed of three distinct joints, which together are rather longer than the preceding one. Prothorax quadrate; sides tawny. Metathorax not much developed. Petiole very short. Abdomen convex, lanceolate, much longer than the thorax; extreme tip yellow. Legs yellow; femora and tibiæ with an undefined blackish band on each. Wings quite colourless; veins pale yellow; ulna longer than the humerus; stigma very small. Length of the body almost 3 lines.

The three following species are also Italian, and were found near Lucca, and there A. H. Haliday discovered Philachyra, which may be associated with Isosoma, for the male does not differ from the latter in character, though in the female the structure of the thorax is modified on account of the undeveloped wings.

Isosoma semilutea.—Fœm. Nigra; caput et thorax subtilissime punctata; antennæ clavatæ, basi luteæ; prothorax, abdomen et pedes lutea; petiolus brevissimus; abdomen fusiforme, thorace paullo brevius; alæ diaphanæ; albo venosæ.

Female. Black. Head and thorax very finely punctured. Head broader than the prothorax. Antennæ clavate, much shorter than the thorax; first and second joints luteous, the latter mostly black above. Prothorax, abdomen and legs luteous. Petiole very short. Abdomen fusiform, a little shorter than the thorax. Wings pellucid; veins white. Length of the body $1\frac{1}{2}$ line.

This species and I. Romana, by the great difference between them in the structure of the antennæ and of the abdomen, represent the two extremes of the genus. I. semilutea agrees most with the two British species that are distinguished like it by a luteous prothorax, but the abdomen is shorter, and it is the only species in which that part is not wholly black, excepting I. Vitis, in which the abdomen is luteous beneath towards the base.

Isosoma luteicollis.—Mas. Nigra; caput et thorax subtilissime punctata; caput prothorace multo latius; antennæ filiformes, basi luteæ; prothorax luteus; petiolus longissimus; abdomen fere lineare; pedes lutescentes, femoribus tibiisque nonnunquam ex parte nigricantibus; alæ subcinereæ, nigricante venosæ.

Male. Black. Head and thorax shining, very finely punctured. Head much broader than the prothorax. Antennæ filiform, rather shorter than the body; first and second joints luteous. Prothorax luteous. Metathorax well developed. Petiole very long. Abdomen nearly linear, together with the petiole not longer than the thorax. Legs lutescent; femora and tibiæ occasionally blackish, except at each end. Wings slightly cinereous; veins blackish; humerus longer than the ulna. Length of the body $1\frac{1}{4}$ line.

It can hardly be compared with I. flavicollis and with I. fulvicollis, as no male of these two species has yet been discovered in England; the longer petiole and the darker wing-veins indicate that it is specifically different from both of them.

Isosoma insolita.—Fœm. Nigra; caput et thorax subtiliter punctata; caput prothorace paullo latius; antennæ subclavatæ, thorace multo breviores; prothorax immaculatus; petiolus longiusculus; abdomen postice sublatescens, thorace multo brevius; alæ diaphanæ, nigricante venosæ. *Mas.?* Antennæ filiformes; abdomen longi-fusiforme.

Female. Black, slender, shining. Head and thorax finely punctured. Head a little broader than the prothorax, which is moderately developed, and has no trace of the two pale spots which are very generally characteristic of this genus. Antennæ subclavate, wholly black, much shorter than the thorax; club fusiform, more than twice as long as the preceding joint. Metathorax well developed. Petiole rather long. Abdomen slightly increasing in breadth from the base to near the tip, very much shorter than the thorax. Legs wholly black. Wings pellucid; veins blackish; humerus much longer than the ulna; stigma very small. Length of the body 1—$1\frac{1}{4}$ line. *Male?* Antennæ filiform, about as long as the thorax. Abdomen elongate-fusiform, longer than that of the female. Most allied to I. brevis.

Systole albipennis, a native of the South of England, also

occurs near Lucca. S. analoga, *Foerst.*, seems to be indentical with Eurytoma platyptera, a species that was first placed with Systole, but afterwards transferred to Eurytoma.

The first of the two following species of Eurytoma was found near Bellagio, by the lake of Como; the second is a native of Japan; as is also the Haltichella, which is next described.

Eurytoma æqualis.—Fœm. Nigra; longiuscula, non gibbosa; caput et prothorax aspere scabra; caput prothorace paullo latius; antennæ subclavatæ, thorace breviores; petiolus brevis; abdomen lanceolatum, subcompressum, thorace paullo longius; tarsi flavi; alæ diaphanæ, nigro venosæ.

Female. Black, elongate. Head and thorax roughly scabrous. Head a little broader than the prothorax. Antennæ subclavate, shorter than the thorax. Prothorax quadrate, well developed. Mesothorax not gibbous. Metathorax fully developed. Petiole short. Abdomen lanceolate, slightly compressed, a little longer than the thorax. Tarsi yellow. Wings pellucid; veins black; ulna slender, much shorter than the humerus; radius much longer than the cubitus; stigma very small. Length of the body $1\frac{3}{4}$—2 lines.

The longer abdomen distinguishes it from E. nodularis, to which species it has most affinity.

Eurytoma Japonica.—Fœm. Nigra, gibbosa; caput et thorax subtiliter punctata; caput prothorace paullo latius; antennæ subclavatæ; petiolus brevis, crassus; abdomen compressum, altum, subcaudatum, thorace æquilongum; genua tarsique fulva; alæ diaphanæ, albido venosæ.

Female. Black, stout. Head and thorax finely punctured. Head a little broader than the prothorax. Antennæ subclavate, wholly black, a little shorter than the thorax. Prothorax and metathorax well developed. Mesothorax short. Petiole short, thick. Abdomen compressed, much deeper than the thorax, and equal to it in length. Sheath of the oviduct forming a lanceolate tube. Knees and tarsi tawny. Wings pellucid; veins whitish; ulna less than half as long as the humerus, not longer than the cubitus; stigma small. Length of the body $1\frac{1}{2}$ line.

It agrees with E. squamea in the paleness of the wing-veins, but the thorax is a little shorter, the abdomen is deeper, the sheath of the oviduct is longer, and the tibiæ are black to their tips.

Haltichella includens.—Fœm. Nigra; caput et thorax subtilissime punctata; caput prothorace paullo latius; tegulæ rufæ; abdomen longi-ovatum, subsessile, subcompressum, thorace paullo longius; tibiæ quatuor anteriores tarsique rufa, illæ basi nigricantes; alæ anticæ nigricantes, margine postico apice maculaque costali cinereis.

Female. Black, shining. Head and thorax very finely punctured. Head a little broader than the prothorax. Antennæ with the usual structure. Mesothorax with a red spot at the base of each fore wing. Abdomen subsessile, elongate-oval, slightly compressed, a little longer than the thorax. Tarsi and four anterior tibiæ red, the latter black towards the base. Fore wings blackish, cinereous towards the tips and along the hind border, and with a cinereous spot adjoining the costa. Length of the body $1\frac{3}{4}$ line.

The following species was found near Lucca, at a short distance from the residence of A. H. Haliday, and appears to belong to a genus established by him, and represented by an Algerian species, which he has described.

Chirolophus Halidayi.—Mas. Viridis, fere linearis; caput thorace paullo latius; antennæ nigræ, quadriramosæ; tarsi fuscescentes, basi pallide flavescentes; alæ diaphanæ, flavo venosæ.

Male. Dark metallic-green, nearly linear. Head a little broader than the thorax. Antennæ black, with four long branches, which are of equal length. Tarsi brownish, pale yellowish at the base. Wings pellucid; veins pale yellow. Length $1\frac{1}{2}$ line.

FRANCIS WALKER.

A List of the Butterflies inhabiting Jersey, with Notes of their Occurrence. By F. G. PIQUET, Esq.

Argynnis Aglaia.—Rare in Jersey. I took a single specimen on the slopes of St. Ouen's Bay, July 20th, 1872.

Argynnis Lathonia.—This beautiful insect has not been uncommon in this island since 1870, previous to which time it was of very rare occurrence. My first specimen was taken in a lucerne field, St. Bulade's Bay, about the end of September, 1870, since which time a season has not passed

when I have not taken several specimens, some even in the month of April.

Melitæa Cinxia.—Abundant on the Quenvais, St. Ouen's Bay.

Grapta C-Album.—Rare. I saw three specimens, and captured one on a fig-tree, St. Saviour's, August 28th, 1872.

Vanessa Urticæ.—Extremely abundant.

V. Polychloros.—Rather rare. I have taken it every season, but never in any numbers.

V. Antiopa.—One specimen was taken here some years ago on some palings, near Longueville, St. Saviour's; but I have never seen a living specimen myself.

V. Io.—Of occasional occurrence. Earliest date of capture, July 22nd.

V. Atalanta.—Common everywhere.

Pyrameis Cardui.—Generally common, but I did not take a single specimen in 1871; last season they were again very abundant.

Pyrarga Egeria.—Abundant.

P. Megæra.—Very abundant.

Satyrus Semele.—Abundant, especially along the coast. Earliest date of capture, June 29th.

Epinephele Janira.—Common everywhere.

E. Tithonus.—Common.

Cœnonympha Pamphilus.—Very common, especially on the Quenvais, and other dry, barren wastes.

Thecla Rubi.—Common, especially on blackberry-bloom, all along the coast.

T. Quercus.—Rare. I only know of two localities in the island for this insect,—Mont Musère, St. Lawrence, and in the Valley des Vaux, St. Saviour's, where I took one specimen, July 8th, 1872.

T. W-Album.—Has been taken here, but not of late years.

Lampides Bœtica.—Specimens have been taken here occasionally within the last few years. The last one I know of was taken in the suburbs of the town, in the autumn of last year.

Polyommatus Phlæas.—Common.

Lycæna Medon.—Abundant.

L. Icarus.—Exceedingly abundant.

L. Argiolus.—Not common, but more so than usual last year.

Colias Hyale.—By no means rare some seasons. In 1871 they were very scarce, but last season they appeared again in greater numbers.

C. Edusa.—More frequent than the preceding, though last season they were less common than usual.

C. Edusa var. *Helice.*—Two specimens were taken in St. Clement's Bay, in the earlier part of September, 1871; one by myself, and the other by my friend W. Poingdestre. I took another specimen last year, also in the same bay.

Gonepteryx Rhamni.—By no means common.

Leucophasia Sinapis.—One specimen was taken, near Claremont Hill, about the end of August, 1872.

Anthocharis Cardamines.—Has been once taken, near Victoria Village, St. Saviour's.

Pieris Daplidice.—By no means abundant, and very local. I generally take twelve to fourteen specimens every season.

P. Napi.—Rather scarce; Pontac, St. Clement's.

P. Rapæ.—Too abundant.

P. Brassicæ.—Common.

Hesperia Malvæ.—I had never seen this insect before or since 1871, when I took a single specimen in the Swiss Valley, St. Saviour's.

H. Sylvanus.—Abundant.

H. Linea.—Not common. St. Brelade's. Earliest date of capture, June 29th.

FRED. G. PIQUET.

Entomological Notes from South Australia.

By H. RAMSAY COX, Esq.

(Continued from p. 359.)

THROUGH the aid of Mr. Hewitson I am enabled to complete the meagre list of South Australian butterflies lately captured there by me. These species appear to have been much overlooked by entomologists: none of them are named in the British Museum collection; and, with the exception of Icilius and Serpentata, I could not find even their representatives in it.

Ialmenus Icilius (Hewitson).—Common, but local, on wattle trees, near Nairne. A lovely insect when fresh out.

Lycæna Serpentata (Her.-Schäffer).—Very abundant on a small patch of lucerne at Woodside, near Port Adelaide; also one solitary specimen at Nairne.

Hesperilla Dirphia (Hew.).—A few near Hahndorf.

Hesperia Phigalia (Hew.).—A few near Nairne? or Adelaide?

The species not hitherto described or named are as follows:—

1. *Lycæna Heathi*, n. sp. Male expands 1 in. 10 lin.; female, 1 in. 1 lin. to 1 in. 4 lin. *Male.*—Dark lilac-purple, with the veins pale brown. *Female.*—Slaty brown, with a central pale purplish blotch, extending to the inner margin. The veins brownish. Under side brilliant grayish white, tinged with blue, with no markings, except a marginal row of minute black dots, which in some specimens are scarcely visible. Fringe unspotted. Local. Mount Barker. November to January.

2. *Lycæna Acasta*, n. sp. Expands 10 lin. Dark inky purple, shot with copper colour. Under side gray, with several rows of indistinct brown spots. A large indistinct brown blotch near the anal angle of both wings. Fringe unspotted. Scarce. "Bremer Ranges," and near Kanmantoo. November.

3. *Taractrocera Celæno*, n. sp.? Expands 1 in. 2 lin. Very nearly allied to T. Papyria (a Tasmanian species) in every respect, with the exception of the band in the hind wings, which is very much narrower and brighter in my South Australian specimens. Scarce. Near Nairne. April and November.

[These three new species were exhibited at the meeting of the South London Entomological Society on the 10th of April.—*Edward Newman.*]

Note.—*Lycæna Phœbe.*—In the first part of my captures (Entom. vi. 209) I used this name, which has led to numerous entomologists writing to me, to know where and how I got this name, and on whose authority it is so named. I can only reply by saying that Mr. Janson gave it to me. On subsequent enquiry I find it is a manuscript name in the British Museum collection.

H. Ramsay Cox.

West Dulwich, London, S.E.

Notes on some Insects of Italy and of South France, observed between the middle of May and the middle of July, 1872. By Francis Walker, Esq.

(Continued from p. 308.)

Avignon.—Dermaptera: Forficula mœsta. Neuroptera: Chloroperla virescens. Hymenoptera: Allantus zona, Bombus hortorum. Diptera: Paragus albifrons. Hemiptera: Nabis subapterus.

Marseilles.—Hymenoptera: Ichneumon fasciatorius.

Nice.—Diptera: Empis lepidopus. This fly was frequent in several parts of Italy as far as Rome.

Genoa.—Hymenoptera: Ichneumon fasciatorius, Vespa Germanica. Diptera: Myopa atra. Hemiptera: Tricophora sanguinolenta.

Pisa.—Neuroptera: Limnephilus fenestratus. Diptera: Chrysomyia formosa, Baccha tabida.

Rome.—Coleoptera: Elodes livida, Phytonomus punctatus. Hymenoptera: Dosytheus Eglanteriæ, Athalia annulata, Ceropales maculata, Ammophila subulosa, A. viatica, Polistes gallica, Cœlioxys rufescens, Nomada furva, Ceratina albilabris, Eucera nigrilabris, Anthophora crinipes, Bombus Hortorum, B. Pascuorum. Diptera: Empis pennipes, Merodon clavipes, Paragus testaceus, Eristalis Arbustorum, Syrphus ornatus, S. vitripennis, Platychirus manicatus, P. mellinus, Sphærosphoria scripta, S. Melissæ, Myopa atra, Gymnosoma rotundata, G. globosa, Ocyptera brassicaria, O. interrupta. Hemiptera: Pyrrhocoris apterus (winged), Nabis ferus, Tricophora sanguinolenta. Some of the British species of Stenobothrus occurred here, and the Sphærosphoriæ were very numerous.

Florence.—Coleoptera: Elater nigrinus, Athous hæmorrhoidalis, Leptura sanguinolenta. Hymenoptera: Nomada furva, Ceratina cærulea, C. albilabris, Bombus Hortorum. Diptera: Usia ænia, Empis pennipes, Syrphus balteatus, Platychirus clypeatus, P. mellinus, Sphærosphoria scripta, S. tæniata, Conops rufipes, Myopa atra, Stomoxys irritans. Hemiptera: Nabis ferus, Tettigonia viridis.

Lucca.—Coleoptera: Sericosoma brunnea, Œdemera cærulea, Œ. lurida, Attelabus curculionoides. Neuroptera: Libellula sanguinea. Hymenoptera: Ichneumon lineator,

Fœnus jaculator, Ceratina albilabris, Anthophora nidulans, Bombus Pascuorum. Diptera: Paragus testaceus, B. femoratus, Sphærosphoria tæniata, Myopa bicolor, M. atra. Hemiptera: Harpactor hæmorrhoidalis, Dryobius croaticus. Harpactor occurs chiefly in the Mediterranean region, and is the representative of a division of a land-bug tribe that abounds in warm countries. The species have a great variety of structure, but all agree in the characteristic of a lancet-mouth adapted for blood-drawing, whereby they control insect-life. The other land-bugs, with a few exceptions, derive their maintenance from vegetation. Three genera, each having a single representative, appear in England, in addition to the little species of Nabis, which seems to be spread over most parts of the earth.

Baths of Lucca.—Coleoptera: Cistela sulphurea, Leptura sanguinolenta, Cryptocephalus Hypochœridis. Dermaptera: Odontura punctatissima, Tettix bipunctata. Hymenoptera: Allantus viduus, Andrena eximia, Bombus Pascuorum. Diptera: Oxycera Hypoleon. Hemiptera: Aphrophora spumaria, Tettigonia viridis.

Ravenna.—Dermaptera: Tettix bipunctata. Hymenoptera: Eucera nigrilabris.

Venice.—Coleoptera: Telephorus melanurus.

Bellagio.—Coleoptera: Telephorus melanurus, Cistela sulphurea, Cryptocephalus Hypochœridis. Dermaptera: Decticus brachypterus. Hymenoptera: Eumenes coarctata, Chrysis succincta. Diptera: Empis pennipes, Chrysomyia formosa, Syrphus balteatus, Myopa atra. Hemiptera: Nabis brevipennis.

Milan.—Neuroptera: Libellula sanguinea. Diptera: Pachyrhina crocata, Paragus femoratus, Ascia podagrica. Hemiptera: Nabis brevipennis.

FRANCIS WALKER.

Mountain Collecting in March. By C. S. GREGSON.

MARCH 25, 1873.—Went to Llanferras, Denbighshire, on "Pen-y-garra Win" and "Pant Moen;" took larvæ of Agrotis Ashworthii and cinerea amongst mixed herbage; the latter seems to prefer Festuca ovina, feeding downwards

from the extreme tips of the grass, and stumping the tufts down it has fed upon, afterwards hiding away in the tufts.

Searching for Micro-larvæ, I took Dicrorampha plumbagana, acuminatana and consortana, Solenobia triquetrella, and Psyche inconspicuella cases, and observed the young larvæ of Psychoides Verhuellella feeding freely on Asplenium Ruta-muraria, and several cases of Diplodoma marginepunctella. In the cases of Scabiosa columbaria young larvæ of Mimæceoptilus scabiodactylus were plentiful; and on the terminal shoots of Teucrium Scorodonia, growing in sheltered corners, Oxyptilus Britanniodactylus larvæ were just beginning to feed, and young cases of Coleophora alcyonipennella were not scarce, whilst Gracilaria tringipennella were also indicating their presence on Plantago lanceolata leaves in warm corners, and the cases of Coleophora Virgaureella were frequently seen attached to sticks and dead plant-stems, whilst I was searching amongst the wild marjoram and golden-rod, growing together, for the hybernating larvæ of Leioptilus osteodactylus.

Passing into "Colomendy" Park (Welsh for the "Dovecote"), whilst tea was preparing, I took larvæ of Cleora lichenaria and Gnophos obscuraria, and then changing my ground for the night I found a good lot of Cirrhœdia xerampelina larvæ packed snugly away in their hybernacula, and dug a few pupæ up, one of which, under Geranium rubrum, is unknown to me, and then observing an Acronycta-like cocoon affixed to the rocks I devoted some time to them successfully at sugar. For over a mile sugared, and at sallows, afterwards, only common species appeared; Rubricosa abundantly on the wing at dusk. Whilst sugaring, the only note-worthy species was Depressaria capreolella, where Daucus Carota grows freely. Leucania conigera and lithargyria larvæ were feeding freely at dusk; and near midnight Agrotis lucernea larvæ were stretched at full length on the rock-faces, one or two feet from the little ledges where their food grows, apparently enjoying the warmth the rocks have imbibed from the hot sunshine of the day. Epunda lichenea larvæ of all colours, from light green to dark chequered brown-olive, and of all sizes, from three-eighths of an inch long to full fed, were feeding on Sedum acre and S. reflexum, and stretched out on various plants, or at rest on the rocks.

Next morning I devoted to larvæ collecting in catkins or moss. From a fine female plant of Salix caprea I took quite a lot of Eupithecia tenuiata, and amongst them plenty of the young larvæ of Grapholita nisana, and, as a matter of course, no end of Xanthia Cerago and Silago eggs and larvæ. Afterwards going a mile down the river I filled a bag with catkins and terminal shoots of Alnus glutinosa, in and on which Grapholita Penkleriana are feeding. Under the tufts of Tortulæ and Hypnums, which grow so freely around Llanferras, I got larvæ of Eudorea muralis, cratægalis and mercurialis (but all were young), and a few common Noctuæ larvæ hiding away there.

Returning by "Glan Alun Mine" I saw, for the second time, Vanessa Polychloros in Wales. And thus ended mountain collecting on March 26, 1873.

C. S. Gregson.

Rose Bank, Fletcher Grove, Edge Lane, Liverpool.

Description of the Larva of Ennomos angularia.—In 1871 I received some eggs of this species from a friend. They were oval in form, and in colour ochreous-brown. Shortly before the emergence of the larvæ they changed to olivaceous. The larvæ began to emerge in April: they did not all hatch at once, but continued to do so in small numbers for some weeks after the appearance of the first. The young larvæ were perfectly cylindrical and rather stout; bodies olive-green, with a paler lateral stripe; the head and anal segment ochreous. After a moult they became pale bluish green, with a broad lateral whitish green stripe: at this period the larvæ generally rested on the under side of the leaves of their food-plant, attached by their claspers only. After this moult they increased in size very rapidly; and by the end of May the most forward of them had attained a length of 9 lines, and the humps, characteristic of the adult larva, had made their appearance. The larvæ underwent four moults in all, before becoming full fed: they were full fed and spun up from the last week in June to the middle of July, and I then described them as follows. The full-fed larva usually rests attached by both its legs and claspers, the intervening segments being bent sideways in a peculiar manner, and forming a slight

arch. Its length is from 1 inch and 5 lines to 1 inch and 9 lines. The head is flattened, somewhat spade-shaped, as wide as the 2nd segment, and porrected in crawling; the antennal papillæ conspicuous. The body is elongate, stoutest behind, and uneven in form; the 3rd segment is dilated laterally; the 6th has a conspicuous, transverse, dorsal hump, and also a smaller one on each side; the 8th has a lateral projection, and both it and the 9th have two inconspicuous dorsal points; the 10th bears a large, bifid, dorsal hump, and smaller lateral ones; and the 12th has two small dorsal points; the 13th segment terminates in two inconspicuous points directed backwards. The skin is much wrinkled transversely, and there is a lateral skinfold containing the very inconspicuous spiracles. The colour of the head is dull blackish; of the body dull umber-brown, mottled, and clouded with pale, dull olive-green. There is a pale line on each side of the back of 5th segment, and an indistinct, large, pale, somewhat oval mark on the dorsal surface of each of the 6th to 10th segments. The humps are very dark umber-brown; that on the 6th segment having a short, pale greenish line down each side. The ventral surface of the 12th and 13th segments is entirely bright olive-green; that of the remaining segments is dull olivaceous, with two longitudinal brown stripes, extending from 5th to 11th segments. The legs are umber-brown; the claspers mottled and clouded like the body; the spiracles are ochreous, each in a delicate black ring. One of my larvæ had the ground colour a dull reddish brown. They fed on oak and birch, preferring the latter; and when full fed spun a slight cocoon between the leaves of their food-plant, in which they turned to pupæ, which were elongate, lively, pointed at the anal extremity, and dull olivaceous in colour, spotted, and streaked with darker. A variety of the pupa is pale bluish green, without markings.—*Bernard Lockyer.*

Description of the Larva of Fidonia atomaria.—In Mr. Newman's work on the 'British Moths,' there is a description of this larva, translated from the French of M. Guenée; but it is so meagre that I venture to place on record a few notes on the species which I took a few years ago. In the spring of 1870 I obtained a small batch of eggs from a female, captured at Shirley. These were small oval, and of a bright

green tint when first deposited; the colour gradually became duller, till about the twelfth day after they were deposited they had become of a grayish brown. The day after this change the young larvæ hatched: they were pale green, with olive-green subdorsal and medio-ventral lines. They fed readily on clover (Trifolium) and dock (Rumex); of the latter they preferred the flowers. They fed up rapidly, and had attained their full growth by the middle of July, when they rested, attached to their food-plant, by both legs and claspers, the intervening segments forming a very slight arch. I then took the following description of them. Head as wide as 2nd segment, slightly notched on the crown. Body rather elongate, perfectly cylindrical. Colour of head whitish gray, marbled with darker. Colour of body variable. *Var.* 1.—Light yellowish green; a double medio-dorsal stripe and the subdorsal lines being paler than the ground colour; spiracular line yellow, bordered above by a reddish stripe, which is delicately striated with darker, longitudinal, rivulet lines; ventral surface ochreous, having eight slender longitudinal reddish lines; there is (on the 5th to 8th segments) a square grayish spot at the anterior interstice, situated between the two medio-dorsal lines; legs and claspers ochreous; interstices of segments, 4th to 11th, yellowish; trapezoidal dots (on 5th to 10th segments) distinct, black. *Var.* 2.—Ground colour of back pale bluish green; rest as in var. 1, but the red is not so vivid. *Var.* 3.—Ground colour of whole body uniform reddish ochreous; dorsal, subdorsal and spiracular lines indistinct, rosy; interstices of segments, 4th to 11th, also tinged with rosy; no red band above the spiracular line. When full fed the larvæ buried in the earth in the breeding-cage and constructed loose cocoons, in which they turned to small, moderately stout, pointed, reddish brown pupæ. The first imago emerged May 30th, 1871.—*Bernard Lockyer.*

Description of the Larva of Eudorea lineolalis.—Length five-eighths of an inch; colour olivaceous-green. Head dark and corslet black; suture scarcely perceptible; segments constricted, wrinkled; on 3rd and 4th segments are six dark, horn-like raised spots in a ring; afterwards the spots are placed triangularly, one being on the second wrinkle of each segment, a little below the first spot and the

third spot below them; between these spots are light, squarish patches, giving the larva a mottled appearance; spiracular marks longitudinal-oval; anal segment with a triangular black plate. Feeds under Parmelia parietina, which grows upon the rocks at Howth, Ireland, and on the rocks on the coast at the Isle of Man, and is full fed in June. It goes to pupa under its food-plant in a slight web, and appears in the perfect state in July.—*C. S. Gregson; Rose Bank, Fletcher Grove, Edge Lane, Liverpool, April* 2, 1873.

Description of a Psychideous Larva.—Mr. Hodgkinson and myself discovered the above larvæ on the rocks at Howth, but though we took about one thousand in June, 1870, which produced thousands of young larvæ the following season, a fresh supply was obtained in 1872, but no perfect insects were obtained. Failing to breed it, and there being little probability that I shall ever have another opportunity to do so, I purpose publishing the description thereof under the name "Psyche Hibernicella," leaving it to some more fortunate fellow-worker to describe the perfect insect, when he or she discovers it. Description made June 16, 1872:—Case obconical. Length about two lines, broadish at the mouth. Larva purplish brown, slightly pellucid below. Head shining, black, with sharply defined corslets on 2nd and 3rd segments, having a long triangular suture through them, the point being towards the head; on the 4th segment in the subdorsal region there is a faintly-defined, sunk, darkish, somewhat triangular mark; head and three segments spiny; dorsal region dark, with sometimes faint indications of a row of light spots, one on each segment; from subdorsal region to under side lighter spiracles; raised abdomen obconical; anal segment obtuse, slightly darker, and under the slight power of a pocket-lens I fail to see the claspers, *if* any exist. Legs long, spread out, the third pair especially so. The larva leaves its case at pleasure, and roams freely. As I write I have an open pill-box before me on a book, and since I commenced this description about fifty larvæ have spread themselves from the box all over the book, twenty-one having old cases, just as they were gathered from the rocks: thirty are without cases, having left them in the pill-box; some walking, as do those having cases; others dragging the body along like a

useless appendage; some occasionally letting the anal segment droop, but none ever using the abdominal feet; and two or three have housed themselves in new cases constructed of lichens, which I gathered from the rocks at Douglas Head yesterday. Each larva can at pleasure suspend itself from a thread. Having failed to breed it this season, so far, my hopes are now very small.—*C. S. Gregson.*

Description of the Larva of Grapholita nisana, Lin.—Length three-eighths of an inch; colour whitish green; rather stout and rugose; spines sparse, but long on the anal segment, which is whitish. Head bright, dark, horn-like; corslet darker, with a suture. Feeds upon catkins and young shoots of sallows from middle to end of April; it spins a slight web, and changes to a stout, yellowish green pupa, the wing-cases darkest: the imago appears in May and early June.—*Id.*

Entomological Notes, Captures, &c.

Vanessa Antiopa.—A very good hybernated specimen was taken at the Warren here, about April 18th, by some boys. The only injury is a small notch out of one of the hind wings. This makes the fourth specimen that Reading can boast of during the remarkable "take" of 1872—73.—*E. B. Poulton; Victoria Villa, Reading.*

Hybernated Specimen of Vanessa Antiopa.—A specimen was seen on the 20th April in the town of Liverpool.—*H. Durnford;* 1, *Stanley Road, Waterloo, Liverpool.*

Hybernated Antiopa.—A specimen was taken on the 14th of April, at Havering Attebower, in Essex.—*E. Newman.*

Hybernated Antiopa near Liverpool.—I had the good fortune to capture a hybernated specimen of Vanessa Antiopa on Friday, April 18th, 1873, in a garden, near Knobby Ash Village, about five miles from Liverpool.—*Edward P. Thompson; Thingwall, Liverpool.*

Hybernated Antiopa.—On Monday last, March 24th, a specimen of Vanessa Antiopa was seen by a gardener flying round a hothouse in the garden in which he was working, at Stamford Hill. Others have been seen in several localities near London, and one has been taken at Hampstead.

During the past week two specimens of Vanessa Antiopa have been observed on the banks of the river Dee; and one at Great Malvern, about half-way up the hill.—*From the 'Field.'*

Vanessa Urticæ.—As my little boy was getting me some nettle yesterday, on the Castle Hill, he saw a V. Urticæ laying her eggs on the top of a stem of nettle, she being so still as to allow him to get quite close to her and watch her for some minutes, as he says he wanted her to lay a good lot, that he might bring them home, which he did; therefore proving that it is the hybernated ones that produce the summer brood. They are of a very dark green. As I have frequently heard different opinions, this may be interesting to some of your readers.—*George Gray; 71, Castle Street, Dover, May 7*, 1873.

Sphinx Ligustri and Lobophora hexapterata near Ipswich and Colchester.—On Friday, May 16th, a very cold day, I took a fine Sphinx Ligustri, at rest on a gate-post at Bentley, near Ipswich; and on the following day a nice series of Lobophora hexapterata near Colchester. Considering how backward most things are, I was surprised to see S. Ligustri out so early. I am now breeding some good specimens of S. culiciformis, B. consortaria, N. pulveraria, P. hamula, N. trepida, &c.—*W. H. Harwood; St. Peter's, Colchester, May* 22, 1873.

Variety of Epinephele Janira.—A few days back, whilst examining my cases of Lepidoptera, I found I was in possession of a rather curious variety of E. Janira, which, on account of its being set to show the under side, I had not noticed before. As to its general appearance it is similar to most of its species; but in addition to the large circular white-pupilled black spot present in all specimens to a certain extent, there is a second smaller one just beneath it, separated from the larger one by a wing-ray. This small spot has, on the left wing, a few white scales, forming a pupil; but of these there is no trace on the right wing. On the under side the small spots are still visible, although united to the larger. Thinking this a rather unusual departure from the characters of the species, I have made mention of it. —*Thomas Barns; Oakington House, Beckenham, April* 21, 1873.

Chœrocampa Celerio at Margate.—At the latter end of last September a friend of mine caught a specimen of Chœrocampa Celerio, at Margate, in his bed-room. Owing to unskilful treatment it is much damaged. As I did not know what it was, I showed it to a friend of mine, Mr. Jarvis, of Brixton Hill, who told me the name of the insect.—*Charles Duncan;* 128, *Mildmay Road, Stoke Newington, N., May* 5, 1873.

Eupithecia irriguata bred.—I have bred a pair of E. irriguata from larvæ beaten from oak, on the 25th of July; there were no beech trees within five or six hundred yards.—*H. S. Bishop;* 4, *Union Place, Plymouth, May* 7, 1873.

Acronycta Alni bred.—On the 29th of last July I found a full-fed larva of Acronycta Alni on alder. A few days afterwards it changed to a pupa; and yesterday (May 7th) a beautiful specimen of the moth emerged in the breeding-cage, a month earlier than the time mentioned in your 'British Moths.' The pupa had never been in a room with a fire, and latterly was chiefly kept outside a window with a north aspect.—*Ada Steele Perkins; Ashgrove, Overton, Flintshire, May* 8, 1873.

Acronycta Alni.—In the autumn of last year I sent you a notice of the capture of a larva of Acronycta Alni, which I described as having safely ensconced itself in a twig of dry bramble for change to the pupa state. You may therefore imagine my disgust and disappointment this morning, on cutting the twig open, to find nought but the enclosed. May I ask you to inform me, in your next number, what pupa it is. It is too large for an ichneumon, as it appears to me. Nothing (and this is strange) could have been more lively than the Alni caterpillar previous to entering the bramble. "Pierced" larvæ are, I have usually found, sluggish and indisposed.—[*Rev.*] *Windsor Hambrough; The Grange, Barnes, Surrey, May* 13, 1873.

[The case is that of a Dipteron; in all probability one of the numerous species that have been included under the name Musca Larvarum of Linneus. It is so common an economy of the true Muscidæ to pass their preparatory state in the bodies of Lepidopterous larvæ, that I cannot attempt to determine the species merely from an inspection of the pupa-case.—*Edward Newman.*]

Phytometra Ænea.—I was greatly surprised at capturing

one of these insects, while sweeping for Arbuti, at our Warren, on Monday, the 12th of May. Do you think it likely that there are two broods? In the New Forest, last year, they were common in August.—*E. B. Poulton; Victoria Villa, Reading.*

Larva of Bajularia.—I was yesterday so fortunate as to see a larva of Bajularia perform its toilet, and have much pleasure in sending you an account of what I saw. When I first observed the larva it was attached by its claspers to an oak-twig, with its head towards the cast-off skin with which it had just parted, and which was also attached firmly to the twig, and just within reach. I had never before seen a larva of Bajularia without its dress, and was watching it, and had marked it had a protuberance on each side of the 5th, 6th, 7th, 8th, 9th, and 12th segments, those on the 9th being a little farther removed from the medio-dorsal stripe than the rest, when it stretched itself forth, and, reaching the cast-off garment, tore away from it by the action of its mouth and legs one of the pieces attached to it; it held the piece for some time, as a squirrel would a nut, turning it over and over, and evidently covering it with a glutinous matter, although I could not see anything proceed from its mouth: when this was done to its satisfaction it twisted itself sharply round, and fixed the piece on the protuberance on the right side of the 6th segment; it then at once seized and tore away a second piece, and placed it on the left side of the 12th segment; garment the third was placed on the 9th segment of the same side; the fourth on the 7th segment of the right side; the fifth on the 7th segment of the left side; the sixth on the 8th segment of the right side; the seventh on the 6th segment of the left side; the eighth on the 5th segment of the right side; the ninth on the 9th segment of the right side; the tenth on the 12th segment of the right side; the eleventh on the 5th segment of the left side; the twelfth on the 9th segment of the right side; the thirteenth on the 8th segment of the left side; the fourteenth on the 7th segment of the right side; the fifteenth on the 8th segment of the left side; the sixteenth on the 12th segment of the right side: so that nine pieces were placed on one side, and seven on the other. When the eleventh piece had been fixed on, a large portion of the old skin was exposed; the larva then gave it

a tug or two, as if about to detach a piece of it to use as an article of clothing, but instead of this it made a meal of about half of it; it then put on the twelfth and thirteenth pieces, when the rest of the skin being exposed, it made another meal. The fourteenth, fifteenth and sixteenth pieces were then fixed on, and the larva composed itself to rest, having been an hour and forty minutes at work.—[*Rev.*] *P. H. Jennings; Longfield Rectory, Gravesend, May* 17, 1873.

Floods and Hybernating Larvæ.—Continued dampness is, as most of us know, not beneficial to larvæ which hybernate, for in the case of B. Rubi, &c., such a state of affairs is productive of a white fungoid growth upon the body of the larva, which is almost certain eventually to cause death. But are floods equally injurious? and do they always cause the death of such larvæ as are fully and unalterably exposed to their influence? If such is the case I much fear the stock of insects will be very limited during the forthcoming season. A flood of *short* duration does not, I think, affect larvæ to a very great extent, as I have known instances in previous winters in which a certain bank—where larvæ of Dominula, Caja, &c., are almost sure to be found after hybernation—has been partially flooded, and yet in the spring I have found larvæ in abundance; such, however, is not the case this season, for the bank has been overflowed for some six or eight weeks consecutively during the winter, and a visit of a few days since revealed the comfrey, &c., in abundance, but no larvæ were to be seen. I am inclined to suppose that sometimes when the bank was but partly covered with water the hybernating larvæ, feeling the inundation, came out from their hiding-places, and were borne about upon the water until drifted to a higher level, when they took advantage of the shelter afforded by the uncovered portions. The spiny larvæ of Dominula I have often found in the spring, floating upon the surface of the water in ditches, by the side of which their food-plants grow; but I quite believe it was always by accident, never from choice, that such a situation was gained. That some larvæ possess an extraordinary amount of vitality when immersed is well known. In 1870 a boy brought two nearly full-fed larvæ of C. Elpenor to my home, and supposing they were *leeches* he had put them into a *bottle of water* to convey them more safely, and as he thought humanely. In this

strange situation the larvæ had travelled several miles, and on reaching me they were still alive. How long they had been immersed I cannot say, but on being extricated from their imprisonment they completed their full growth upon fuchsia-leaves; and the two moths are now in my cabinet, proving that a short immersion is not always fatal.—*G. B. Corbin.*

Do Insects recognize Individuals?—Do you think that insects know individuals? I verily believe they do; and I give you my reason for coming to such a conclusion. I was lately in the neighbourhood of Gainsborough, in Lincolnshire, collecting. I was staying at the house of a small farmer: this person had in his garden thirteen hives. In some of my rambles Mr. Hurry, the owner, went with me, and, to my surprise, I noticed bees came and settled upon his hands and face, and about his coat. When I called his attention to this novel conduct of the bees, he said:—"They are my bees; they know me very well." At this time we were two miles from his house and garden. I saw the same thing occur a second day, and told the two gentlemen that were with me, W. Cook and F. Marshall; and as it was repeated several times the other collectors witnessed it for themselves. I think all three of us cannot well be mistaken: they never settled on either of us, or took the least notice, although the ground was swarming with bees. The spot where this occurred is a beautiful heath, called Loughton Common. I have just stated the facts as they occurred, and made no comment, yet I thought some of your readers may have noticed similar occurrences. I do not recollect this principle of recognition being mentioned by Kirby and Spence, although they give very elaborate comments respecting the instinct, habits, and general movements of the bee. Now, supposing those statements to be correct, can we doubt that the same degree of intelligence may be met with in other insects. I do not think we have any reason to doubt it.—*John Potts;* 79, *Spring Gardens, Doncaster.*

[In Kirby and Spence are several passages that support Mr. Potts' statement, although perhaps they do not state the fact precisely in the same way: thus we find in vol. ii. p. 199, of the 1828 edition, that the writer's bees did not usually attack himself, but did so on one occasion. This seems to

imply that they recognized him in general, or their molesting him on that occasion would not have been exceptional, or worthy of note. It is clear that bees recognized the celebrated Wildman, to whom also Kirby and Spence make allusion; but I have the direct authority of several bee-masters to state that their bees distinguish them from any other individual.—*Edward Newman.*]

Extracts from the Proceedings of the Entomological Society, February 17, 1873.

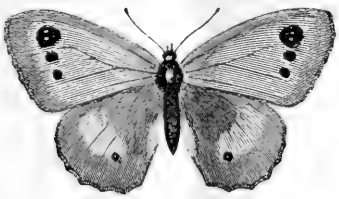
Acronycta Psi and Tridens.—Mr. F. Bond exhibited a series of bred specimens of Acronycta tridens and A. Psi, with preserved larvæ of the two species. The specimens of A. tridens had all been reared on the common pear. He remarked that the dark specimens so often occurring in A. Psi were never repeated in A. tridens; and that the latter always exhibited a pinkish tint in fine fresh-bred specimens, which, however, was very evanescent.

Dipterous Larvæ in Phlegm.—Prof. Westwood exhibited two Dipterous larvæ preserved in spirits, which were probably those of Psila Rosæ. These had been discharged by a female in a clot of phlegm. He suggested, when they were submitted to him, that the person had probably been eating raw carrots, which, upon enquiry, turned out to have been the case. After they had been immersed in spirits for three or four days he took them out for examination, when he was surprised to find they were still alive. He also exhibited drawings of a Dipterous larva (probably Merodon clavipes, *Fab.*) infesting some bulbs sent to him from the Continent. Also drawings of woody excrescences on stems of vine, which had probably been formed by a beetle of the genus Otiorhynchus. Mr. Müller remarked that Mr. Riley had recorded a similar habit in an American beetle allied to Baridius.

Anaitis plagiata.—Mr. Briggs exhibited parallel series of the large and small forms of Anaitis plagiata taken by him in Tilgate Forest, in the month of June, stating that he had found only the larger form last year, in the same place in which he had found only the smaller form three years before. It was commonly supposed that the smaller form was only a second brood, but this did not appear to be the case.

THE ENTOMOLOGIST.

No. 119.] AUGUST, MDCCCLXXIII. [Price 6d.



VARIETY OF EPINEPHELE TITHONUS (FEMALE).

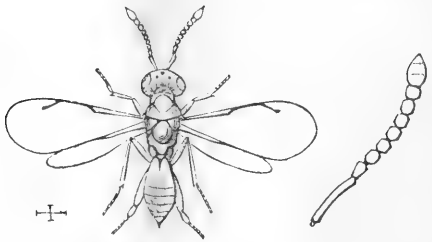
Variety of Epinephele Tithonus.—This female specimen differs from the ordinary marking of the species in having two circular black spots below the usual double-pupilled black spot, which is constantly observable near the apical angle of the fore wings. I have described this variety (Brit. But. p. 93), but had not in my possession an example to figure. It does not appear to be very uncommon; but on looking over a large number of specimens I find many in which this peculiarity is indicated, although not so strongly pronounced as to attract attention. These intermediate examples are very interesting, as establishing beyond question the specified identity of the two extremes,—one having the additional spots strongly marked, while in the other they are entirely absent.

The specimen is in the cabinet of Mr. Stevens, and has been kindly lent me for the purpose of figuring in the 'Entomologist.'—*Edward Newman.*

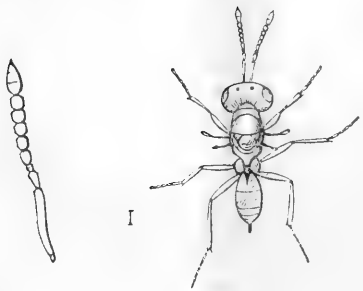
Economy of Chalcidiæ. By Francis Walker, Esq.

(Continued from p. 419.)

The economy of the species represented in the first three figures is unknown: the middle legs of the first indicate its



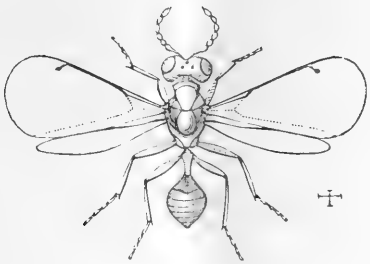
PROSOPON MONTANUM.



MICROMELUS PYRRHOGASTER.

affinity to Eupelmus; and the second may be considered as a section of the genus Pteromalus. The species of Entedon are well known to be parasitic on leaf-mining grubs, and the

observations on their habits here recorded were made by M. le Col. Goureau several years ago. It is probable that

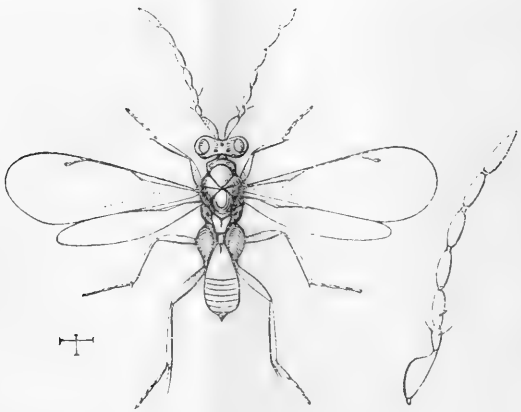


ENTEDON AMYCLAS.

the species mentioned inhabit England, and may be found by collecting the mined leaves which are often abundant:— Omphale palustris, *Gour.*, parasitic with Dacnusa flavipes, *Gour.*, and Blacus? Florus, *Gour.*, on Agromyza nana; Entedon Lepidus, *Gour.*, parasitic with Dacnusa punctum, *Gour.*, on Phytomyza Scolopendri, *Desv.;* Entedon Gratus, *Gour.*, parasitic on Phytomyza Plantaginis, *Desv.;* Entedon Latreillei? parasitic with Dacnusa maculata, *Gour.*, on Phytomyza Aquifolii, *Gour.;* Entedon Cyrinus, *Gour.*, parasitic with Dacnusa incerta, *Gour.* (= flavipes?), on Phytomyza flava, *Meig.;* Omphale stigma, *Gour.*, parasitic with Cirrospilus cyanops, *Gour.*, Systasis celer, *Gour.*, and Dacnusa Lysias, *Gour.*, on Phytomyza horticolor, *Gour.;* Entedon Coponices, *Gour.*, with Dacnusa Chereas, *Gour.*, and Opius Ambirius, *Gour.*, on Phytomyza minuscula, *Gour.;* Entedon gracilis, *Gour.*, with Dacnusa flavipes, on Phytomyza lateralis, *Macq.* Observations are still required to ascertain whether the Chalcids and the Braconids above mentioned participate in the substance of the little Muscids, or whether the Chalcids are dependent on the Braconids for their maintenance, and help to adjust the increase of the latter. Goureau mentions that there are at least two generations of the Muscids: the spring generation, when the Braconids

are few, generally live unmolested; the autumn generation, when the Braconids are young, seldom escape the latter. The Braconids are thus adapted in the scheme of Nature to regulate the number of the little Muscids, and to adapt them for their periodical work, a remnant of them being sufficient for recommencement in the spring of each year. The large destruction of the Muscids must be followed by the like event to the destroyers, and investigation is required as to how a very small number of the latter are preserved through the winter. Three species have been lately added by Dr. Giraud to the genus Eupelmus here mentioned,—E. Cicadæ, E. splendens, and E. bifasciatus: the first is parasitic on the eggs of a Cicada; the second is parasitic on Bathyaspis Aceris, one of the Cynipidæ; and the third seems to be closely allied to E. pezomachoides.

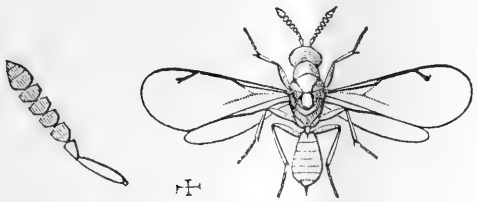
The first of the three following figures illustrates the



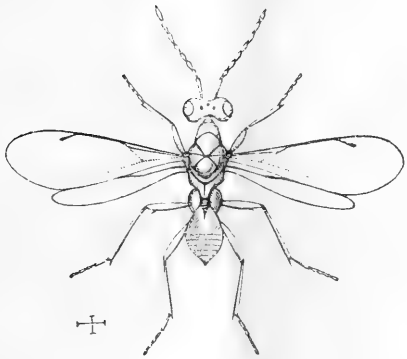
EUPLECTUS ALBIVENTRIS.

Elachistidæ, of which one species, Olynx Gallarum (Ichneumon Gallarum, *Linn.*), is familiar to all persons who have examined oak-apples, though there is as yet no exact knowledge as to the proceedings of the Olynx with regard to the

other inhabitants of these galls. The two other figures represent Eulophidæ, of which Eulophus albomaculatus and



EULOPHUS APHACA.



CIRROSPILUS PULCHELLUS.

E. stenostigma may be mentioned as having been observed by Leon Dufour, in Spain, to be parasites of Trypeta Jasoniæ in that country. Sympiesis sericeicornis, one of this family, is parasitic on subcutaneous larvæ.

FRANCIS WALKER.

Notes on Southern Indian Lepidoptera.

By William Watkins.

I would wish, prior to commencing my notes, to explain that the chief reason of my wishing these papers published, is that English entomologists may become aware of the wide distribution of the species identical with those of our native land; having resided in India a period extending over four seasons (during which time I have lost no opportunity of collecting and observing the species that occur at the Neilgherry Hills, Secunderabad and Burmah), I have thought that notes thereon would prove interesting to the "lovers of the net and pin." My first paper will be on captures at the Neilgherries in 1872.

The Neilgherries are a range of hills running along the south-west of India, and distant from Bombay some two hundred miles; their height at Wellington above the level of the sea is six thousand feet. The climate is remarkably mild, and the seasons much like those of England: during the months of November, December and January it is decidedly cold; and although we do not get snow in Southern India, still the hills are covered with hoar frost almost every morning during those months. The average mean temperature at Wellington for 1872 was 62°. Only a very few of the wild plants of England occur here, and I have never seen trees identical with those we find growing wild at home; yet almost all English fruits, vegetables and flowers can be cultivated here in great perfection.

Arriving from Secunderabad in February, 1872, I immediately commenced entomological operations, but found that the species most common were only "hybernates:" these were C. Cardui (extremely abundant), V. Atalanta, and V. Orithea (a very beautiful species, in size and markings like Urticæ, but with a brilliant blue instead of red band). Amongst the Bombyces, O. potatoria was common in all three stages; the larvæ here are not so fastidious as in England,—only eating one particular species of grass,—for they will feed upon almost all our hedgerow-plants; in open glades one could not walk without disturbing the beautiful D. pulchella. Of Noctuæ, I found commonly, at rest, Dian-

thœcia conspersa; at sugar, Ceropacha ridens, A. Segetum, N. xanthographa, and N. V-nigrum. The month of May opened terrifically boisterous, and wound up with a fearful cyclone, causing great devastation throughout the whole of Southern India. At Wellington, however, genial weather set in almost immediately afterwards, and insects came out in profusion. I had only to go a short distance to obtain the following:—R. Rhamni, a profusion of the genus Pieris, not omitting Brassicæ and Rapæ, both of which cut a sorry figure with their beautiful congener Epicharis. Of the genus Papilio I met with Sarpedon, Coon, Hector, Polymnestor, and Demoleus (the nearest to our English Machaon), the larvæ of which, together with those of Sarpedon, Hector, and Demoleus, I met with during the month feeding upon citron trees. A species resembling V. Antiopa, but named Junonia Sabina, has a peculiar habit of alighting upon the trunks of certain forest trees (certainly not for the sap, because it is quite bitter), and thus many came to my net; I confess they successfully "dodged" me when on the wing. Lycæna Alexis, Alsus and Argiolus were extremely common, flitting in company with T. Tages, Pamphila Linea, Sylvanus, Actæon, and T. Alveolus, but these were not all the Hesperidæ, for we have at least thirty representatives of the family here, all of which occur during this month; some are very large,—one, which I catch at Lauristinus blossoms, is quite two inches eight lines, and in colour just like shot-silk, almost dazzling one's eyes to look at it. The petunia flowers attracted S. Convolvuli, D. Celerio, C. Porcellus and Elpenor; whilst round the hedgerows a species exactly like H. Hectus, but in size six inches, was common, as were also P. auriflua, Chrysorrhœa, S. illunaria, and C. ferrugata. At sugar I had grand captures. There is a very large moth here, evidently a relation of Mania Maura, but three times its size: it has a splendid ocellus of purple and blue on each wing. My pinning-box is considerably larger than one would think of using in England, but I found when I first beheld one of these gentlemen on my sugar that it was only when his wings were folded that he would enter it. In company with this species was a Noctua, exactly like the male of Saturnia Carpini, the same sex of this species being quite black. Besides these a host of "unknowns" made

their appearance, and this year it is my intention to devote more time to sugaring, in order that I may see what Noctuæ actually occur here. In addition to those mentioned already, which were also common this month, I obtained P. Chrysitis and Gamma, and H. rectilinea at rest; I met with L. lobulata rather commonly; besides a host of pretty Geometræ that I did not know. In June the following English species made their appearance:—C. Pamphilus, C. Hyale, P. Napi, A. Atropos, H. Thymiaria, R. tenebrosa, E. nigra. A profusion of foreign gentlemen also. There is a pretty species, evidently a Brephos, that one meets with commonly, flitting about the trees in the same manner as Parthenias at home. A beautiful Bombyx, too, emerges this month, the male of which is a beautiful emerald-green and devoid of markings, whilst the female is a bright yellow, with a fulvous blotch on the centre of the fore wings; the hind wings are in shape like those of Quercifolia: thus, when at rest, they resemble either a green or yellow leaf. I have bred it repeatedly from eggs: the larvæ have the exact characteristics of Orgyia; but the imago differs, inasmuch as the females are not apterous, neither are they day-flying Bombyces.

WILLIAM WATKINS.

Convalescent Depôt, Wellington, Madras.

On the Habits of certain Gall-insects of the Genus Cynips.

By H. F. BASSETT.

[When I first broached the idea that vegetable-galls were not new or additional parts of the plants whereon they occurred, but old and recognized organs produced under abnormal and diseased conditions, it was considered so diametrically opposed to what ought to be the order of nature, that there was a very general expression of dissent; and Mr. Peter Inchbald, one of our more scientific entomological observers, felt it a duty to express his disapproval, and to show that these things could not be. Subsequently Mr. Parfitt, of Exeter, attempted to answer Mr. Inchbald's objections in the 'Field' newspaper, in which they had been published, and his remarks were reprinted in these pages. More recent and continued observations have tended to

confirm, not only the views I originally took as regards what I have called the pseudobalani of the oak, but to extend them to oak-spangles, bedeguars, and other abnormal productions of trees and shrubs. While still occupied with the enquiry, which seems likely to extend as long as my own life, I have been much gratified in reading the remarks, reprinted below, of a brother observer in America. They are perfectly independent of mine, and, as will be seen, are introduced only incidentally in his paper on galls.—*Edward Newman.*]

"For ten years past I have been studying the habits of the Cynipidæ to determine, if possible, whether there are one or two broods of these insects each year. Several years ago I discovered the flies of C. q.-operator in the act of ovipositing in the young acorns of Quercus ilicifolia, the oak on which the woolly galls of this species are generally found. The insect thrusts its ovipositor down between the acorn and the acorn-cup, and, late in the summer, the acorns thus stung proved abortive, while around them, and often protruding far above the cup, were little acorn-like galls, each containing a large Cynipideous larva. Several of these galls were often found in each acorn-cup. That year nearly all the acorns were affected, and there are more or less thus injured every year. I have as yet failed to rear any flies from these galls, probably because I have failed to keep the galls in the proper condition for development.

"A later discovery, made three or four years ago, was that of two, and I think three, species of Cynips in the act of ovipositing in the buds of the oak, Q. alba, just as the buds began to develope, but before the leaves were visible. The relationship of these species to any known species was only inferentially established. It is true that the leaves of several oaks, on which I found one species very abundant, were almost all covered with galls of C. q.-futilis, o.s., but the females of this species were not so large as my new bud-stinging species.

"I have for the past three years carefully examined the buds of Q. ilicifolia, hoping to find the producer of C. q.-operator at work, but without success till this week, when I found no less than thirty gall-flies ovipositing in the buds of this oak. That they really are the producers of these

galls needs no further proof than I now give. The insect C. q.-operator is distinguished from all our other species by the projection of the ovipositor above the dorsum. In this respect it resembles the several species of guest gall-flies that infest almost all our species of galls. It has, however, the neuration of the true gall-flies. In size my insects are considerably larger than C. q.-operator, but in form, colour, neuration of the wings, and, above all, in the peculiar form and position of the sheath of the ovipositor, they are like this species. Few will doubt their identity; but to make "assurance doubly sure" I hope some one will be so fortunate as to raise gall-flies from these acorn-galls, when a comparison with mine will settle the question whether this particular species (C. q.-operator) is double-brooded or not. I wish (if my article is not already too long) to state a few other facts, and to show their bearing upon the history of these interesting insects.

"There stands not far from my house a small oak-tree, Q. bicolor, which is almost ruined by the ravages of a species of gall-fly, which closely resembles, and may be identical with, C. q.-botatus, *Bassett*. Every summer the leaves of this tree are so injured by the galls that scarcely one perfect one can be found on the tree. The petioles and mid-veins are enlarged to the size of one's finger, and the blade shrivels up or remains undeveloped, and each gall contains a large number of insects which come out in June. I have reared many thousands of these gall-flies, and find them of both sexes—about equally divided.

"Late in the summer another form of gall appears, this time on the ends of the small branches, and the insects remain in these, in the imago, through the winter. I have reared not less than fifteen thousand of these gall-flies, and *all are females*, and they cannot be distinguished from the summer brood, except that they are a very little larger. The flies of C. q.-futilis, o.s., are of both sexes; but among the considerable number found ovipositing in the buds of the white oak, and which, I have no doubt, produce the galls of C. q.-futilis, there are no males, and the females are considerably larger than the summer brood. And again, in my last discovery the flies are all females, but larger than the females of C. q.-operator, though they have the structural peculiarities of that species.

"From all the above facts I infer that all our species that are found only in the female sex are represented in another generation by both sexes, and that the two broods are, owing to seasonal differences, produced from galls that are entirely distinct from each other. I shall not be surprised if it shall yet be found that all our species of Cynips proper are double-brooded, but the allied genera Diastrophus and Rhodites probably produce but one brood each year. Mr. Walsh's successful attempts at colonizing C. q.-spongifica, o.s., do not prove that the galls he raised were the *immediate* product of the flies he colonized; another generation may have intervened from which his galls were descended. I have in mind two species of Cynips that mature from the egg in less than thirty days. They are our earliest vernal species, and are not yet described.

"In an article published ten years ago in the Proc. of Ent. Soc. of Philad., describing several new species of Cynips, I ventured to remark that probably some of the species whose galls are formed on the leaves deposit their eggs in the embryo leaves, the leaf-buds of the following year being formed at the time these insects appear. This seems to be true only in part. It is at another time and by another brood that the eggs are so deposited. In the same article I gave it as my opinion that the woolly galls of C. q.-operator, o.s., and C. q.-seminator, *Harris*, were the abnormal development of the embryo leaves, and that the wool was an enormous growth of the pubescence of the leaf. To this view the late Mr. B. D. Walsh objected, either in a published article or in a letter to myself, saying the galls were not connected with the leaf-buds. Last spring I was so fortunate as to find two galls of C. q.-seminator in the earliest stage of growth; so young that I did not recognize their true character, being simply large buds just beginning to open, but exhibiting on the summit a beautiful rose-coloured pubescence. I watched them till they were mature, and had the satisfaction of seeing them develope into two fine galls of this not very common species.

"My friend Mr. L. S. White, of this city, like a true chemist, as he is, suggested the idea of *weighing* the specimens of new insects we describe, and tried his plan upon the gall-flies taken the other day. The species taken on the buds

of C. q.-operator weighed 4½ millegrammes, while another species, probably C. q.-globulus, *Harris*, weighed alive 18 millegrammes. This last was taken on a bud of the white oak.

"Slowly, year by year, the above, and other quite as interesting fragments in the history of the Cynipidæ, have come to my knowledge, and I hope to live to see their history fully written. It is in such investigations of the *habits* of insects that our real work and our highest enjoyment as entomologists consists.

"H. F. Bassett.

"Waterbury, Connecticut."

Forest Collecting in April. By C. S. Gregson.

April 12.—Went to Hartford Station, Cheshire, for "Delamere" Forest; from thence to the "Chase," past the Monkey Lodge, a four miles' walk through beautiful lanes, where good work could be done; and a long day on the Chase, and thence round by the Kennels and Sandaway at night, resulted as follows:—

G. Rhamni, P. Rapæ, V. Io and Urticæ were seen frequently, and the beautiful green hair-streak, flitting round mountain-ashes—then just breaking leaf,—was a sight worth going to see itself at this season of the year. Approaching the heather-clad Chase a few Amphydasis prodromaria were secured, and Peronea mixtana turned out of heath-bushes freely as I puffed tobacco-smoke under them, as did sundry Depressariæ; passing on, D. salicella rose freely during sunshine; and now I got a sight of a Tinea on the wing, which proved to be Butalis incongruella,—working well for this I secured about fifty good specimens whilst the sun shone; and then making for the swamp around the lake I worked for dragonflies during about two hours. Lestes viridis, the most beautiful species we have, was plentiful and quite fresh, as were several other species; but more of these another time. Reluctantly leaving this rich collecting-ground I turned westward, and west by north to north, working every yard of the ground I passed over, with the following results. S. Carpini,—females sitting, males fluttering about all over the heath; H. suffumata, Badiata, Derivata and Lobulata on trees, and beat out G. Illunaria abundantly in one place;

E. pumilata was plentiful, and E. abbreviata not scarce; M. unimaculella in abundance, and a few Steinkellneriella were taken from the stems and branches of mountain ash-trees; a few Depressaria capreolella were secured in a heather lane, but I failed to see any remains of its food-plant, "wild carrot," near,—this insect flies rapidly when disturbed when the sun shines, and but for the hawking propensity of an Empis, which abounded, I should have secured a great many. Perhaps the most highly-esteemed species I captured during the day was Depressaria pallorella, a species which, until Mr. Hodgkinson and I took it in Westmoreland, was said to be exclusively confined to the Isle of Wight, Delamere being one hundred miles south of our Westmoreland locality. G. Elongella and a few Phasianipennella—the first beaten from silver-firs, and the last from tufts of heath in lanes—complete the list of imagos I saw or took which need be recorded; of larvæ, which were in fact my leading object on this journey, I secured a good supply, including all the ordinary spring fir-feeding species; but perhaps the best species which I have yet bred from this day's work is Sericoris signatana, the larvæ beaten from sloe-bushes in bloom.

I may say of this "*terra incognita*" that it only requires to be worked to yield its entomological treasures in abundance; and seeing that as yet this "Chase" has never been worked by any entomologist, we may hope, now the road leading to it is pointed out, that our friends will pay some attention to it. I have only been twice upon it, but on each journey I liked it. Those who know the "Kennel Woods" may go that way, going past the Kennels due south two miles, then east by south to east, returning north by east to due north; a clump of immense Scotch fir-trees, which grow at the south end of the Chase some miles away, are a good landmark always.

C. S. Gregson.

Rose Bank, Fletcher Grove, Edge Lane,
Liverpool.

Description of the Larva of Depressaria Douglasella.—Length fully half an inch to five-eighths of an inch; colour light green, striate; form rather long and slender, semi-cylindrical, attenuate to anal extremity. Head small, pointed,

yellowish green, immaculate; corslet broad, bright light green, edged in front lighter. Dorsal streak rather broad; subdorsal darker and broader; spiracular region puckered and spread; papillæ light, faint, in fact hardly perceptible. Feet green; claspers spread out; spines sparse. Feeds on Daucus Carota in June, spinning the terminal pinnæ of the leaf together, so as to form a tube; later it often spins a web crosswise of the midrib, and, like some other carrot-feeders, leaves the plant to go into pupa. Common at Howth and on our Lancashire coast.—*C. S. Gregson.*

Entomological Notes, Captures, &c.

Entomology of the Isle of Man.—During the third week of June I and Messrs. Roxburgh, Greasley and Leather, of Liverpool and district, spent several days near Douglas, Isle of Man, for the purpose of collecting some Lepidopterous insects occurring there. Of Dianthœcia cæsia, about a score specimens were taken; Capsophila occurred not uncommonly along with them,—this species must be on the wing a long time, as we beat out larvæ of all sizes freely from Silene maritima. After dark we searched the Statice Armeria and Silene for larvæ of Polia nigrocincta, but only a few were found on these plants. At length Mr. Greasley found several on Plantago maritima, but had to return to Liverpool next morning. The day turned out wet, so nothing was done; but on the evening of the following day (our last) I and Mr. Roxburgh worked the Plantago alone, and in a comparatively short time had collected thirty-two larvæ, twenty-six of them falling to Mr. R.'s lot. From this, Plantago maritima would seem to be the most general food of the species. In all, about fifty larvæ were collected. Sesia philanthiformis was out, but difficult to capture; and though a number of pupæ were collected it was far from plentiful. Amongst the other species taken during our stay were Argynnis Aglaia, Satyrus Semele (a full-fed larva), Lithosia complana (larvæ, common on the rocks), Bombyx Rubi, Acidalia promutata, Emmelesia albulata, Eupithecia venosata (imagos, and nearly full-grown larvæ), E. pulchellata, E. castigata, Thera variata, Ypsipetes impluviata, Melanthia albicillata, Eubolia palumbaria, Ma-

mestra anceps, Cucullia umbratica, Plusia V-aureum, Botys fuscalis, Crambus perlellus, Pempelia palumbella, &c.—*Geo. T. Porritt; Huddersfield, July* 8, 1873.

Insect-hunting in Sussex.—At the end of June I passed a few days in entomological pursuits at Lewes. The year is a most extraordinary one: the day-flying Lepidoptera usually found in profusion on the South Downs are almost absent. I was two days at Lewes and only took one insect worthy of capture, *viz.*, Agrotis corticea; Lycæna Adonis was very rare; of Lycæna Alsus I saw but one; and even of Alexis I do not think I saw twenty specimens. The three species of Procris, usually common on Cliffe Hill, were so extremely rare that I heard of but three Geryon being taken, and I myself took but one Globulariæ during my stay of nine days. At Abbot's Wood, Melitæa Athalia, usually very common, was very rare; I do not think in three days I saw more than twelve specimens. Agrotera nemoralis was not rare; I was too late for this lovely insect, and the males were wasted; the females were in better condition. Melanippe hastaria was common, even to the last day of June; so was Odezia chærophyllata; and the oak-trees swarmed with Lithosia rubricollis. Where last year I saw at the same period of the year an abundance of Zygæna Trifolii, this year I saw not one. One thing that struck me most was that May-flying Lepidoptera were in some plenty at Abbot's Wood at the end of June.—*J. Jenner Weir.*

Food-plant of Epione advenaria.—Is there any other food-plant for Epione advenaria in a state of Nature than bilberry? I am aware that rose, sallow and dogwood are given in Dr. Knaggs' 'Lepidopterist's Guide' as substitute food-plants, but some larvæ I had of the insect positively refused to feed on rose (cultivated). I am induced to pen these remarks, as I and others have lately taken the insects in abundance in several places near here, in none of which, so far as I know, nor indeed elsewhere in the neighbourhood, does any bilberry grow. In the woods, where I found it most abundant, it seemed generally to rise out of the bramble, which abounded in them, but I am unaware that it has been found on that plant. Its time of appearance, moreover, differs from that given in 'British Moths.' I caught it in abundance on June 20th this year, though the insect seemed

then to be by no means freshly out; whilst last year I caught one as early as May 21st.—*W. A. Forbes; Culverlea, Winchester, July* 14, 1873.

Phytometra ænea.—On the 21st of May I caught a specimen of P. ænea, which seems to show, as suggested by your correspondent Mr. Poulton, that it is double-brooded.—*Id.*

Anticlea sinuata.—I have again taken A. sinuata this year, within a few yards of where I secured one last: a fine specimen, caught last Thursday (July 10th).—*Id.*

Yellow variety of Zygæna Filipendulæ.—The yellow variety of Z. Filipendulæ is again beginning to appear in some abundance. Can any of your readers tell me whether this variety has been noticed elsewhere in England?—*Id.*

[I shall be greatly obliged for this insect. Mr. Forbes kindly gave me two some years back, but they were, unfortunately, too much injured in transit to represent the variety efficiently.—*Edward Newman.*]

The Waxy Exudation of Homoptera.—An exudation, corresponding to that which is characteristic of Aphis Fagi, is common to all the several thousand species of Homopterous insects, and appears more or less, and in various forms, throughout the tribes, from the singing Cicada to the stationary Coccus, and often serves as a defence. In Cicada it is slight and powdery; in some of the tribe, of which the lantern-flies are the most conspicuous representatives, it is excessive, and forms waxy filaments which surpass the body in length. It hardly appears as an emanation from the frog-hoppers; but in the next family, or Psyllidæ, it may be often witnessed in gardens by the multitude of white flecks which proceed from Psylla Buxi on the box-trees, and fall in showers when the branches are shaken. Next come the Aphides, of which the types are distinguished by two pipes, whence the streams of honey flow. The beech Aphis, or A. Fagi, is less typical and less multiplying than many others, and is more sheltered than them from the oviposition of Aphidius by the fleecy or gummy substance which it emits. The American blight, which belongs to this family, is defended by the abundance of its cottony covering. The wax-insect, or Coccus of China, has been mentioned in several books, and a Coccus in Arabia produces a substance which is called manna, and is supposed by some persons to be identical with the manna in the wilderness.—*Francis Walker.*

Insects at Sea.—Ever since we left Tunis, all along the Malta Channel, and upwards to Italy, the sea was covered with large brown butterflies, moths of all sizes, and dragon-flies, evidently just dead, as they had not been long in the water. For four or five days we sailed through many miles of water without finding any diminution in their number, and we began to ask ourselves the question whether they could have been a provision of Nature for the sustenance of birds during their passage.—*J. S. Walker; Yacht 'Aline,' Palermo, April* 5, 1873.

Vanessa Antiopa at Whitby.—I beg to inform you that my brother, whilst staying at Whitby last week, was fortunate enough to capture a hybernated specimen of Vanessa Antiopa. He had no net with him at the time, and was obliged to make use of his hat, which unluckily damaged the plumage slightly on the right upper wing.—*W. H. Danby; July* 3, 1873.

Vanessa Antiopa in Essex.—As I was driving through Canewdon to-day I saw a fine specimen of Antiopa; it settled on the hedge close to me, but I was unable to capture it. It was the pale-bordered variety.—*E. A. Fitch; Down Hall, Rayleigh, July* 25, 1873.

Lycæna Arion near Gloucester.—I caught a specimen of the large blue, Lycæna Arion, male, at Stinchcombe Hill, near Dursley, Gloucester, on the 23rd of June.—*D. G. Lathom Brown; Winkfield, Beckenham, July* 8, 1873.

Variety of Callunæ.—I have just added to my collection a nice variety of the male of Bombyx Callunæ, bred this month by my cousin Herbert Porritt. The chocolate colour is darker than in ordinary specimens, and the usual yellow band is entirely replaced by one of dark olive-green.—*Geo. T. Porritt; Huddersfield, July* 11, 1873.

Limacodes Asellus and Zygæna Filipendulæ.—On July 3rd I took a single specimen of L. Asellus, in Crabbe Wood, near here; and although I beat some time in the same place I could not turn up any more. Several specimens of the yellow variety of Z. Filipendulæ, before chronicled in your pages, have been taken again this year.—*C. L. Raynor; The College, Winchester, July* 20, 1873.

Lithosia Quadra at Kingsland.—I had a fine specimen of this insect brought to me alive. It was taken in a green-

grocer's shop, within a hundred yards from where I live. No doubt the pupa was brought in some peas, as from its fine appearance it evidently had never flown.—*W. J. Harper; Mansfield Street, Kingsland Road, July* 24, 1873.

Ophiodes Lunaris near Lewes.—I captured a specimen of this rare Noctua in this neighbourhood on the 17th ult. The insect was at sugar, sitting with its wings raised ready for flight, after the manner of the Catocalas, and surrounded by several common moths. I saw at once that it was something new and strange to me, and at the same time I perceived the risk I ran of missing it, as it would be sure to fly as soon as its commoner companions were disturbed; however, as there was not much time for consideration, I made the attempt to box the insect, and with the result anticipated: away flew the great unknown, but by a fortunate stroke of the net I succeeded in capturing it. The insect is in good condition, and reminded me when on the sugar of T. pastinum, though much larger.—*M. S. Blaker; Lewes, July* 5, 1873.

Tortrix grandævana near Cullercoats.—I had the pleasure of taking a specimen of Grandævana, the new Tortrix discovered last year (as British) by Mr. Eales, on last Tuesday night. Mr. Eales also secured one.—*J. C. Wassermann; Beverley Terrace, Cullercoats, near Newcastle-on-Tyne.*

Endromis versicolor at East Grinstead.—I have two very fine cocoons of this species, one of them received only yesterday. Please inform me whether it is safe to keep them in a cellar, as I want to keep them moist.—*W. Thomas; Ray Lodge, Lingfield, East Grinstead, July* 16, 1873.

[I should keep them in a green-house or out-house of any kind in preference to a cellar.—*E. Newman.*]

Hadena Atriplicis and Aventia flexula.—Will you tell me if H. Atriplicis is a Norfolk insect, as I took it here early this month, and wish to know if it is worth anything? Also to what genus is the insect Flexula (the beautiful hooktip) to be referred, as I do not know where to put it in my cabinet? —*Henry F. Wilson; Forncett St. Peter's Rectory, Long-Stratton, Norfolk, July* 19, 1873.

[Hadena Atriplicis has been found in Norfolk in the "Broad" district; the pupæ are dug up each in an earthen cocoon. I have proposed the name Craspedocampa for Flexula; it is closely allied to Metrocampa margaritata and

Catocala nupta: if we wish to have a natural classification of Lepidoptera, the Geometræ and Noctuæ must meet at this point.—*E. Newman.*]

Can Butterflies be Tamed to know the Hand that Feeds them?—Mr. Gurney encourages me to write to you, as an authority for habits of insects, to ask if it is true that butterflies can be tamed, and know the hand of those who feed them? This is asserted, I hear, as a fact in Lord Lytton's 'Kenelm Chillingley,' and those who have read this work in Germany have applied to me to know the truth of the statement.—*Elizabeth de Bunsen; Abbey Lodge, Regent's Park, July* 14, 1873.

[I have not read the passage to which my correspondent refers. My inclination is to discredit Lord Lytton's statement; but I sincerely hope some of my readers will be able to express an opinion more reliable than my own.—*E. Newman.*]

The Reed Moth?—I have within these few days found a number of caterpillars and chrysalids in the stem of the common reed or bulrush. The chrysalis does not exactly answer to the description of the reed moth given in your book of 'British Moths.' Will you kindly tell me what they are, I being but a young beginner in Entomology?—*R. E. Burt; Flour Mills, Witchampton, Wimborne, Dorset, July* 22, 1873.

[The larvæ have become pupæ, and will probably emerge as moths in a few days, when I can answer the question with certainty; at present I can only do so with a doubt.—*E. Newman.*]

Names of Lepidoptera.—The specimens sent by Mr. Wasserman are Eupithecia pumilata and Phytometra ænea, variety A of Guenée, 'Noctuélites,' vol. iii. p. 298. Guenée observes that the purple tint has entirely disappeared in this variety, and is replaced by a brown tint scarcely differing from the ground colour.—*Edward Newman.*

Names of Lepidoptera.—Will you kindly name the enclosed three species of Lepidoptera, which I cannot make out from description.—*W. Thomas; Ray Lodge, Lingfield, East Grinstead, July* 4, 1873.

[(1) Aglossa pinguinalis, (2) Acidalia heparata, (3) Acidalia incanaria. In answer to Mr. Thomas's second letter,—the

moth is Rivula sericealis, and the caterpillar is the gooseberry-grub, described at such length at pp. 148—154, of the first volume of the 'Entomologist.'—*Edward Newman.*]

Names of Insects.—Will you please inform me whether the two flies enclosed are Nematus ventricosus, as they answer the description you have given of the gooseberry-grub? and what is the name of the little beetle-looking creatures I have also enclosed? I found them on the leaves of Scrophularia. There seems to be another brood of Ventricosus, as they have begun their ravages again.—*John Purdue.*

[The sawflies are certainly Nematus ventricosus, provided the imago of the gooseberry-grub be properly so called. The little beetles are Cionus Scrophulariæ.—*E. Newman.*].

Chrysomela fulgida.—Will you have the kindness to give me the name, &c., of a beetle which feeds on the tansy,—commonly called the "tansy-beetle."—*Thos. W. Wilson; 3, Botham, York, July* 11, 1873.

[The beautiful golden green beetle feeding on the tansy is Chrysomela fulgida: it occurs in marshy places in Yorkshire, Cambridgeshire, and Norfolk, but I do not recollect receiving it from any other county.—*E. Newman.*]

The Genus Cionus.—I herewith send you some little beetles, which I found *resting* on the leaves of Verbascum Thapsus, and should feel greatly obliged if you would kindly tell me the name of them, and anything relating to their economy, as I have not got Stephens' 'Mandibulata' by me just now.—*Henry Reeks; Manor House, Thruxton, June* 30, 1873.

[The beetles are Cionus hortulanus of the Stephensian nomenclature, but I am not certain that they retain that name in this name-changing era. It is a true weevil,—that is, a member of the family or section of beetles called Rhynchophora or Curculionidæ. There are five British species of the genus Cionus, all closely resembling one another in form, but different in colour and in size. To the best of my belief they feed exclusively on the mullein, and I have found them all, as mentioned by Mr. Stephens, feeding on a single plant. The egg I have never found, but it is in all probability laid on the leaf of the common mullein (Verbascum Thapsus), for I find the larvæ when very small digging holes in the soft

down which clothes the leaf, and feeding on the parenchyma, actually burying themselves in their food. The stages of existence seem to follow one another in rapid succession, for after observing the larvæ in a very juvenile state, I have returned in the course of a few days and have found them, without exception, either spinning or having spun their cocoons, and then, again, in a few days more I find they have emerged and paired, and set seriously to work to obey the imperative command—"Increase and multiply." The larva is by no means an attractive object: it looks like, and is, a small mass of dark-coloured gelatine, possessed of the least possible allowance of locomotive power; as to head, legs, claspers, or other implement of nutrition or motion, I have never detected any, but this must be owing to my imperfect powers of perception, for the creature certainly moves and as certainly eats; the evidence of the former is to be found in its change of position. Kirby and Spence, quoting De Geer, mention a larva of this kind that moved so slowly as to be a quarter of an hour in going the breadth of a hand; but surely those larvæ of Cionus that I have watched would be a week, if not a lifetime, performing this feat. The pupal state is far more interesting and attractive: these amorphous lumps of mucilage, apparently headless, wingless, and legless, have yet sense enough or instinct enough to spin a most ingenious cocoon or cradle made of a kind of net-work, just like that I have seen spread over a balloon; the only difference observable is that the Cionus larva, more ingenious than man, spreads the net-work without having the balloon inside it: and in this well-ventilated and well-lighted apartment the change to a pupa and subsequently to a beetle takes place.—*Edward Newman.*]

Galls of the Oak.—Miss Weise, who has translated Dr. Mayr's descriptions of oak-galls, has sent me some galls, evidently the work of a species of Euura, and precisely resembling those produced on the leaves of Salix fragilis by Euura Gallæ. In every instance an aperture on the upper side of the gall notifies the escape of the gall-maker or its parasite.—*Edward Newman.*

Galls on Orleans-plum leaves.—My brother sends me from Leominster a number of leaves of the Orleans plum, the under surfaces of which are almost completely covered with small

galls nearly hemispherical, and about a sixteenth of an inch in diameter. I am quite unacquainted with them, and of course submitted them to Mr. Walker, who does not recognize them, but he invited my attention to the fact that a species of Cecidomyia inhabits galls on the leaves of Prunus spinosa (the sloe) : this is described under the specific name of peregrina, at p. 94 of the third volume of 'Insecta Britannica, Diptera.' These galls of the sloe also produce Acari.—*Edward Newman.*

Biston hirtaria Two Years in Pupa.—In 1871 eggs of the above-named species were sent me, all of which duly hatched, and the larvæ in due course entered the pupa state, and in the spring of 1872 moths were produced in abundance. At the end of May this year I was somewhat surprised to find two females in my rearing-cage freshly developed, and since then three others, all females, have made their appearance: these must have been part of the brood I had in 1871, as I did not see the insect last season in any stage of its existence. Such cases of retarded development often occur with other species, as most of us know, but I do not recollect ever hearing of a like occurrence with this particular species.—*G. B. Corbin.*

Cucullia Verbasci and its Hood.—I suspect there are few collectors of several seasons' experience who have not reared this insect, for its very conspicuous and brightly-coloured larva is easily detected and reared, and consequently it is a general favourite with beginners. Last season I took a few off some plants of mullein (which in this neighbourhood seem to be its exclusive food), which duly produced moths at the end of May. In previous seasons I have noticed how strongly the hood or crest is developed in this species, and I determined to "set" a few specimens in their *natural position when at rest:* this, however, I found to be difficult, if not altogether impossible, for the hood—which in the living insect is pointed forward, even beyond the line of the head—is immediately erected or thrown back over the front of the thorax when the insect is disturbed, for it seems to possess the power of raising or lowering this crest, or collar, after the manner of a cockatoo. The dark streak along the inner margin of the fore wings, one of a similar hue down the centre of the thorax, and the *edges* of the projecting hood, form one continuous dark line down the entire length of the

insect when at rest; but when the insect is killed the continuity of this dark streak is destroyed by the erected crest, the dark edges of which then form a collar on the front of the thorax. I tried several different plans of killing the insects, in the hope that a *natural* position could be obtained, but cyanide, laurel leaves, oxalic acid, &c., all had the same effect, and the *naturally projected* crest could not be made to look life-like, for at the best it looked ragged and distorted after the insect was "set," and in no case could I make it point forward as much as in the living moth, for it seemed to be contracted as soon as life was extinct in the specimen.—*G. B. Corbin.*

Phytometra ænea (Entom. vi. 412).—It is no uncommon thing to meet with this pretty little insect upon the heaths of the New Forest in May. The earliest date I have entered in my diary for its *capture* is May 6th, and I am sure I have seen it even earlier than that. The species seems to be on the wing nearly the whole of the summer, for I have seen it in the spring when I have been looking for Argiolus, and it was also out in July and August, when the oak-loving Thecla Quercus calls us forth to the very pleasurable forest rambles, and when a good chase after Anaitis plagiata in the sunshine causes one to sit down and rest; and the lively little Ænea is often present on such occasions, dodging about almost invisibly or settling almost under your nose.—*Id.*

The Production of Honeydew.—I have carefully watched the first formation of honeydew in the lime during this and the two preceding weeks, and am satisfied that its first appearance is wholly independent of insect agency. In each week, on the accession of hot and sunny weather, the upper surface of the leaves, inclusive of those on the extreme branches, become very uniformly speckled with honeydew, the specks appearing on the tumid spaces between the venules, and seldom exceeding one-tenth of an inch in diameter. These were washed away by the first shower, and reappeared with the returning hot sun. In the first week it was difficult to find an Aphis anywhere on these limes, and such as I found were solitary, very immature, and confined to the lower surface of the leaves. On the extreme twigs, the leaves of which projected some feet beyond the rest of the foliage, and which leaves were equally speckled, scarcely an Aphis was to be seen. During the last week and this the

Aphides have become more numerous, but are still comparatively rare and always solitary. That the formation of honeydew is independent of Aphides, and is a function of the plant unstimulated by insect agency, is clear to me; but it remains to be seen whether the Aphides may not at a later period induce a more copious secretion of honeydew.—*J. D. Hooker; in 'Gardener's Chronicle,' July* 19, 1873.

["You have, doubtless, observed what is called the honeydew upon the maple and other trees, concerning which the learned Roman naturalist Pliny gravely hesitates whether he shall call it the sweat of the heavens, the saliva of the stars, or a liquid produced by the purgation of the air. Perhaps you may be aware that it is a secretion of Aphides, whose excrement has the privilege of emulating sugar and honey in sweetness and purity."—*Kirby and Spence*, '*Introduction to Entomology*,' i. 210. "This fluid, which is scarcely inferior to honey in sweetness, issues in limpid drops from the abdomen of these insects, not only by the ordinary passage, but also by two setiform tubes placed—one on each side—just above it. Their sucker, being inserted in the tender bark, is without intermission employed in absorbing the sap, which, after it has passed through the system, they keep continually discharging by these organs. When no ants attend them, by a certain jerk of the body, which takes place at regular intervals, they ejaculate it to a distance; but when the ants are at hand, watching the moment when the Aphides emit their fluid, they seize and suck it down immediately."—*Id.* vol. ii. p. 88. Having times and often seen the ants engaged in the manner described by Kirby and Spence; having often seen the liquid emitted by Aphides; having often tested and tasted it, and found it sweet; and having seen honeydew on the leaves near which these scenes have taken place; I feel reluctant to give up the long-cherished idea that, from first to last, it is the excrement of Aphides. Nevertheless, I think any suggestion emanating from a botanist of Dr. Hooker's eminence and experience should be received with respect and candidly considered, though it may be entirely opposed to preconceived opinions. On this question of honeydew and Aphides we have no one more competent to give an opinion than Mr. Walker. Will he oblige me by expressing it?—*Edward Newman.*]

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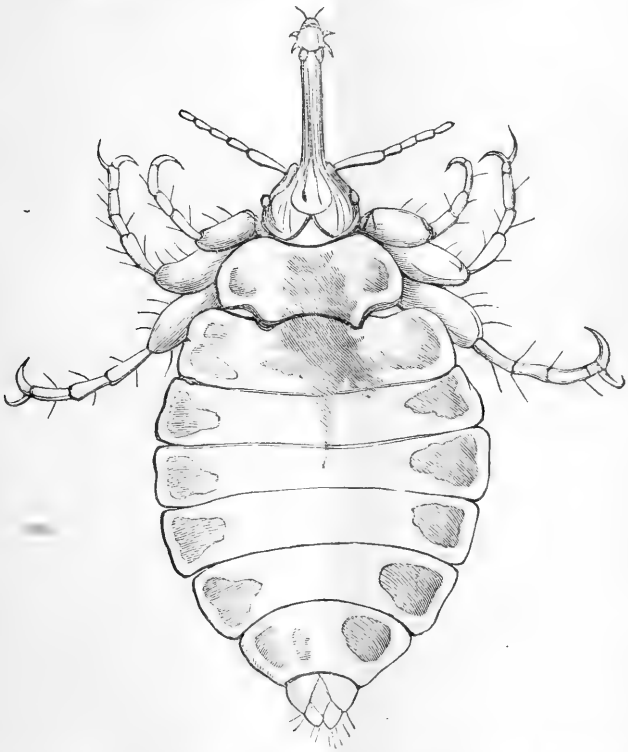
The Elephant's Louse. By Edward Newman.



Elephant's Louse, Hæmatomyzus Elephantis (copied from the figure in 'Science Gossip' for 1871): length of the living insect one-twelfth of an inch.

The discovery of this insect on elephants in Ceylon might have been anticipated: the existence of such a parasite is in

exact accordance with the usual order of Nature. Dr. Leach has told us that in all probability every suckler and every bird has its epidermic parasite; and we find that so far back as the time of Linneus a distinct species of louse had been found respectively on the pig, the Guinea-pig, the camel, the stag, the sheep, the horse, the ass, the mouse, and also on each of the following birds:—vulture, kestrel, buzzard, owl, crow, magpie, roller, swan, goose, Muscovy duck, garganey, goosander, petrel, puffin, albatross, tern, spoonbill, heron, crane, golden plover, coot, avocet, peacock, turkey, pheasant, quail, domestic fowl, pigeon, corn bunting, yellowhammer, wagtail, swift, skylark, starling, crossbill, bullfinch, greenfinch, whitethroat, and robin. Four species have been found on man, and four each are said to have occurred on the raven and oystercatcher. These parasites have received specific names indicative of the genus of suckler or bird on which they depend for subsistence,—an arrangement of great convenience and merit, inasmuch as no species of louse, so far as I am aware, has hitherto been found feeding on two distinct species of animals. The importance of settling this point induced Redi, Degeer, Latreille, Nitzsch, Leach, and Denny, to give the subject their most earnest attention; and all these authors have investigated this little group of insects with untiring perseverance, thus overcoming in the cause of Science the conventional repugnance to these animals. Mr. Cordeaux, one of the most accomplished of living ornithologists, has done the same; and I can only regret that the vast amount of information obtained should still remain unpublished.

These epidermic creatures received at the hands of Latreille the general name of "Parasita;" the name is truthful and very descriptive, but scarcely sufficiently definite or restricted. The group soon became divided into two families: those found on sucklers receiving the Linnean name of Pediculus, or, as a family, Pediculidæ; and those found on birds being called Nirmus, or, as a family, Nirmidæ: this division, however, is not absolute, two of the Nirmidæ being attached to quadrupeds; these are Trichodectes and Gyropus, the former infesting the dog, the latter the badger.

Regarding, then, these parasites as naturally associated by their parasitic economy, it becomes necessary to consider whether they can be incorporated with either of the eight

classes (usually, but erroneously, called orders) now in general use among entomologists; or whether they should constitute a ninth class, of equal value with each of the other eight; or, again, whether they should constitute a still higher and more important group, equal in rank to the whole of the other eight. Dr. Nitzsch, who, without doubt, has studied them more laboriously and philosophically than any other entomologist, considered the Pediculidæ to be true Hemiptera (an opinion also expressed by myself in 'Sphinx Vespiformis,' p. 21), and referred the Nimidæ to the Orthoptera. Leach, in his 'Zoological Miscellany,' divided insects into two sub-classes: —"Ametobolia, those undergoing no metamorphosis;" and "Metabolia, those undergoing metamorphosis." The first sub-class is divided into two orders:—Thysanura, consisting of the Lepismidæ and Poduridæ; and Anoplura, equivalent to the Parasita of Latreille. Latreille divides insects into twelve orders, the first of which is Myriapoda (the centipedes); the second, Thysanoura; the third, Parasita; the fourth, Siphonaptera (including only the flea); the fifth, Coleoptera; and the Orthoptera, Hemiptera, Neuroptera, Hymenoptera, Lepidoptera, Rhipiptera (instituted for Stylops only), and Diptera, follow in this succession. In addition, I will only mention Dr. Burmeister, who places the Pediculidæ in the class Hemiptera, and institutes a new class or order to receive the Nirmidæ, Poduridæ, Libellulidæ, Ephemeridæ, Termitidæ, and Psocidæ.

I have always discountenanced guessing at the proper location of the families (or, as I consider them, natural orders) of insects, and had I any novel views on this subject I believe I should refrain from expressing them; but seeing that the insect before us so wonderfully supports the conclusion at which Drs. Nitzsch and Burmeister have arrived, after the most elaborate investigation ever bestowed on a family or a tribe of insects, I think it reasonable to accept its teachings, and place Hæmatomyzus where these two philosophers would certainly have placed it had they been aware of its existence; for if they placed Hæmatopinus Suis, the pig's louse, in the Hemiptera, then, *a fortiori*, Hæmatomyzus Elephantis, which presents many more points of resemblance to the Cimicidæ, must be Hemipterous also. If entomologists make laws, such as drawing a hard and fast line between winged and

apterous insects, or between metabolous and ametabolous insects, the step will involve them in perplexities and labyrinths, from which they may hopelessly seek to extricate themselves. The metamorphosis of the bed-bug, like that of Hæmatopinus, is an oft-repeated ecdysis without change of form, and without the attainment of additional organs of locomotion. The absence of wings in insects is generally accompanied by an absence also of compound eyes: this is always the case in the female Psychidæ (Lepidoptera), in the Pulicidæ (Diptera), the female Agaonidæ (Hymenoptera; see the figures and description of Apocrypta and Sycocrypta, Entom. v. 399), and the female Stylopidæ (Coleoptera), and, therefore, the exhibition of similar characters in the Nirmidæ and Pediculidæ cannot logically be cited as an argument against the admission of these groups respectively with the Orthoptera and Hemiptera.

The simultaneous degradation of widely different organs in insects is a subject worthy the closest investigation. As might be expected, the thoracic segments are wonderfully altered when wings are absent; the competent parts are no longer to be recognized. We have a daily example of this in the winged and wingless ants, and strangely enough the winged ants are constantly in the habit of self-mutilation: they take off their own wings, as if to show us the difference in the structure of a thorax naturally winged and a thorax naturally wingless; but that this should be correlative to a similar degradation in the organs of vision may possibly seem by no means requisite; still such is the case, and the reason is sufficiently obvious. A creature confined in a case (like the female Psyche), or procuring food in the dark, buried in the substance of a fig (like Sycocrypta), or in the body of a bee (like the female Stylops), or crawling by means of prehensile claws on the skins of beasts and birds, or climbing among their hairs and feathers (like the Pediculidæ and Nirmidæ), certainly requires no extensive powers of vision; and the same law which denied them aërial locomotion simultaneously deprived them of those guiding faculties which are necessary for its government and control. Cave beetles and ants'-nest beetles offer striking instances of this. Degradation in these humble forms of life goes still further, for the female of Stylops and Psyche have neither eyes, ocelli, palpi, antennæ,

maxillæ, legs, nor wings; and those of Sycocrypta, although rejoicing in antennæ and legs, exist without activity, and these insects if extracted from their dwelling-place—the fleshy interior of the fig—roll themselves together, and remain absolutely motionless.

I have purposely refrained from describing Hæmatomyzus Elephantis; *first*, because this has been done well already;* and *secondly*, because the copied figure answers every purpose of a description. The difference between this louse and that of the pig is extremely small; the slightly longer beak of Hæmatomyzus is only what might have been predicted of an insect destined to feed on so ponderous a pachyderm; and it is highly probable that intermediate forms, even in this respect, will eventually be discovered on Hippopotamus, Tapirus, Phacochœrus, Dicoteles, Rhinoceros, and Hyrax, each of these animals having, doubtless, a genus of parasite as distinct as those of the elephant and swine.

Without entering very minutely into anatomical details, indeed without the same patient and thorough investigation that Nitzsch has bestowed on the enquiry, we shall never be able to invalidate his conclusion that the Pediculidæ form part of the Hemiptera, and I can readily believe that *with* such thorough and patient investigation our conclusions will be the same as his. I think, also, that most of our reflecting entomologists will agree with Dr. Burmeister in ranking the Lepismidæ as undeveloped or, perhaps, as degraded allies of the Ephemeridæ, and therefore Neuroptera. That eccentric little insect, Aleyrodes, in the same way, seems an imperfect and diminished form of Stegoptera. I have shown, to the satisfaction of all entomologists whose approbation I desire, that Stylops is nothing but a Coleopteron, whose female wears an altered form, and the elytra of whose male are reduced almost to nonentities; and Haliday long since pronounced the flea a Dipteron without wings. Thus, these aberrant, degraded, depauperated, or imperfectly-developed insects, as they have variously been called, seem to fall into the ordinary ranks as arranged by general consent of

* "Hæmatomyzus g.n. *Piaget, Tijdschr. voor Ent. 2nd Series*, vol. iv. p. 254. Sp. H. Elephantis sp.n. *Piaget*, l.c. p. 254, pl. 11, figs. 1—14." Idolocoris Elephantis, *Walker, Sci. Goss.* 1871, p. 132.

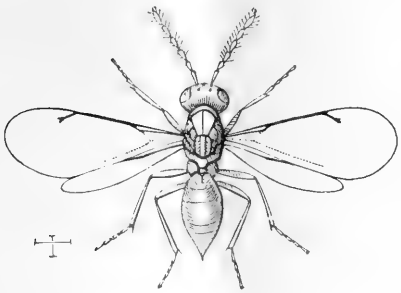
entomologists; and this new parasite, like every other discovery, ancient or modern, seems to supply a missing link obviously required. Just in the same way as the females of Psyche and Stylops are degraded forms of Lepidoptera and Coleoptera respectively, so are the Parasita of Latreille a degraded group, or, if divided, degraded groups of the Insecta.

Seeing the universal distribution of lice, it has occurred to speculative philosophers to enquire into the utility, the *cui bono*, of this animated tax on living beings. Some have suggested that the irritation they occasion promotes that gentle, but almost unceasing muscular action, which is admitted on all hands to be conducive to health; others have expressed a belief that these creatures are a weapon in the hands of Providence for the punishment of great offenders; and the names of Pheretima, Sylla, the two Herods, Maximin, and Philip II. of Spain, have been cited as illustrations of this hypothesis; of course the third plague of Egypt would have been added to the category had it occurred to these ingenious speculators. Kirby and Spence, in their invaluable 'Introduction to Entomology,' prettily suggest that these creatures "seem to have been created to punish inattention to personal cleanliness;" but this explanation will scarcely admit of general application, since the irritation they induce in the pig—"the lordly pig," as an enthusiast in the chase has called him—produces an inclination to wallow in the mire, and thus add a coating of mud to his customary panoply of filth. The same work, now happily in the hands of every entomologist, will show that Hottentots and other tribes of our fellow-creatures in South Africa habitually feed on these parasites, and that they were called by classical writers—Phthirophagi. This taste, moreover, is abundantly developed in the monkeys, which may be regarded as the typical Phthirophagi, for it is impossible to visit zoological gardens in any part of the world without finding proof of the universality of this taste among our "poor relations." The very eye of a monkey thus seriously engaged, whether on a fellow-creature or on himself, is indicative of intense interest in the pursuit.

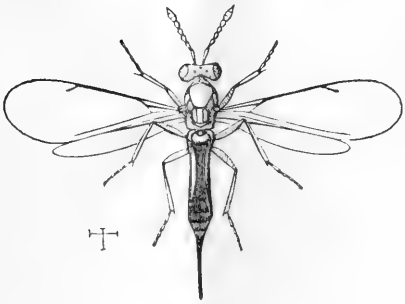
EDWARD NEWMAN.

Economy of Chalcidiæ. By Francis Walker, Esq.

(Continued from p. 445.)



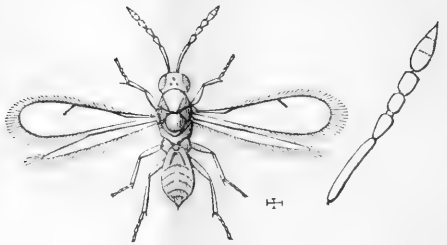
CIRROSPILUS ATTALUS.



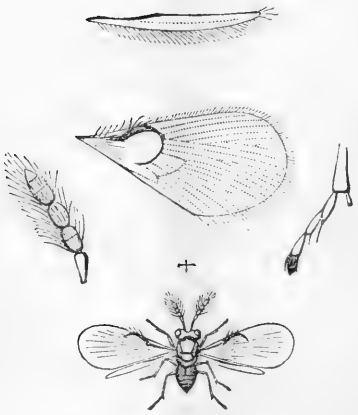
TETRASTICHUS CAUDATUS.

Tetrastichus and Pteroptrix belong to the Tetrastichidæ. In T. caudatus and in a few other species of the genus, which is very extensive, the oviduct extends more or less beyond the abdomen. One Tetrastichus is parasitic on some of the inhabitants of oak-apples; another on Hyponomeuta evonymella; and I lately received from Mr. Rothera a third, reared by him from dwarf rose-galls; and I have previously

mentioned some other inhabitants of these galls. Mr. Rothera also forwarded to me the inhabitants of the cherry-gall, that



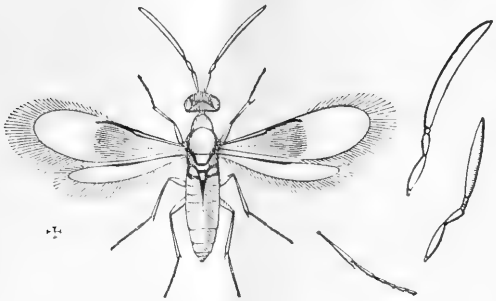
PTEROPTRIX MENES.



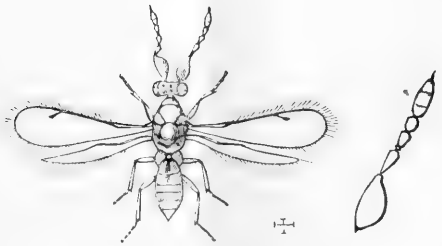
TRICHOGRAMMA EVANESCENS.

grows from the midrib on the under side of oak-leaves, such as Dryophanta Quercus-folii, the former of the gall, a Synergus or inquiline, Eurytoma nodularis, Megastigmus dorsalis, Callimome elegans, and another species of this genus, probably the female of C. antennatus, and very like the female of C. versicolor, in which the oviduct is a little shorter. The difference of the oviduct as to length in the

above-mentioned species infers a difference of distance between the surface of the gall and the spot where the purpose of the gall is effected. A Callimome is a nearly invariable attendant on a gall-maker, and with these two



THYSANUS ATER.



CIRROSPILUS PACUVIUS.

alone the annals of the gall are comparatively short and simple, but they are otherwise when Synergi, Eurytomidæ, Ormyridæ, Pteromalidæ, Eupelmidæ, Elachistidæ, and Tetrastichidæ, are also congregated there.

Megastigmus dorsalis, as it usually comes from the oak-apple, is rather smaller than those from the cherry-gall above mentioned, and the occurrence of the large M. giganteus from the Devonshire gall in England indicates that some Megastigmi considered as species may be mere modifications by difference of parasitism.

Trichogramma is the smallest and most simple form of the Chalcidiæ; it is parasitic on the earliest state of Lepidoptera, and thus its life commences from an egg within an egg, and a little grub emerging from the included egg appropriates the contents of the including egg, which in that case produces a fly instead of the usual grub.

The Myinidæ are next to the Trichogrammidæ in smallness of size; some of them appropriate Aphides internally: when such is the case the latter assume a deep black hue, and the wholly yellow Myina flava is a parasite of Callipterus annulatus and of C. Coryli.

FRANCIS WALKER.

Notes on Southern Indian Lepidoptera.

By WILLIAM WATKINS.

(Continued from p. 448.)

JULY was a glorious month: the weather was fine, with occasional showers, that greatly tended to increase the already prolific field of Lepidoptera. Whilst beating for larvæ on the 1st of the month I was astonished to see roll into my net Limacodes Testudo; after which I got it commonly. If my recollection serves me rightly its food-plant at home is oak; however, it is decidedly not oak in this place, as I believe (with the exception of one tree at Coonoor and one at Bangalore) there is no oak growing in Southern India; these of course have been cultivated. On the same day on my way home I beat out Erastria venustula: the same applies to its food-plant as to that of Testudo, for I am convinced that there is no beech growing on the Neilgherry hills; it has found something else to feed upon, as I have caught it repeatedly since. The whole of the species enumerated for May occurred throughout the month, together with Macroglossa Stellatarum (common) and Pyrarga Egeria. In August, Chortobius Davus and Satyrus Semele put in an appearance; but by far the most interesting occupation this month was the collecting and observing the numerous species of Crambites and Tortrices, which were swarming. I do not profess to have ever known much about

these families, and therefore I did not recognize many English species; but by my captures I know that the genus Peronea is grandly represented here, several "buttons" appearing in my store-boxes.

During the month of August I collected a good deal on the Ghauts, as insects were more common there than at the higher elevations, probably owing to the heavy rains that set in about this time. My captures were something over a hundred specimens of butterflies daily: amongst these were nine different species of Papilio, almost all the species occurring in May and June, besides a profusion of "unknowns." I should say that I met with at least twenty different species of Pieris. Butterflies are so abundant here this month that you only require to put your net over a small pool of water and obtain forty or fifty specimens of the most beautiful species. Acherontia Atropos was very common during the month; I found it at rest. Bryophila glandifera was rather common on lichen-covered walls. Thera variata occurred amongst the Eucalyptus foliage, and also Fidonia atomaria; whilst on the trunks of the same tree I met with Eulepia Cribrum commonly.

The atlas-moth (Saturnia Atlas) together with the moon-moth (Bombyx Luna) occur here during this month; and another beautiful Bombyx of a pale green colour, having two long appendages to the hind wings. I have frequently bred all these species, the larvæ of which surpass any I ever saw for brilliant colours. The beautiful Ornithoptera Amphrisius is very common here on the Ghauts during this month; its larvæ feed upon vine: they are black, with red warts, and are most unseemly things to produce such magnificent imagos,—rather a frequent occurrence in Entomology. September and October here are the best months of the year, as almost all the species seemed to occur during these months; and therefore it will be superfluous for me to enumerate them, the only additions to the English species being Macaria alternata and Boarmia crepuscularia. The season changed greatly towards the latter end of October, and it became foggy and cold. Rough, cold weather prevailed throughout the whole of November, and some heavy rainfalls occurred. In spite of the inclement weather I saw batches of a Clisiocampa larva feeding upon Acacia; and

the imago of Colias Hyale was more abundant this month than any other. C. Porcellus continued to come commonly to flowers until the close of the year.

WILLIAM WATKINS.

Convalescent Depôt, Wellington, Madras,
July 7, 1873.

[I feel some hesitation in accepting the names of British insects as inhabitants of India without comparison. Perfectly aware that the same species *does* occur in Britain and in India, it still seems desirable to institute a rigid comparison before assuming that so many Indian species are identical with our own. I have also noticed that Mr. Watkins mentions the Eucalyptus as native in India. I thought it was confined to Australia. I need scarcely say that I shall always be glad to receive a continuation of these communications.—*Edward Newman.*]

Captures in the New Forest in 1873, *from June* 23*rd to July* 21*st; including Ten Days at Freshwater, Isle of Wight.* By W. H. TUGWELL.

THE season, as a rule, has been a very dull one, and old resident collectors speak of it as the worst they recollect. Sugar was a perfect failure,—it was literally "wasting one's sweetness on the desert air," and, as a consequence, comparatively few Noctuæ were captured. Those fortunate collectors who recollect the year 1871 there would have been particularly struck at the scarcity of the then abundant species,—Sibylla, Paphia, Adippe, Aglaia, Selene, and Sinapis,—which then absolutely swarmed in the rides of the enclosures by day; and the sugared trees, teeming with dozens of Promissa, Sponsa, Turca, and enough Oo on dark patches of sugar to give it the appearance of almond-rock at night, were things of the past. Common day-flying species were few and far between, and your sugar a blank, except an occasional slug or beetle; and insect life, excepting that of Diptera, was decidedly much less prolific than usual.

One of my principal objects was to retake our new burnet, Zygæna Meliloti; and by devoting twelve days to this species

I possibly took the finest series of the species ever seen,—certainly in this country. One curious fact is I failed entirely in finding any pupa or pupa-case, although I searched for them on my hands and knees for a very long time, even when I found the insect perfectly damp; one thing is certain, they cannot spin up on the culms of grass, &c., as Filipendulæ and Trifolii do; however, I hope to know how they do spin, as I have about one hundred larvæ feeding on Lotus corniculatus; at present the young larvæ eat both leaves and flowers. As a species it is a very distinct one; and Mr. Doubleday has very clearly defined it in the September number of the 'Entomologist' for last year. It does not appear to vary much, as I did not get any marked difference from the type.

I collected, or had brought to me fresh, the following species:—

Diurni.

Sinapis. The late spring brood, to end of June and first week in July; worn.

Cardamines. Were flying, end of June; worn.

Rhamni. Second week in July; worn.

P. Cratægi. Not rare, at flowers of rhododendron, &c.

Of this group I met with thirty-five species, and that in one month is a good number.

Nocturni.

In this group I found nothing special:—C. Porcellus, M. fuciformis, C. ligniperda; four species of Zygæna,—Trifolii, Meliloti, Loniceræ, and Filipendulæ; and three species of Hepialus.

S. irrorella. A fine series; one very dark-coloured male; and one male IVI variety, at Freshwater.

C. miniata, L. mesomella and Rubricollis, D. Jacobææ. In profusion; both imago and larva.

E. russula. Fairly common on heaths.

B. Rubi. A female; flying over a bog *at night*. And many species of general distribution.

Geometræ.

B. roboraria. On trunks of fir and oak; also one flying at night: in all seven.

T. consonaria and extersaria. Not common; on tree trunks.

G. papilionaria. Two females off alder, and missed a fine male.

N. viridata. This species was worn and faded.

P. bajularia. Flying at dusk in the wood-ridings.

H. auroraria. Not common.

Acidalia subsericeata, straminata, and imitaria. Boggy heaths.

A. immutata. Woods.

A. emutaria. I am not surprised that this species is a desideratum in so many cabinets. Walking and running up to one's knees in bog, and at times getting a plunger not a little deeper, is not the most pleasant collecting; but to get it at all one must do this for two hours of an evening, and then often fail to get even a specimen. I bred ten Emutaria from eggs collected last year; curiously enough I took the female the last day of Brockenhurst trip last year, and the larvæ lived through the winter, and went to pupa the last week in May and first in June: the first of the moths appeared on the 21st of June, and they continued to do so until the 30th, when I was at Brockenhurst again; so they pretty nearly took the twelve months to complete their transformation.

M. alternata. This species I did not take personally, although I saw four during my stay; two of them alive, and two had been set.

M. liturata. Fairly common if worked for.

S. plumaria. Less common than last year.

M. euphorbiata. Flying by day in woods.

P. hippocastanaria. Common on heaths.

E. pumilata. Beaten out of furze, &c.

L. sexalata. By beating hedges; not commonly.

M. albicillata. In woods; not rare.

M. unangulata. Beating hedges.

G. obscurata. Very dark form, and in fine condition.

E. lineolata. Series, in fine order, at Freshwater.

T. chærophyllata. Common; and many species of general distribution.

Cuspidates.

I only set one species, *viz.* Stauropus Fagi, very fine; this I did *not* catch.

Noctuæ.

My captures were not numerous, as sugar failed.

T. subsequa. One fine specimen flying by day, in Stubby.

A. cinerea. One, at sugar on flower-heads, at Freshwater.

A. lunigera and lucernea. Seven of each, at sugar on flowers at Freshwater; and some six other common Agrotidæ.

Caradrina Morpheus, Alsines and blanda. At sugar, on flowers.

A. caliginosa. Pretty common in Stubby, &c.

T. tridens. At rest on fir-trunks, high up.

D. Orion. One, at sugar.

L. Turca. Three, at sugar.

L. conigera. At flowers.

N. despecta. In the bog at Freshwater.

N. Geminipuncta. Pupæ; at Freshwater, near River Yar.

H. dipsacea. Not so common as last year.

P. V-aureum. Over flowers of Erica tetralix.

T. Pastinum. On a bog at Freshwater.

E. fuscula. Not uncommon.

P. ænea. Very fine, and particularly bright coloured.

In the families Pyralidæ, Crambites, and Tortricidæ, several good species fell to my net.

PS. I had the good fortune to get a fine specimen of Calosoma Sycophanta on the shingle, at Freshwater, after a very heavy gale of wind and rain; the tide had evidently caught it, and half-drowned it. Not collecting Coleoptera I have given it to a friend.

W. H. Tugwell.

3, Lewisham Road, Greenwich,
July 24, 1873.

Description of the Larva of Lithosia quadra.—Whilst collecting near Lyndhurst, early in June this year (1873), I beat off the lower boughs of oak some larvæ, as to the identity of which I was uncertain, but conjectured, from their general appearance, that they were larvæ of some species of Lithosia. About the same time my friend Mr.

Wilbey, of Hampstead, obtained several of these larvæ. We supplied them with two or three species of lichen picked off twigs of oak, and had the satisfaction of seeing them commence feeding thereon. They fed well and grew perceptibly, though not very rapidly, and about the first week in July three of Mr. Wilbey's spun up amongst the lichen. About this time I had but two surviving larvæ which appeared to be full fed, but which never attained maturity, so that we might still have remained in ignorance as to the identity of the larvæ, had not Mr. Wilbey, more fortunate than myself, succeeded in rearing an imago. On the 31st July a perfect male specimen of Lithosia quadra emerged from one of his three pupæ. The larvæ when full fed vary from one inch and three lines to nearly an inch and six lines in length: they are cylindrical, of moderate bulk, the segmental divisions tolerably deeply incised; attenuated distinctly behind, and having the second segment manifestly narrower than those which immediately follow it. The claspers are very long. The colour of the head is black; its surface appears as if highly polished. The second segment is entirely dull grayish, with a few inconspicuous yellow marks on its posterior portion, only visible when the larva is fully extended. The dorsal surface of the 3rd segment is black, and it bears four yellowish marks along its subdorsal region, the anterior pair longitudinal, the posterior transverse. The dorsal surface of the rest of the body, from the 4th to the 12th segment (both inclusive), is divided into two well-contrasted areas, *viz.*, a pale dorsal and a dark lateral, the dorsal area being pale gray, longitudinally striated, and minutely dotted with more or less vivid yellow. The principal yellow markings are:— a double dorsal line, its constituent parts not parallel, but enclosing an elongate diamond-shaped area on each segment; exactly in the centre of these two lines there is usually an indistinct thread-like medio-dorsal line, and a subdorsal line somewhat interrupted and broken up into spots, and which follows the outline of the dorsal line. The pattern above described is interrupted three times, *viz.*, on the anterior part of the 4th segment, in the centre of the 8th segment, and on the posterior part of the 12th segment, in each of which places it is erased by a conspicuous transverse black spot; that on the 4th segment oblong; the other two somewhat

diamond-shaped. Next below the subdorsal line is a deep black stripe, having an interrupted yellow line down its centre, and bordered beneath by a similar line. Below this the lateral surface is smoky gray, minutely dotted with yellow; the spiracular line is yellowish, and intermediate between it and the above-mentioned black stripe is a much interrupted yellow line. The lateral surface of the 3rd and 4th segments is grayish, thickly dotted with yellow. The usual tubercles are conspicuous, and each of them is somewhat thickly tufted; at each extremity of the larva are a few scattered hairs, much longer than any of the others. Of the dorsal tubercles the 3rd and 4th segments have the anterior pair the largest, and coloured bluish gray, the posterior being dull red; on the other segments the posterior pair are the most conspicuous, the anterior pair being very small. On the 5th to 11th segments both pairs of tubercles are dull red, the posterior pair being seated on the subdorsal line and projecting into the black band below it. All the tubercles on the 12th segment are bluish gray, as are also those on the lateral surface. The hairs are very pale grayish, and have a slight silky gloss. The ventral surface is dull smoky gray, with a few yellow marks on each side of every segment after the 4th. The legs are black; the claspers pale reddish gray on their outer, almost colourless on their inner, side. The favourite food of these larvæ is a common lichen (Parmelia caperata), which grows in great abundance on all the trees in the locality where I captured them. They will, however, eat other species of lichens. They never fed very voraciously, and were always very restless when feeding, scarcely ever settling down to one patch of lichen for any length of time. They appeared to extract nourishment from places where the coating of lichen was so slight as to be quite invisible to the naked eye. All the larvæ we captured this year were beaten from oak; but in the spring of 1872 Mr. Wilbey took them in some abundance on beech, but failed to rear the imago. Probably they feed on the lichens growing on most species of forest trees. I am indebted to Mr. Wilbey for an interesting fact respecting this larva. For some time we neither of us could account for the diminution in the number of our larvæ. I discovered two empty skins bitten in half; I could not conjecture by what, as I had seen no slugs or other

intruders in the cage. At last one day Mr. Wilbey discovered one of his larvæ in the act of devouring another of its own species: it began by biting a hole in the back of the larva, and then appeared to suck out the soft interior parts, till it left nothing but the empty skin, which was apparently too tough a morsel for its digestive organs. He afterwards saw another larva in the act of devouring a larva of Cleora lichenaria, which happened to be in the same cage. This would seem to prove that in confinement, at all events, if not in a state of nature, this larva is a cannibal. The cannibalism in this case was certainly not caused by want of food, as my friend had supplies of freshly-gathered lichen up from the forest twice a week.—*Bernard Lockyer; August* 8, 1873.

Description of the Larva of Depressaria Yeatiana, Fab.—Length, quarter of an inch to five-eighths of an inch. Colour light chrome-green. Form slender, semi-cylindrical, slightly appressed, constricted, with yellowish rings between the segments. Head black, broad, shining; corslet black, broad, having a rather light edge in front. Dorsal streak faint; subdorsal streak hardly perceptible; papillæ indistinct. First pair of feet black; the remainder green. Spines yellow, strong, but sparse. Feeds upon Daucus Carota (wild carrot), forming a tube by turning the pinnæ of the leaves over, and resides therein. It is full fed during the last week in June and first week in July; it then descends to the surface of the earth and spins a white, silken, but rather slight covering, and changes to a rather flattened, bright brown chrysalis, in size and shape very like the chrysalis of Gelechia populella, and remains in pupa about three weeks. This larva was discovered by Mr. Hodgkinson and myself, in 1871, in Westmoreland, and a drawing made then agrees exactly with larvæ taken by us in North Lancashire and in South Lancashire in 1872 and 1873, from which the series before me were bred.—*C. S. Gregson; August* 19, 1873.

Entomological Notes, Captures, &c.

Controlling of Sex in Butterflies.—While I have pen in hand let me say a word on Mrs. Mary Treat's experiments in reference to the "Controlling of Sex in Butterflies," and—as

the law must, of course, be universal—in other Lepidoptera. Mrs. Treat's experiments are not quite satisfactory. A male may be an under-fed female; but this can scarcely be the exclusive method of producing males. In a batch of—say one hundred—Antiopas feeding on the same elm or willow, and of course all similarly fed, there will, unquestionably, be a considerable number of males. I have, however, a suggestion to make to Mrs. Treat. We have in the Atlantic States a moth, Thyreus Abbotii, the female larva of which is altogether different in colour from that of the male. Now, if Mrs. Treat will take the female larva of this moth, and, by any method whatever, make it produce a male moth, the process by which such a change is brought about will be worth very serious consideration. I have heard of such changes in Hymenoptera. Why not in Lepidoptera?—*W. V. Andrews; New York, July* 31, 1873.

Argynnis Niobe (Linn.) *in Kent.*—Mr. Parry, of Canterbury, sent me two specimens of an Argynnis, to name one of them, which he said he had sent alive to my friend Edward Newman. They are females of Argynnis Niobe,—the typical variety, with the spots on the under side silvery. I know nothing of their history beyond the statement of Mr. Parry,—that he took them twenty miles from Canterbury. Being a sub-alpine species on the Continent, and a native of Sweden, its occurrence in this country might be looked for in the northern counties of England and in Scotland rather than in Kent.—*Henry Doubleday, Epping, August* 23, 1873.

[Mr. Parry sent me a specimen of Argynnis alive, which I set and returned to him, expressing my opinion that it was A. Adippe. My friend Mr. Tugwell happened to be with me the afternoon before I returned the specimen, and after a careful examination entirely concurred in this opinion. In reference to Mr. Doubleday's observation, that Niobe might be looked for in our northern counties rather than in Kent, I may just repeat that the only other British specimen (recorded in the 'Entomologist,' vol. iv. p. 351, and subsequently in 'British Butterflies,' p. 30) was taken by Mr. Gerrard in the New Forest, Hampshire. It is now in the collection of the Rev. Windsor Hambrough.—*Edward Newman.*]

Variety of Argynnis Adippe and Lycæna Ægon.—When in the forest in July I captured, in Stubby Copse, a specimen

of A. Adippe, wanting the hind marginal series of silver spots on the hind wings and the apical ones on the fore wings, and also differing in some other minor respects from typical specimens. I also took a female specimen of Lycæna Ægon, as large as my largest male, and with the basal portion of the wing blue as in the male, with the wing-rays brown; it also wants the series of marginal orange spots on the upper surface.—*Bernard Lockyer; 179, Camden Road, London, N.W., August* 6, 1873.

Melitæa Dia in Kent.—On the 23rd of last month I was fortunate enough to take two specimens of Melitæa Dia on thistles, in the open spots in a wood, in this neighbourhood; they were in fine condition, apparently just emerged from the chrysalis.—*T. Batchelor; Yew Tree Farm, Southborough, Kent, August* 18, 1873.

Vanessa Antiopa in America.—Absence from home is my excuse for not replying earlier to Mr. Birchall's very proper remarks on the inconclusiveness of my answer to his question: "Does V. Antiopa ever emerge from its chrysalis with a white border?" The truth is that I do not, upon reflection, *know* that it does; it is a matter of inference. All fall specimens have the yellow or brimstone border; all spring specimens have the white border. All fall specimens that have hybernated, in my possession, have the yellow border in the spring. But, if the hybernating Antiopa does not undergo a bleaching process during the winter, it is no very extravagant assumption that the spring specimens with a white border have passed the winter in the chrysalis state. Still, I admit that this is not quite satisfactory. Perhaps some other correspondent may assist us in ascertaining the facts.—*W. V. Andrews; New York, July* 31, 1873.

Vanessa Antiopa near Horsham.—As I was driving to-day I saw a Vanessa Antiopa flying by the road-side, near Monk's Green, about half-way between Lower Beeding and Horsham. I had a very good view of it, as it flew very steadily, though strongly, within six feet of me, for nearly a hundred yards, when it turned over the hedge, and I saw no more of it. The sun was shining clearly upon it, and I saw distinctly the edging of the wings, which were *bright yellow*, the rest of the butterfly appearing nearly black.—*Wm. Borrer; Cowfold, Sussex, August* 16, 1873.

Great Abundance of Vanessa Io.—I have just returned

from spending a few days in Sussex, near Arundel, and have been struck with the unusual abundance of this butterfly. Each fine morning, in the course of a couple of hours, along the lanes and road-sides, I must have seen from three to four dozen, mostly in beautiful condition, sitting, and flying round the thistle-heads and various flowers. I should like to hear if it is abundant all over England this season, for last, if I remember rightly, it was very scarce. I noticed only two or three specimens, and I think several of your correspondents remarked about the scarcity of this species. Of P. Atalanta and Cardui I have not seen a specimen, and I have not heard of anyone having observed Antiopa. It will be singular if these three species should be scarce this season, or the latter be entirely absent. The ordinary common butterflies were in tolerable abundance, such as P. Brassicæ, Rapæ, Napi, H. Janira, Hyperanthus, Tithonus, &c. Next week I shall be along the Kentish coast, and if I notice any rarities, or anything worth recording, will send you a report.—*Samuel Stevens; 28, King Street, Covent Garden, August* 18, 1873.

Variety of Pyrarga Megæra.—Is it a common occurrence for Megæra to have a *double*-pupilled spot near the apical angle of the fore wing, exactly similar to Tithonus? I have a specimen in my collection so marked (a female, caught two years ago), and should you like to see it I shall be most happy to send it to you.—*Byron Noel; East Budleigh, Budleigh Salterton, Devon, August* 6, 1873.

[It is certainly not common for Megæra to have a double-pupilled spot at the apical angle: it may possibly be another species. I should be obliged by a sight of the insect, if an opportunity occurs of sending it by private hand; but I would on no account send it by post.—*Edward Newman.*]

Variety of Chœrocampa Elpenor.—On the 23rd of last June I bred a fine variety of C. Elpenor: it is entirely of a uniform olive-green colour, excepting the abdomen, which is tipped with bright pink. This is the second variety of this species I have bred within the last three years.—*Edward F. Bisshopp; Ipswich, August,* 16, 1873.

Variety of Xylophasia polyodon.—The other night I captured a variety of this insect at sugar: it is marked like the ordinary ones, but in addition has a broad silver band across both wings.—*George J. S. Eastham; Spring Bank, Pendleton, near Manchester, August* 1, 1873.

Fecundity of Sphingidæ.—A female of S. Ligustri, which I found at rest a few weeks since, laid two hundred and sixty eggs, all of which, save one, produced larvæ. Is this a large number? A female of S. Populi, captured at rest last week, has laid one hundred and sixty eggs. In what work may be found information as to the fecundity of Lepidoptera?—[*Dr.*] *H. W. Livett; Wells, Somerset, July* 23, 1873.

Smerinthus Populi only a Fortnight in Pupa.—On the 6th of August a female specimen of Smerinthus Populi came out in my box, from a pupa bred from a caterpillar this year: the first caterpillar having burrowed on the 16th of July, this insect can only have been in pupa about a fortnight.—*D. G. Lathom Browne; Winkfield, Beckenham, August* 13, 1873.

Zygæna Loniceræ and L. Trifolii.—Mr. Robert Last, of Birmingham, has sent me your note of the 11th respecting some Zygænæ he sent you. I named these for him as Loniceræ, and you say they are Trifolii. How do you separate the two? In a pair I have always considered typical Trifolii, the spots are much larger than in those of Mr. Last's; the middle pair are quite confluent, the antennæ are shorter, and I think the thickening is more abrupt. In fact, they are distinct enough to be separated by any tyro; but when I come to look over a lot of what I call Loniceræ, I find differences not very easy to understand. In a series gathered from various places I find a great difference in the length of the antennæ, and I have one with a short antenna on one side. The size of the spots and width of the hind border vary much; and I find one from Mr. Last's lot that might pass for Meliloti, but that the upper centre spot is round, not oval. If you would not consider it too much trouble I should be very much obliged if you would give me a line or two on your distinguishing marks of the two species. I have been wondering whether I have not two species mixed as Loniceræ, separable in length of antennæ principally. Now, I ask, is that with short antennæ what you call Trifolii? If so, what is the species spoken of before with confluent spots? —*John E. Robson; Sea View, Hartlepool.*

Zeuzera Æsculi in the common Holly.—On the 17th of March last a gardener in this neighbourhood found two larvæ of Zeuzera Æsculi feeding in some young holly-trees he was transplanting. They were brought to me; one I gave away, and the other I determined to rear if possible. I partially

stopped up the hole in the branch with clay, and placed it in the garden with the end sticking in the ground: it continued feeding, and on the 10th of July emerged a fine female. I have also found it feeding in willow.—*B. W. Neave.*

Bombyx processionea in Kent.—About the middle of last June I found a quantity of pupæ of a species quite new to me, concealed among the twigs and rubbish of an old magpie's nest built in a tall pine-tree. Some of these pupæ are in tolerably perfect cocoons, in appearance something between that of B. Quercus and B. Neustria, but rather smaller than that of B. Neustria; the chrysalides themselves are light brown, and in shape almost exactly like B. Neustria: one has just yielded me a moth, which appears to me to be a small variety of B. processionea; there are about fifty pupæ in all.—*T. Batchelor; Yew Tree Farm, Southborough, Kent.*

[I shall feel obliged if Mr. Batchelor will submit both the Dia and Processionea to Mr. Doubleday or myself, with a view to examination and confirmation. Mr. Batchelor is probably unknown to many of my readers.—*E. Newman.*]

Does Cossus occasionally form its Cocoon in the Ground.—Is it the usual, or even the occasional, *habit* of Cossus Ligniperda to form its cocoon in the earth, at the depth of two inches, and at least fifty yards—with a steep hill intervening—from the tree where it has fed? I found one in this situation, with the insect just emerged, early in June, and was much surprised, as I thought that as a rule the larva spun up *inside* the tree where it has fed, at the extremity of one of its galleries.—*Henry F. Wilson; The Rectory, Forncett St. Peter, Long Stratton, Norfolk, August* 21, 1873.

[I have seen Cossus wandering across roads and footpaths far from any tree in which I should suppose it likely to have fed; but we all may fall into error by restricting its range of food too narrowly. All entomologists must have observed the occasional wild and wayward wandering of larvæ, accompanied by change of colour, before assuming the pupa state. More directly answering Mr. Wilson's question, I have found this larva underground in a cocoon formed of silk and earth, without a particle of its home being made of sawdust.—*Edward Newman.*]

Demas Coryli and Ligdia Adustata Double-brooded.—Some eggs of Coryli in my possession hatched about the

beginning of June: some of the larvæ began to pupate on July 21st, and from these two moths emerged,—a male on August 2nd, and a female on August 3rd; the female laid a number of eggs, which hatched in less than ten days, the larvæ from which are now feeding well. Coryli is, I believe, frequently double-brooded, but I think it rather unusual for two broods of Adustata to occur in the year. A female of this species, taken on the wing on June 16th, deposited fifteen eggs in a chip-box; the larvæ emerged on June 27th, and all turned to pupa on the same day, July 24th. The first imago emerged on August 11th, but I did not attempt to obtain eggs, as I have found that the larvæ are not easily brought through the winter.—*Gilbert H. Raynor; Hazeleigh Rectory, Maldon, August* 22, 1873.

Platypteryx Sicula near Bournemouth.—I obtained a larva of this species in this neighbourhood, feeding on alder, on August the 12th, 1873: it made up in an alder-leaf on August the 15th.—[*Rev.*] *A. C. Hervey; Pokesdown, Bournemouth.*

Information of Instructors.—I went a few days since to the Bethnal Green Museum, and looked over the cases of Economic Entomology. I found it stated against the specimens exhibited of Vanessa Io,—"Feeds on various plants;" and of Vanessa Atalanta,—"Feeds on all kinds of plants." My own experience of both species is that the larvæ feed only on nettles. Will you therefore ask the question in the pages of the 'Entomologist?' It appears to me that in an educational museum the information given by the curator on the labels should be scrupulously correct, but I often find the reverse to be the case. It is a crotchet of mine that the instructor should be well informed on the subject which he undertakes to teach, but in practice I find that those best competent are not instructors.—*J. Jenner Weir;* 6, *Haddo Villas, Blackheath, S.E., August* 7, 1873.

Long Continental Entomological Pins.—I should be very much obliged if you would inform me where I can get those extremely long, thin pins, so much used on the Continent.—*George J. S. Eastham; Spring Bank, Pendleton, near Manchester.*

[I am unable to give the desired information, having never seen any purchased in England. Will any correspondent kindly answer the query?—*Edward Newman.*]

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On the Brain and a Portion of the Nervous System of Pediculus Capitis. By J. S. BOWERBANK, LL.D., F.R.S.

ABOUT twenty years ago Mr. Topping furnished me with one of the finest preparations in Canada balsam of a specimen of Pediculus Capitis that I have ever seen. It possesses great transparency, and, at the same time, by the mode of preparation, the muscles and nerves are stained of an amber-yellow colour, so as to be rendered distinctly and beautifully visible beneath the microscope. The examination of this specimen at the time I received it disclosed so many interesting facts appertaining to the brain and nerves of the creature, that I felt a strong inclination to carefully examine its organization, in the hope of throwing some additional light on the anatomy and physiology of insects in general, and on the organs of sense and the habits of this one in particular; but other occupations have hitherto prevented me from pursuing this subject until the present time.

The brain varies to a considerable extent in size and form in different tribes of insects, but in this one it is a more than usually well-developed state. The two lobes of the cerebrum are united at the upper surface of the organ, but they are widely separated beneath and between the separated portions; the œsophagus, deeply embedded, passes from the anterior to the posterior parts of the head over the upper surface of the cerebellum, which is gradually inclined downward from its junction with the posterior portion of the cerebrum. A partial constriction of the general mass marks the junction of the posterior part of the cerebrum with the anterior portion of the cerebellum. The fore part of the cerebellum closely resembles the cerebrum in form, but it

differs from it in having two terminal lobes, one on each side, of a widely-shaped oblong.

The substance of the brain appears to be amorphous, and I could not with a power of 700 linear detect the slightest indication of convoluted structure. Two pairs of nerves are distinctly to be seen passing from the cerebrum. The first pair are the optic nerves, which originate at the lateral margin of each mass of the cerebrum from a small conical mass, the base of which is on the surface of the brain-lobe; and from the apex of the cone the nerve proceeds in the form of a small cylindrical thread, in a straight and tense line, to the base of the eye, where it expands into a cone of attachment very similar in form and size to that from which it emanates. The diameter of the base of the cone measured $\frac{1}{1750}$ inch, the extreme length of the optic nerve is $\frac{1}{700}$ inch, and the nerve at about equal distances from its terminations measured $\frac{1}{7591}$ inch in diameter.

The second pair of nerves passing from the cerebrum are the antennal ones. They originate from conical bases very similar in form and size to those of the optic nerves, from the fore part of the margins of the brain-lobes opposite to the basal joints of the antennæ, and pass beneath the muscles in a meandering course into the antennæ at about the centre of the basal joints. In the right antenna, in which the nerve is most distinct, it pursues its course in a direction inclined to its right side until it reaches the base of the second joint, through which it passes in a diagonal direction to the left side of the antenna, and thence continues its course as a flexible thread until it reaches to about the middle of the terminal joint of the organ, when it expands into the form of a large conical mass, the broad base of which is closely attached to the thin terminal membrane of the antenna, on the outer surface of which there are numerous very minute hairs. The terminations of the antennæ are not like those of many other insects; they consist of a sunken area of thin membrane, with a well-defined marginal ring surrounding and protecting them from injury; and it is on this thin circular area that the minute terminal hairs are based.

The antennal nerves are less than the optic ones; their diameter at a slight distance below the commencement of the expansion into the terminal cone measured $\frac{1}{11111}$ inch, and

the broad base of the cone at its application to the terminal membrane was $\frac{1}{946}$ inch in diameter. Small as these organs are, those of the terminal membrane of the antenna are still more minute. The length of two of the longest of the minute hairs measured $\frac{1}{2929}$ inch, and the diameter of the thickest of the two was $\frac{1}{35000}$ inch. The length of these hairs was unequal, and they seemed to occur in pairs closely adjoining each other.

The optic and antennal nerves are the only ones that are distinctly visible as passing from the cerebrum; but there appears rather indistinctly to be another pair beyond the antennal ones that seem to pass from beneath the margin of the fore part of the brain, and to proceed forward to the oral organs of the insect, and are shortly lost sight of beneath the muscles.

The general distribution of the nerves in the body of the insect cannot be traced in the specimen under consideration, as the viscera and the muscular system completely obscures them; but in the limbs the course of the principal nerve and the branches it gives off to the hairs on the surface of the limb is frequently distinctly to be seen and traced, and especially so in the large terminal joints of the fore limbs, with a linear power of 320. There appears to be but one main nerve, which traverses the whole length of the limb, and from which a branch is given off to the base of each of the external hairs. There is no enlargement of the branch at the point at which it departs from the main nerve, but shortly before it reaches the base of the hair it gradually enlarges and assumes the form of a bell-shaped cone, the broad base of which is applied to the base of the hair. The branches of the nerves thus appropriated to the hairs are of extreme tenuity; the one belonging to the hair with the large basal cone measured $\frac{1}{17500}$ inch in diameter; the length of the cone at the base of the hair was $\frac{1}{8750}$ inch and its basal diameter $\frac{1}{17500}$ inch. Each hair evidently has its especial nerve, but it is only under very favourable circumstances that they can be so distinctly traced, as in the right forearm of the insect under consideration; but in far the greater number there are unmistakable indications of their presence.

The antennæ are also furnished with hairs at the distal portions of each joint. They are slender and few in number.

I examined their bases for nerves, and I could in several of them trace very minute threads of nerve for short distances from their bases, but in consequence of the thickness of the outer integuments I could not follow them to the main antennal nerve, nor could I detect their junctions with the main nerve; but the direction of these minute nerve-threads were always towards it. The whole of the hairs on the body and limbs of this insect are evidently simple organs of touch to guide it in its progress through the forest of hairs amidst which it lives.

Very little appears to be definitely known regarding the senses of insects. Burmeister states:—"Of all the organs of the senses the eye alone possesses a superior development; nose and ear are not yet proved to exist, and taste, likewise, can only be present in a few, at least to a degree worthy of investigation; but touch, which never properly possesses a distinct and constant organ, but, according to the differences of animal organization, is sometimes imparted to one and sometimes to another organ, has, in the majority of the orders, peculiar organs varying in their grade of development." Burmeister also states ('Shuckard's Translation,' p. 296):—"Sulzer, Scarpa, Schneider, Borkhausen, Reaumur, and Bonsdorf, consider the antennæ as organs of hearing. That they are not organs of touch is proved anatomically by the observation that insects never use them as such, this function being exercised by other organs, namely, the palpi."

This conclusion as regards the organs of touch in the insect under consideration has no force, as Pediculus Capitis, P. Vestimenti, and Phthirius inguinalis, have no palpi. Shuckard writes of the antennæ—"That they are not organs of touch is proved anatomically by their horny, hard upper surface, and physiologically by the observation that insects never use them as such." This may be true, as applied to some of the insect tribe; but it must be observed that Shuckard does not take into consideration the probable sensitive qualities of the numerous minute hairs with which the terminations of these organs are furnished.

Strauss Durckheim regards the feet as being especially appropriated to the sense of feeling, while Burmeister places the exercise of touch exclusively in the palpi. The antennæ and palpi have each had the power of smelling assigned to

them. Owen believes the antennæ to have the faculties of touch and hearing, but thinks their precise function has not been hitherto well defined. Thus, authors seem to differ greatly as to the seat of the organs of the senses of touch, smell, and hearing.

Under these circumstances it appears to me that our best guide to the elucidation of these difficulties lies in accurate observations on the nervous systems of the insect tribes. They differ greatly in their habits and manners, and we may therefore naturally expect to find them varying in their nervous structures in a corresponding degree. In the higher class of animals we find the senses of hearing, feeling or touch, and seeing, have each their appropriate set of nerves, and that their nervous systems are much more complicated than in insects; but I am not aware that it has ever been demonstrated by anatomists that the same nerve or nervous system serves two different senses, and it is not reasonable to expect such to be the case among insects. In the case of the optic nerve, we find in insects, as in the higher animals, that it serves the eye only. In many other warm-blooded animals we find an exceedingly complicated division of the nervous system, which in them are exceedingly sensitive to injury, producing agonising sensations of pain; but that this is not the case among insects we have numerous observations recorded to establish that fact. Perhaps one of the most striking instances is the experiment of Mr. Davis, an entomologist well known to the members of the Entomological Club of London, many years since. I heard him relate that while out insect-hunting he took a large Libellula, and while holding it by its wings, pressed together over its back, he presented a finger to its mouth, and the insect made a vigorous attempt to bite it, so he turned up the end of its own tail to its mouth, and it bit a piece off of it, and this it repeated several times. Mr. Davis at once came to the conclusion that there was no feeling of pain in the operation. He then, with a pair of scissors, removed nearly the whole of that part of its body, and cutting a short length off a straw he thrust it into the stump of the tail, but he found at first that the artificial tail was too heavy, so he trimmed it until it became a fair balance to the body. Away flew the Libellula, and he commenced hawking about for flies just as if nothing extraordinary had happened to its tail.

The hairs on the joints of the antennæ, there is little room for doubt, are simply organs of feeling or touch, and as they receive their branches from the simple main nerve of the antenna, terminating at the bases of similar, but very minute hairs, which, from structure and position, have every appearance of being discriminative organs of feeling also, it appears reasonable to conclude that the single main nerve of the antenna is devoted to the sense of touch only, as the optic nerve is devoted solely to the sense of vision. If we have separate nerves for vision and touch, it is reasonable to expect that a separate nerve would have been devoted to so important a sense as hearing, and that if the antennæ had possessed that faculty we should have found a separate nerve in each devoted to it; but as such is not the case we may reasonably conclude that all the hairs are appropriated to the sense of touch under ordinary circumstances, and that the delicate and beautiful organization of the terminations of the antennæ are especially devoted to the office of discriminative feeling; and this conclusion appears the more probable when we consider that for the ordinary purposes of touch each hair of the body and limbs has a single branch of nerve, while the broad base of the terminal cone of the antennal nerve is applied to the bases of a congregation of very minute hairs, based on a thin and probably elastic membrane.

The mode of the imbibition of nutriment by these insects does not appear to have been determined by the naturalists who have described them in a satisfactory manner. Swammardam, in p. 33 in his book of 'Nature or History of Insects,' states:—"The louse has neither beak, teeth, nor any kind of mouth, as Dr. Hooke describes it, for the entrance into the gullet is absolutely closed. In place of all these it has a proboscis or trunk, or, as it may be otherwise called, a pointed or hollow aculeus or sucker, with which it pierces the skin and sucks the human blood, taking it for its food into the body: but this proboscis cannot be shown, on account of extreme smallness, nor can it be distinguished unless a person happens to see it by chance."

This description of the oral apparatus of the insect is to a very considerable extent incorrect, arising probably from the difficulties under which the great microscopical observers laboured in those days. In the specimen under description

we find a short, truncated, conical, suctorial tube. The length of this tube is $\frac{1}{6\,5\,2}$ inch, the diameter at the base is $\frac{1}{8\,7\,5}$ inch, and at the orifice $\frac{1}{1\,6\,0\,0}$ inch: it appears perfectly smooth, and is very thin at the mouth, but evidently firm and strong. Within the orifice of this tube there are two elliptical sponge-like bodies, with somewhat corrugated or obscurely transversely striated surfaces; each of these organs is provided with a basal ligament, which may be traced backward for a short distance, when it is seen to terminate in a muscular fasciculus of about the same length as the ligament. This structure irresistibly suggests an action within the short tube, similar to that of a mechanical piston. Such an organ applied to one of the sudoriferous ducts would be admirably adapted to exhaust its contents by suction for the nutrimentation of the insect. The conical form of the suctorial tube would adapt it to any variations that might occur in the diameters of the sudoriferous pores. The spiral ducts in a fine wet preparation of the human scalp in my possession measured $\frac{1}{1\,0\,0\,0}$ inch in diameter, expanding slightly at their external orifices, so the suctorial tube of the insect being $\frac{1}{1\,6\,0\,0}$ inch at its orifice and $\frac{1}{8\,7\,5}$ at its base would scarcely ever fail in adapting itself as a suctorial organ to the sudoriferous pore from which it might choose to extract its contents. The application of the sucking apparatus of the insect to the perspiratory pores of man is suggested by Swammerdam, and he describes the organ by which he believes it to be effected as "a proboscis or trunk, or, as it may be otherwise called, a pointed or hollow aculeus or sucker."

When the learned author described the entrance into the gullet as absolutely closed, it is probable he had discovered by dissection the two little masses within the sucking-tube of the creature, and not being able to see their ligamentous and muscular appendages he considered them as impassable obstacles to entry of nutrimental matters. I have not discovered in the specimen under consideration any organism the shape of the "proboscis or trunk, or, as it may otherwise be called, a pointed or hollow aculeus or sucker, with which it pierces the skin and sucks the human blood." As described and figured by the author in tab. i. fig. 4 *a*, as very little exceeding one of the adjacent hairs in diameter, such an organ would be quite incompetent to imbibe a single

molecule of human blood which has an average diameter of $\frac{1}{3501}$ inch. The distal orifice of the large oral tube of the insect has a diameter only $\frac{1}{1000}$ inch, while that of the supposititious sucker, as described and figured by Hooke and Swammerdam, certainly does not exceed one-fourth or one-fifth of that of the oral orifice; so that, estimating it at one-fourth the size of the oral orifice, its diameter would not exceed $\frac{1}{6400}$ inch, very little exceeding half the diameter of a blood disk.

Denny, in his excellent 'Monographia Anoplurorum Britanniæ,' represents P. Vestimenti in pl. xxvi., and exhibits, in figs. *f*, *g*, and *h*, what he designates the haustellum in a state of protrusion. I have not seen this organ in the state he represents, but there is no doubt of its existence, for at a very short distance within the two spongeous masses, which occupy a considerable space in the conical suctorial tube of P. Capitis, there is a third spongeous mass, the long axis of which is at right angles to those of the other two spongeous bodies. This third mass is similar in its apparent structure, but rather smaller than either of the others. From the middle of its posterior side there is a short, stout ligament or pedicle projected backward for rather more than the greatest length of the spongoid body, and terminating in an irregular basal mass, from which two ligaments diverge, passing towards the right and left sides of the head, each terminating in a spindle-shaped muscular fasciculus. I could not detect any prehensile teeth or hook on the spongeous mass of this organ with a power of 700 linear, but this may probably be accounted for by my having examined these organs in their natural condition and in a state of repose, my specimen having never undergone desiccation, while that of Mr. Denny's may have been sketched from a dried specimen. This third spongeous mass in the rear of the two formerly described, and in conjoined action with them, would form an exceedingly efficacious compound piston-valve in such a suctorial tube as that of P. Capitis. These organs are faithfully represented in the figure of the head of the insect by the artist, but they are so minute that a lens of two or three inches focus may be applied with advantage to the figure. The third species of parasite infesting the human body is Phthirius inguinalis (the crab-louse). Specimens in my pos-

session have the same suctorial organs as P. Capitis, including the spongeous masses in the sucking-tube with their thread-like ligaments. The antennæ exhibit, but very indistinctly, similar nerves to those of P. Capitis, and their terminations are also the same in structure. The same suctorial organization exists in Hæmatopinus Suis, the parasite of the hog; in Trichodectes scalaris, the parasite of the ox; and in a great number of parasites of the same and nearly-allied genera.

If we thus read off the habits of these creatures by the structure of their oral organs it would appear that it is not a blood-sucking animal, and that its natural food is the fluid exhalations of the human body through the sudoriferous ducts, but that if blood were found there is little doubt that it would imbibe it. All the authors who have examined and described the two species of Pediculus agree in asserting that they do not inflict any pain during feeding on the fluids extracted from the human skin.

J. S. Bowerbank.

Variety of Melitæa Euphrosyne.—This female Euphrosyne has the basal half of all the wings black, and presenting a very marked appearance; in the fore wings there is a double fulvous spot in the middle of the black area, and in the hind wings there is a smaller crescentic mark of the same colour:

VARIETY OF MELITÆA EUPHROSYNE (FEMALE).

the situation of these several markings is distinctly shown in the illustration. The specimen is in the rich collection of Mr. S. Stevens, who has lent it to me for the express purpose of figuring in the 'Entomologist.' I have now only to thank

Mr. Stevens for the use of a series of varieties, which must be of great interest to every subscriber. The series is now complete.—*Edward Newman.*

Notes on the Mymaridæ. By FRANCIS WALKER, Esq.

ANAPHES PUNCTUM.

PTERATOMUS PUTNAMI.

THE Mymaridæ are more atom-like than all the other Hymenoptera, and thus, in comparison with them, are nearest on the surface of creation to spaceless infinity.

Ichneumon atomus, *Linn.*, is probably one of the Mymaridæ, but the mention of it as such is sufficient, the description not being suitable for the limits of a species. Nees ab Esenbeck established two genera—Gonatocerus and Eutriche—in this family, which he considered as Chalcidiæ. Haliday separated them as a family, with a systematic arrangement of the genera into which he divided them. Foerster afterwards elaborated them, and his Synopsis is here translated as follows:—

A. Tarsi 5-jointed.
a. Abdomen distinctly petiolated.
* Antennæ of the male 10-jointed, of the female 9-jointed. - - - - CAMPTOPTERA.
** Antennæ of the male 13-jointed, of the female 11-jointed. - - - - - OOCTONUS.
b. Abdomen sessile, or nearly sessile.

Male.

* Marginal branch extending to the middle of the costa. - - - - - LIMACIS.
** Marginal branch not extending to the middle of the costa.
† Antennæ 13-jointed. - - - GONATOCERUS.
†† Antennæ 10-jointed. - - - - ALAPTUS.

Female.

* Antennæ 11-jointed. - - - GONATOCERUS.
** Antennæ 9-jointed. - - - - LITUS.
*** Antennæ 8-jointed.
† Marginal branch extending to the middle of the costa. - - - - - LIMACIS.
†† Marginal branch not extending to the middle of the costa. - - - - - ALAPTUS.
B. Tarsi 4-jointed.
a. Club of the antennæ with two joints.
* Marginal branch very long. Tarsi of the four hinder legs shorter than the tibiæ. - - EUSTOCHUS.
** Marginal branch very short. Tarsi of the four hinder legs longer than the tibiæ. - - DORICLYTUS.
b. Club of the antennæ not jointed.
* Abdomen distinctly petiolated.
† Fore wings only widened at the tips. - - MYMAR.
†† Fore wings widened throughout.

‡ Marginal branch punctiform. - - - Cosmocoma.
‡‡ Marginal branch elongated.
§ Metathorax with two keels. Antennæ of the female 9-jointed. - - - Caraphractus.
§§ Metathorax not keeled. Antennæ of the male 10-jointed, of the female 9-jointed. - - Stichothrix.
** Abdomen sessile or nearly sessile.
† Antennæ of the male 12-jointed, of the female 9-jointed. Marginal branch elongated, somewhat thickened near the tip. - - - Anaphes.
†† Antennæ of the male 13-jointed, of the female 9-jointed. Marginal branch linear, not thickened near the tip. - - - - Anagrus.

They have been illustrated by five figures, two of which accompany these notes. The first is Anaphes punctum (Ichneumon punctum), *Shaw*, Trans. Linn. Soc. vol. iv.; the second is Pteratomus Putnami, *Packard*, Proc. Essex Institute, iv. 137, pl. 3, f. 8, and is copied by permission of Dr. Packard, and this American species is supposed to be the smallest of all insects, and is especially remarkable on account of the peculiar structure of the fore wings. The structure of the wing-veins is more rudimentary than that of any other tribe of Hymenoptera, and they have most affinity with the two large tribes of Chalcidiæ and Oxyura, which come next to them in simplicity of structure. However, as A. H. Haliday first observed, they are much more allied to the Chalcidiæ than to the Oxyura, and there appear to be intermediate genera, such as Thysanus and Prestwichia.

From the number of specimens that I have observed I believe that the Mymaridæ are considerably more numerous than what have been recorded. Their exquisite elegance would appear to advantage in highly-magnified figures of each kind, and one of the "coming race" of entomologists will do well to investigate their successive epochs of life, and to publish his discoveries with illustrations as above mentioned.

The early life of this family has been observed by Loew, who witnessed a Polymena and a Rachistus from larvæ of Gymnætron villosulum in galls of Veronica anagallis; the Polymena allied to P. longula, and the Rachistus to R. littoralis. He also mentions an Anaphes from larvæ of Cecidomyia

Urticæ, *Perris*, in galls of Urtica dioica. It seems (Ent. Mag. i. 342) that A. H. Haliday often saw the oviposition of Mymaridæ in eggs of Lepidoptera, and he mentions that many are often transformed in a single butterfly's egg, and that Polymena Ovulorum is abundant in summer, destroying the eggs of Pieris Brassicæ. Thus they attack both eggs and larvæ; and such is also the case with Trichogramma evanescens, one of the most minute of the Chalcidiæ. The Telenomi are, perhaps, more exclusively ovivorous, and some descriptions of Ichneumon Ovulorum may have reference to them; and Haliday remarks that Linneus and Schrank have each described two species under this name.

Foerster mentions that he reared from the capsules of Papaver Rhœas and P. dubium, where there were galls of Aulax Rhœadis, Camptoptera Papaveris, *Foerst.*, Pteromalus Papaveris, *Foerst.*, Cecidomyia Papaveris, *Winn*, Pezomachus Papaveris, *Foerst.*, Lochites Papaveris, *Foerst.*, and a small Ichneumon. In a postcript he alters the name Camptoptera to Pteroclisis.

Sir J. Lubbock has described two species (Polynema natans and Prestwichia aquatica, Linn. Trans. xxiv. 138—140, pl. 23) that live occasionally under water, and are able to swim:—Polynema natans, according to Haliday, = Caraphractus cinctus, Hab. ——

As before mentioned with regard to the Chalcidiæ, Foerster's works will be useful to anyone who may write the history of the British Proctotrupii, with which that author includes the Mymaridæ. The characters which he assigns for this arrangement are as follows:—

CHALCIDIÆ.

Male.—Antennæ always bent, or with one or more small joints between the scapus and the flagellum, the basal joint of the antennæ being like a handle, and the apical part like a whip, or in frequent vibration.

Female.—Oviduct emerging before the tip of the abdomen.

PROCTOTRUPII.

Male.—Antennæ bent or not bent, with no small joints; rarely not bent, and with one small joint.

Female.—Oviduct proceeding from the tip of the abdomen.

The following plan shows the position which he assigns to the Mymaridæ amongst the Proctotrupii or Oxyura.

A. Hind wings with a flap-like appendage, or the wingless female with raptorial legs. - DRYINOIDÆ.
B. Hind wings with no flap-like appendage.
a. Fore tibiæ with two spines. - - CERAPHRONOIDÆ.
b. Fore tibiæ with one spine.
* Mandibles not dentate. - - - PROCTOTRUPOIDÆ.
** Mandibles dentate.
† Sides of the abdomen with a rim beneath. Antennæ seated on the border of the mouth.
‡ Wings with a marginal branch, and sometimes with a stigmatic branch. No ocelli when wingless. - - - - - SCELIONOIDÆ.
‡‡ Wings with no marginal nor stigmatic branch. Ocelli always present. - - PLATYGASTEROIDÆ.
†† Sides of the abdomen with no rim. Antennæ seated much above the mouth.
‡ Hind wings with no trace of a middle vein.
§ Hind wings very small, almost linear. - - MYMAROIDÆ.
§§ Hind wings broader, not linear. - - DIAPRIOIDÆ.
‡‡ Hind wings with a middle vein.
§ Fore wings either without or with a regular basal vein. Flagellum with no small joints. - BELYTOIDÆ.
§§ Fore wings with an irregular curved basal vein, which does not extend to the hind border-veins. Flagellum with one small joint. - HELOROIDÆ.

FRANCIS WALKER.

On Aphides and Honeydew.—The observation, "On the extreme twigs," &c., quoted in the 'Entomologist' for August (Entom. vi. 463), does not seem to be conclusive that the honeydew is not caused by Aphides. It does not follow, because there were no leaves directly above those on which the honeydew was seen, that it was not caused by Aphides, for a slight movement of the air would carry the honeydew in falling out of a perpendicular line, and if the trees mentioned are high there are abundance of leaves from which it might fall on the lower leaves. The Aphis of the lime may be seen in May, and

is most abundant in July; it is always solitary, and, like all other Aphides which feed on leaves (except one on the walnut), it is always on the under side of the leaf, and no leaf has honeydew by means of the Aphis which is there, but receives it from the leaf or leaves above, on whose under side the Aphides are feeding. Nevertheless, the specks mentioned may not have originated in Aphides; but may they not have been the effect of lime-flowers? The abundance of sweet fluid in the latter is witnessed by the multitude of humble-bees and moths that resort to them. The lime probably is only included in the observation that honeydew is a function of the leaf, and no opinion is perhaps expressed as to honeydew on any other kind of plant, and therefore there is no occasion to mention any other kind; but I will conclude with a few words about the Aphides elsewhere. The maple or sycamore (like the lime and the oak) is only accessible to a very small extent for the inspection of Aphides on it, and therefore the number of these cannot be observed as they are on shrubs and vegetables, and the insects of the sycamore, being generally out of sight, are the cause of three phenomena which occasionally occur. The first of the three is the crowds of Aphides which are sometimes heaped along the sea-shore; the second is the excessive abundance of lady-birds which subsist on these Aphides; the third is the immense flight of Syrphi, which are also dependent on Aphides. The honeydew on the leaves of the sycamore attracts many kinds of flies, some of which are driven away by the little Sepsis, which avails itself of its ant-like aspect to excite their fears.—*Francis Walker.*

Aspect on the Under Side of the Oak-leaf, July 22*nd.*—Of the following appearances the first is the most conspicuous and general. It consists of the beautiful little crimson galls, called oak-spangles, of which there are sometimes five hundred beneath one leaf, and their abstraction of the sap is indicated by the pale spots on the upper side of the leaf. The second appearance is Phylloxera Quercus, which also causes yellowish spots to appear on the leaves above; it seems to be always oviparous: one mother has sometimes about one hundred eggs about her, and patches of eggs may be seen here and there, and sometimes about a thousand little ones just hatched from the eggs, and too small to be seen by the eye alone, are

beneath one leaf. The third appearance is Thelaxes dryophila: it is generally stationed along the ribs of the leaf, and especially along the midrib, and therein resembles Callaphis Juglandis, which clusters along the midrib of the walnut-leaf, and is the only Aphis which feeds on the upper side of the leaf; the Thelaxes sometimes lives in companies in oak-apples, the formation of which probably surrounded the sole ancestor of the colony, and thus supplied food and shelter. The fourth appearance is the delicate little Aphis called Callipterus annulatus: it is scattered on the leaf, and its semi-transparent body differs widely from the opaque, velvety covering of the Thelaxes; it is sometimes of a blackish hue, which is perhaps indicative of its having the grub of Myina flava within it. The fifth appearance is the destroyers of these Aphides, such as the larva of Anthocoris and that of Scymnus, which latter has a resemblance to a Dorthesia. The sixth appearance is the elegant lemon-coloured Cecidomyia of the oak, which, as is usual in the species of that genus, is accompanied by a little black Platygaster. *August* 23*rd*.—The three representatives of Aphides before mentioned are now much diminished in number, and there are many whitish blotches, the habitations of subcutaneous Micro-Lepidopterous larvæ, but from these coverings a brilliant green little Entedon, far more beautiful than an emerald, occasionally proceeds. The spangles have now generally attained their full size, and frequently one overlaps another, and sometimes their shapes are altered by their mutual contiguity. Some of the spangles are only half grown, others not larger than a pin's head, and this difference requires some explanation, for the oviposition, which is the first agency in effecting a spangle, seems to be limited to a very short season. The little Synergus is now engaged in its last work, traversing the spangles and inspecting them by means of the sense seated in its antennæ, with regard to the selection of one suitable for its egg. The spangle thus selected loses its simplicity, or its whole subservience to the growth of its first inhabitant, and is appropriated by two inmates. Here it may be enquired, Are the two eggs in the spangle in juxtaposition, or are they far apart, so that each grub, when it is developed, may have half of the spangle to itself? Another actor sometimes appears

on the scene—that is a Eurytoma—which contributes an egg to the spangle, and thus a new complication begins; but the notice of this and of other agents may be deferred, including the enquiry whether the Eurytoma has the faculty of detecting the previous visit of a Synergus, or whether it is indifferent in this matter. The spangle, unless it is appropriated by a bird or disposed of in some other way while on the ground, may, in the ensuing spring, or afterwards, produce a Neuroterus, a Synergus, or a Eurytoma; and, perhaps, the latter does not interfere till the spring, and then inserts its egg into the gall, or into the grub within the gall. In an oak-apple the proprietor and the tenant live peaceably together, but it is doubtful whether there is a sufficiency in a spangle for the satisfaction of the Neuroterus and the Synergus together. There are sometimes millions of these spangles on one oak, and the result may be imagined if each were to produce a Neuroterus. Two other insects now also occur beneath the oak-leaf: one scale-like, and of the Coccus tribe; the other a little larva, which runs about quickly in search of Aphides to devour, and is one of the Hemerobidæ.—*Francis Walker.*

Note on the Appearance of Aphis Nymphææ and of its Aphidius in the middle of August.—At this time numerous whitish specks occurred over the leaves of the water-plaintain on the border of a pond. These specks were dead Aphides, which perished by means of Aphidii, and were not defended by the presence of friendly ants. The living Aphis was abundant, and was sometimes on the stalks of the leaves beneath the water: these stalks were also inhabited by many little leeches, and swarms of Achorutes aquaticus sometimes occurred there. Excluding some of the Aphides on the pond, the rest may be reckoned at about 100,000 in number, and the Aphidii at about 10,000. A small individual, of a species of Allotria, was with them. I observed above 100 of the Aphidii, and they varied much in size. There is much to be ascertained in the history of this Aphidius: its continuance during the winter, the rate of increase, the number of broods yearly, whether it is peculiar to A. Nymphææ or resorts to it from other Aphides, and in that case whether its appearance is altered by the variation of its food. A. Nymphææ only infests water-plants, and therefore there is not much occasion to diminish its numbers; but some one may have a fancy to

utilise the Aphidius, and to try if it is sufficiently forgetful of its former habitation to provide another kind of home for its descendants. Some thousands may be transferred while they are secure in the Aphides, which are to them food and shelter, to gardens, where the multitude of Aphides seem to require their presence.—*Francis Walker.*

On Parasitism of Chalcidiæ.—I will add a few lines to what I have already transcribed of the observations of M. Goureau and of others on parasitism. The following observations are incomplete, but they may be the means of directing some one to a more perfect investigation of the matter. He obtained an Aphidius from the Aphis of the willow, and two species from that of the peach (one apparently A. obsoletus, *Wesm.*). The Aphis of the rose supplied him with a Cynipid, black, with the head and legs red (not erythrocephalus, *Jur.*, nor fulviceps, *Curt.*), and this Cynipid and an Aphidius emerged from the Aphis of the plum: these two are probably the same parasites that I have acquired from H. Pruni in England. An Encyrtus, with black-bordered wings, came forth from Coccus Festucæ, and Cheiloneurus elegans (?) from Chermes Lauricerasi. A very minute Encyrtus (?) was the result of Aspidiotus Rosæ, and unspecified Aphides were the victims of Elassus (*Wesm.* = Ephedrus, *Hal.*) parvicornis, Coryna clavata, a Sphegigaster, and an Ormocerus. Perilampus lævifrons issued from a larva that feeds on pears. Cecidomyia Verbasci of Vallot and of L. Dufour is the victim of Misocampus (Callimome) nigricornis, *L. Duf.*, and of Eulophus Verbasci, *Vallot* and *L. Duf.*; this last species and Tetrastichus Armæus are perhaps identical. The genus Stomoclea, *L. Duf.*, is probably one of the Eulophidæ, and S. pallipes, *L. Duf.*, has been reared by that author from galls of Scrophularia. Eulophus crinicornis, whose economy has been observed by Perris, is a Tetrastichus.—*Francis Walker.*

Notes on Southern Indian Lepidoptera.

By William Watkins.

(Continued from p. 476.)

Thayetmyo, British Burmah, is a military station, some three hundred miles north from Rangoon, on the right bank

of the river Irrawaddy. Dense jungle encircles the cantonment on three sides, consisting chiefly of bamboo, mango, palmyra, tamarind, and guava trees. The undergrowth is very luxuriant and varied; with the exception of bindweed I noticed few other British plants.

I commenced operations here on the 10th of March, 1870, but found that it was the winter season; still I met with Vanessa Orithea, Thestis Marianne, H. Semele, and several representations of the Lycænidæ; Deiopeia pulchella was abundant amongst cholum.

Unfortunately, on the 7th of April, cholera broke out in the regiment, and the result was very serious: this prevented my leaving the cantonment until the 24th, when I still found Pulchella common. On the 27th I captured Sphinx Convolvuli at rest. During the last eight days of the month the mango showers, as they are termed, set in, and the vegetation began to spring up wondrously after the long spell of dry weather.

May opened with warm, genial weather, and the trees round the barracks came out in splendid bloom. I had good sport at these every evening at dusk, my captures being D. Celerio, C. Porcellus, C. Elpenor, M. Stellatarum, and its more uncommon brother Pterogon Œnotheræ, together with lots of Geometræ all unknown to me. I commenced "sugar" this month, and operated upon the mango and tamarind trees as a trial; the latter I found a dead failure, as almost immediately after the sugar was put on, it would be covered with myriads of ants. A very few small Noctuæ came to the mango trees, but the most common customers I found to be geckoes, a large species of lizard, abundant throughout Burmah; they had constituted themselves "collectors," and doubtless collected the moths for me, putting them in their own box; however, several of these intruders came to grief, as when I saw them I greeted them with a whack from a clubbed stick. Quantities of larvæ were feeding this month; amongst them Arctia Menthastri, and A. Lubricipeda, which seem commoner here than in suburban gardens at home, albeit the same type. I have seen them racing at that familiar pace across a road as though they were hurrying out of some one's way; and indeed they were, too, for if the "Indian crow" espied them he would terminate their existence. Pulchella larvæ were

abundant, and it may not be out of place to describe it here, with a hope that some of your readers may discover its localities in England.

Description of the Larva of D. Pulchella.—Bluish white; between each segment is an orange-coloured band; on the sides of each segment two black warts, each emitting a single black hair; subdorsal lines black, with minute white dots; spiracles black. It is extremely local. I found it in batches along the banks of the Irrawaddy, feeding upon a small plant much like "forget-me-not." It spins a loose cocoon between leaves, and emerges in fifteen to twenty days.

There were not many butterflies on the wing, excepting a few Pieris, P. Sarpedon, D. Archippus, D. Chrysippus, and those mentioned for April. Beating brought to light some beautiful moths: a species resembling H. crassalis was very common, and also a very large Tryphæna, like Fimbria, but twice its size. The month of June, however, was *the* month for this family. I commenced to sugar on the 15th, and it would be useless to attempt to describe what I caught; my captures usually were about fifty to sixty specimens nightly. Both the species spoken of as occurring at Wellington, and resembling Mania Maura and Saturnia Carpini, I first caught here; they were abundant, the latter so much so that I desisted catching them after the first two nights. I noticed, too, that a butterfly, evidently a Hipparchia, came *very* commonly to sugar. I presume they were at rest in the foliage, and were attracted, as their unfortunate brethren, by the irresistible odour of the sugar. On the 16th of the month D. Celerio, too, came, and was duly boxed. For the information of entomologists who should ever find themselves in this country and disposed to collect, they will find that loggery, simmered in a little malt-liquor and the common Colombo arrack added, is far more attractive than the most expensive mixtures: I have tried all kinds, and find this the best by far. July and August both slipped by without my being able to get out, owing to a press of work. At rest I procured a few Sphingidæ:—A. Atropos, S. Convolvuli, and S. Dumelinus; also a very pretty Trochilium with feathered legs. In the regimental gardens I procured L. Sinapis, a few Lycænæ, and larvæ of Ornithoptera Amphrisius.

In September the head-quarters of the regiment were

moved to a place called Tay-au-goon, about two miles higher up, on the opposite bank of the river. Temporary barracks were erected, but literally speaking we were living in the jungle. The vegetation was about the same as that of Thayetmyo, with the exception that there were very few large timber-trees.

Owing to the ground being so near I was enabled to collect a good deal. The mango topes produced Ornithoptera Amphrisius, but they flew very high; so I caught a female, and kept her in a small box with net-work over it, similar to the "Carpini method" at home, and I found that the males came very commonly. Pieris Epicharis, too, was very common; D. Archippus, P. Sarpedon, A. Aglaia, and C. Cardui, were everywhere; S. Bombyliformis were common flying over cholum flowers. For the collection made this month I can thank the generous-hearted government for ordering our shift. Tay-au-goon is a delightful place, but the heat is intense compared with Thayetmyo, which is not much to say: plenty of insects, and plenty of Lepidopterists (for half the regiment seemed entomologically struck), but no mosquito-hunters; these infernal pests were terribly annoying: at night one would hear them apparently a great distance off, and in a second they would dart right into one's ear.

With the exception of stray A. Atropos there was nothing worthy of note occurred to the close of the year; and I will conclude these remarks on Burmah by adding that I consider its resources, in an entomological point of view, boundless; as although I have only mentioned Lepidoptera, still I captured numerous other insects, more especially Coleoptera that I have not met with elsewhere, and I have crossed several entomologists during my four years, all of whom are of the same opinion. It is just the country for a "naturalist" to commence operations with, and I only regret I did not stay longer there to have obtained more of its treasures.

WILLIAM WATKINS.

Convalescent Depôt, Wellington, Madras.

Life-history of Dasypolia Templi.—Two hundred and thirty eggs were deposited on the 4th of March, and thirty-four more on the 7th, making two hundred and sixty-four, by

a female which had been confined in a box through the previous winter: they were attached to the side of the box, and were at first of a light straw-colour, changing to light fawn-colour in three days; their shape was a flattened round, reeded from the centre of the top to the base; the centre was darkest, and there was a faint ring round the upper edge; the ribs or reeding were very fine. On the 24th of March a purple zone appeared round the upper portion, broken by an irregular, light canary-coloured blotch on one side. On the 8th of April the eggs became a warm lead-colour, inclining to lilac, the zone expanding above and before, and the light blotch obliterated: the centre of the egg was now dark, with a narrow ring round it, and the ribs in the ring distinct. On the 9th of April the eggs became more conical, and were now lead-coloured, with the ribs light and distinct. On the 10th of April the centre of the egg appeared darkest. On the 12th the colour grew lead-colour; the ribs are now light and distinct, darkest in the centre. On the 14th and 15th the eggs were hatching. The young larva is a looper, with a large, broad head of a grayish horn-colour; the feet large and dark; the body stone-colour, hairy. At first it had a rambling habit, as if searching for a place to hide or feed in: placed on its food-plant it ceased to ramble, and afterwards soon went down into the root-crowns, eating its way with ease. On the 10th of May many larvæ removed from old to new plants, eating the crown-leaves before they burst, and thence down into the roots. It was now a stout, semi-transparent larva, in general appearance like a Tortrix larva. At the end of June the larva was one and a quarter inch in length, stout, shining fawn-colour, and glossy. Head small, heart-shaped; colour reddish fawn, with the lips darker. Shield or corslet fawn-colour, edged with black; the shield is broadest in front, thin behind, and much the shape of a child's hat, with three dots under it: on the 3rd segment is a ring of black dots, placed two and two, with three under them placed triangularly over the spiracle; the remaining segments have the upper spots on the back and sides as in the Tortricidæ, but over the spiracular region there are three large and one small spots, forming a lozenge or diamond, but the small spot is a little above its place, and below this, on the thighs, is also another black spot; and the spots on the anal segment are continued round

under the insect. Subanal and anal plates fawn-colour; the first edged with black, and the last dull rugose, projecting behind, and armed with short spines; there is also a single short spine in the lower row of black spots, and a few short hairs on the head and body, requiring a good glass to see them: otherwise the insect is suffused with glabrous fawn-colour, slightly appressed below the subdorsal. On the 1st of July, the food of the larvæ being exhausted, they were eating into fibres of roots not so large as themselves, swelling the skin of the roots out. Supplied with fresh roots of Pastinaca sativa and Heracleum sphondylium they ate into them, and were at home in either. On the 12th, the larvæ, in wild parsnip-roots, were full-fed: length one and a half inch; colour full rich fawn, suffused outwards, fading to creamy ash on the sides. Body stout, constricted at the annulations. Head distinctly heart-shaped, bright, shining fawn-colour; the lips darker. Corslet light fawn-colour, edged with black, broadest in front; spots as in the last-described state, but larger and better defined. Anal plates: first small, edged with black; and the second still large, rough, and projecting. This is a stout, large, constricted, glossy, glabrous larva, round above, but spread out below on its sides, which are puckered, and is altogether like an overgrown Tortrix larva: it leaves the plant-root, and makes up in the earth, in July and August, and appears early in September, the female living through the winter in a torpid state; in fact, I have observed them daily throughout the winter, and found them exactly in the same position in March which they had taken up in October. Specimens fed on wild parsnips are larger and brighter-coloured than when fed upon cow-parsnep and much more liable to grease; but since Pastinaca sativa is more abundant on our sand-hills, I usually collect it as food for this insect. —*C. S. Gregson; Rose Bank, Edge Lane, Liverpool, July* 1, 1873.

Description of the Larva of Œcophora pseudospretella.— Length half to five-eighths of an inch; somewhat hairy; colour creamy white (wax-like); stout; slightly appressed; annulations deeply constricted. Head brownish, horny. Corslet colourless; anal segments white, horn-like. Feet light. Whole insect creamy white, stout. Spins a white cocoon, and lives therein, feeding upon, I may say, any-

thing. This description was taken from larvæ which had entirely destroyed tons of rice: they spun six or eight rice-corns together, forming them into so many small bunches of rice, until it was impossible to find a single corn in the sample, or, I may say, in the warehouse. They roam at pleasure, and eat the outside of their house, thus smoothing it down until they give it a tapioca-like appearance, when of course the bulk is no longer vegetable. This creature has been sent me to name, &c., in almost every sort of produce; but its last phase seems peculiar,—I was told the "sweeping-brooms" (ling besoms) in the stores of one of our "local government" boards were being destroyed by an insect, and on some of the larvæ being forwarded to me I recognized our old friend Œcophora pseudospretella, full fed and very fat, whilst its only available food had been heath besoms.—*C. S. Gregson.*

Description of the Larva of Leioptilus Lienigianus.—Length three-eighths to half an inch, full; attenuate to anal extremity; appressed; hairy. Head contractile, blunt, and colourless. Colour whitish yellowish; on the dorsal region is a series of faint patches on each segment, defined by four minute dots therein, and sometimes tinged with pink; below these are a series of wart-like protuberances, from which spring bunches of hairs; anal segment colourless. Feeds on the leaves of Artemisia vulgaris, eating the skins thereof. The larva, from which this description was made, was kindly sent me for figuring, May 19th, 1872, and was figured and described May 25th, when about to change to the perfect insect. It emerged June 17th, 1872.—*Id.*

Entomological Notes, Captures, &c.

Vanessa Io, &c.—In the last number your correspondent, Mr. S. Stevens, amongst other species, notes the abundance of Io this season. This is a butterfly which is usually plentiful in this neighbourhood, but last season it was comparatively scarce, and I took but few specimens; this year I have taken it in great plenty. Whilst out with a friend or two a few weeks ago we passed a field of clover, the flowers of which were literally swarmed with these butterflies, and we netted over fifty in a quarter of an hour. Rhamni I find is

not so plentiful here this autumn; I have usually taken it abundantly, but this season I have observed but few. Of Atalanta I have taken but two, and Cardui I have not seen. Antiopa has, I believe, been taken this season, but not in this locality to the best of my knowledge. Of Polychloros, which has occurred here rather more abundantly of late years, I have seen and taken several. Machaon, I think, occurs here rather more sparingly this year than usual, and the commoner species, with the exception of Brassicæ, seem to be pretty numerous.—*Robert Laddiman; 3, Cossey Terrace, Upper Hellesdon, Norwich.*

Vanessa Antiopa near Dover.—I had a fine specimen of V. Antiopa, taken at Watersend yesterday, September 19th, with the *yellow* border. I had four specimens last year, and all had the *white* border. I have sent it to a gentleman alive. Watersend is four miles from Dover.—*G. Gray; 71, Castle Street, Dover, September* 20, 1873.

Vanessa Antiopa at Clapham.—On the 28th ult. George Hodder, gardener to Mr. J. S. Oxley, captured in the latter gentleman's grounds on the pathway, settled, a splendid specimen of V. Antiopa: the margin of the wings is of a pale straw-colour. I am pleased to say that the specimen has been added to my collection.—*J. R. Wellman; 14, Portland Place North, Clapham Road, S.W., September* 20, 1873.

Vanessa Antiopa near Brighton.—A fine specimen of this insect was caught on Saturday, the 20th instant, at Hassock's Gate, about seven miles from Brighton. It was brought to me alive this morning, and is now in my possession. The colour of the margin of the wings is *pale* yellow: from this and from the lustre on the wings, and the perfect state of the fringes and body-hairs, I think the insect must have been bred in this country.—*H. Goss; Brighton, Sept.* 22, 1873.

How is the entire absence of Colias Edusa to be accounted for.—Can you give me any reason for the entire absence of Colias Edusa from various localities in the island, where two years ago they were very abundant?—*Cyril D. Ash; Palestine House, Shanklin, Isle of Wight, September* 3, 1873.

[The subject has interested entomologists ever since I have known anything of the Science, and evidently long before, as testified by our books. Numerous hypotheses have been invented, few of which have survived the freezing effects of

neglect. One of my own which I ventured, in describing Daplidice, at the commencement of a child's periodical, called 'Young England,' suggested that specimens, occasionally "blown over" from the Continent, finding appropriate food and conditions, ate, drank, increased and multiplied; in fact, became established on British soil for a few years as colonists, but did not find the conditions sufficiently favourable to effect a permanent settlement.—*Edward Newman.*]

Trichiura Cratægi.—Can any of your readers tell me when I may expect young larvæ to emerge from eggs laid by this species in the beginning of September?—*G. H. Raynor; Hazeleigh Rectory, Maldon, September* 22, 1873.

Deiopeia pulchella at Littlehampton.—Seeing it mentioned in your 'British Moths' how very scarce English specimens of Deiopeia pulchella are, I think it worth while to mention that I caught an unusually fine specimen at Littlehampton, in Sussex, in 1870.—*Cyril D. Ash.*

Zygæna Loniceræ and Z. Trifolii.—At the request of my friend Edward Newman I send a few remarks upon these two species: Trifolii is one of the most variable, and Loniceræ probably the most constant, in markings, of the European Zygænæ. The antennæ of Trifolii are rather abruptly clavate, but those of Loniceræ are long and slender. The fore wings of Trifolii are more rounded at the apex than those of Loniceræ, and the two central red spots are generally united, which is very rarely the case with Loniceræ. The width of the black border of the hind wings varies a good deal in different specimens of Trifolii, but it is always broader in this species than in Loniceræ. Trifolii appears on the wing early in June, and in forward seasons I have seen it out the last week in May. Loniceræ seldom appears before the middle of July, and is pretty much confined to the northern and midland counties of England; it is also found throughout Northern Europe. Trifolii is found in Central and Southern Europe, and in the southern counties of England. The supposed specimens of Loniceræ, which have been captured in the Isle of Wight and other localities on the south coast, are, I believe, all Trifolii; those which I have seen are certainly this species. Loniceræ was formerly very abundant in the moist meadows near Monk's Wood, Huntingdonshire; the

larvæ feed on the yellow vetch (Lathyrus pratensis). I have bred many hundred specimens of the perfect insect from larvæ obtained in this locality, but not one of them had the spots on the anterior wings united. Specimens with the spots united and forming an irregular band do, however, occur in some localities, but they are rare.—*Henry Doubleday; Epping, September* 21, 1873.

Zygæna Filipendulæ.—As Mr. Forbes has asked, in the August number of the 'Entomologist,' whether the yellow variety of Zygæna Filipendulæ, noticed by him near Winchester, has been seen elsewhere in England, I think it worth while to state that, a few years ago, I saw a single specimen so coloured flying, with others having the ordinary colours, over the Laird Embankment, about two miles from Plymouth. —*T. R. Archer Briggs;* 4, *Portland Villas, Plymouth, August* 27, 1873.

Yellow Variety of Zygæna Filipendulæ at Maidstone.—Mr. Hubert Elgar, an assistant in the museum, caught in July last, on the hills near this town, a peculiar burnet moth, which we have failed to find described in your work, and an account of which he therefore thinks will interest you. We should also be glad of your opinion as to its identity. Fore wings metallic-green, semi-transparent, with six yellow spots on each; hind wings sulphur-yellow, with a border of metallic-green; antennæ, head and body blackish green.—*Thomas G. Ponton, Curator; The Museum, Maidstone, September* 2, 1873.

[This interesting variety has occurred in some plenty this year in the South of England, as appeared in announcements in the September 'Entomologist.' A similar variety of Zygæna Trifolii also occasionally occurs, but I have heard of none captured during the past summer.—*Edward Newman.*]

Tæniocampa Opima.—From batches of eggs of this species, kindly sent me by my friends the Rev. T. W. Daltry and Mr. Wm. Johnson, I have this season succeeded in rearing a large number of larvæ. They were kept in a large roomy box, in a cool place, and supplied with plenty of fresh sallow, though they would also eat whitethorn and plum. After the last moult they were the most ravenous feeders I ever saw. Those from the eggs sent by Mr. Daltry began to go down June 22nd.—*Edward F. Bisshopp; Ipswich.*

Larva of Acronycta Megacephala in Aldgate Churchyard.—Last Friday, the 15th of August, as I was walking past Aldgate churchyard, I saw a nearly full-grown larva of Acronycta Megacephala crawling on one of the tombstones. Having seen this one I looked more closely the following day, and noticed several, out of reach, on the poplars overhanging the corner of Houndsditch. I have no doubt as to their identity, having bred several here; but was very much astonished to find them in such a locality.—*Thomas Barns; Oakington House, Beckenham, Kent, August* 19, 1873.

Plusia Interrogationis in Lincolnshire.—On the 23rd July, 1873, I took a fine specimen of Plusia Interrogationis flying over some privet bloom. Has it ever been recorded as having been taken in Lincolnshire?—*Isaac Robinson; The Wharfe, Grantham, Lincolnshire.*

Liparis Monacha, Eubolia mæniata, &c., at East Grinstead.—On the 2nd of August, about 10 A.M., I found a fine specimen of Liparis Monacha, excepting that it was a little rubbed on the collar, on an oak-trunk in a field, about seven feet from the ground: it was a female specimen. Also on the 4th I took, by beating, a female specimen of Lithosia quadra, but too much torn for the cabinet. I have lately been taking plenty of Apiciaria, which seems common this season. I also have to record the capture of a fine specimen of Eubolia mæniata on the 11th of August: I beat it from amongst fern and long grass; there is plenty of broom growing in the vicinity.—*W. Thomas; Ray Lodge, Lingfield, East Grinstead, Sussex, August* 13, 1873.

Ennomos fuscantaria.—I found a full-grown larva of Ennomos fuscantaria on the 4th of July: it spun up and turned to a fine female on the 16th of August.—*Id.*

Curious Variety of Rumia cratægata.—I have a very curious variety of R. Cratægata, that might be worth your notice. I should be glad to send it on if you thought so. It has a portion of the wings, between the veins, on one side only suffused with the colour of the spots, giving it a most curious look. I took it here some time ago.—*John E. Robson; Sea View, Hartlepool, August* 13, 1873.

Cucullia Absynthii and Apamea ophiogramma in Ireland.—A specimen of C. Absynthii was captured in our flower-garden on the evening of July 28th, 1873: this moth is new

to the Irish list. A specimen of A. ophiogramma was also captured in the same place, July 26th: it is a far better and fresher insect than one captured three years ago upon the bank of a river in our demesne. This is the third record of this insect in Ireland. The first is mentioned in Mr. Birchall's List of Irish Lepidoptera, as taken by Mr. Tardy; "locality unknown."—[*Mrs.*] *F. I. Battersby; Cromlyn, Rathowen, West Meath, Ireland.*

Larvæ of Cucullia Gnaphalii.—I beg to inform you that I have been fortunate enough to take a few larvæ of C. Gnaphalii, feeding on the golden-rod, in company with C. Asteris. Others were taken by brother members of the Haggerston Entomological Society, who were down at Seal for the Society's annual dinner, on Sunday, August 10th. Locality: Seal, near Sevenoaks.—*W. H. Danby; 56, Lawford Road, Camden Town, August* 14, 1873.

Eremobia ochroleuca in Surrey.—I took here yesterday, August 13th, a good specimen of Eremobia ochroleuca. I send you notice of it because Surrey is not one of the counties given in your 'British Moths' as producing this moth.—*Waldegrave; Bookham Lodge, Cobham, Surrey.*

Spilodes palealis, Acronycta Alni, and A. strigosa, at Whittlesford.—I took a fine specimen of Palealis last year at this place. Is it not very unusual to find it so far inland? I have also taken Alni down here, and Strigosa at sugar.—*E. Thurnall; Whittlesford, September* 17, 1873.

Sphinx Convolvuli at Walthamstow.—My brother took a fine female last evening, September 18th, whilst hovering over flowers in his garden. During a visit to the New Forest, in the early part of July this year, I took a good series of Z. Meliloti, and a pair of Asellus, beside many other local insects. Sugaring, however, was a dead failure.—*Bernard Cooper; Higham Hill, Walthamstow.*

Sphinx Convolvuli near Huddersfield.—A fine male specimen of Sphinx Convolvuli was taken by my friend Mr. Charles Ramsden, in his garden at Longroyde Bridge, on the 30th August: it was at rest on the wall. Mr. Ramsden has kindly placed the specimen in my cabinet.—*James Varley; Almondbury Bank, Huddersfield, Sept.* 16, 1873.

Variation in the Colours of Cirrhœdia Xerampelina.—During the last two weeks of August I obtained a nice series

of this species from the ash-tree trunks growing near Douglas, Isle of Man: they varied from full, rich yellow to rich ochreous-brown. The weather was rough and wet, and unfit for sugaring: the *modus operandi* by which they were collected was to go round the ash-trees and examine the trunks thereof from 4 P.M. until dusk, waiting until they stretched as they emerged from the pupa. The brown variety occurred as one in three specimens.—*C. S. Gregson.*

In the matter of Compta and Conspersa.—I wish somebody, who has the opportunity, would place one of the so-called British (Irish) Dianthœcia compta in a relaxing-box for a night, and see if it returned to its continental flat set, or fell to an unset moth, and let us know the result. I once took a wasted specimen of D. conspersa (variety) at Penmaenbach, in Wales. It has been said to be a Compta repeatedly; but it laid nine eggs, which produced what I knew were Conspersa larvæ; so this settled the question. I have also seen other specimens of Conspersa having the band broken, &c., but knowing Compta well I have at once seen they were not that species; and having kept a good collector on the so-called Compta ground at Howth, in Ireland, above two months at a time, and having repeatedly worked the district myself without seeing anything like it (during the months of May, June, and July), except varieties of Conspersa, I think it possible that the true "Compta" has never yet been taken there, and that the specimens, if British, are only varieties of Conspersa.—*Id.*

Abundance of Nemoria viridata near Poole.—During the month of June I met with N. viridata very plentifully on a piece of heathy ground adjoining the now famous Upton estate, near Poole. The insect had apparently been out some time, since although I netted some hundreds I was unable to select more than one-third as worthy of preservation. The extreme localness of this species is very remarkable. Although we have many square miles of heath in this neighbourhood, I have only succeeded in taking it in one other locality, and there not plentifully.—*A. J. Spiller; Wimborne.*

Leucania albipuncta at Folkestone.—As insects appear to to be scarce this season, especially "good things," perhaps you can find space in your next number for the following

capture at Folkestone:—two Leucania albipuncta, on the 1st of September, at sugar.—*Charles Oldham; Newton House, Amhurst Road, Hackney, September* 20, 1873.

Is Eulepia Cribrum Double-brooded?—Of late I have been repeatedly asked the above question by my correspondents; and persons wishing to take the species have come to me asking if the second brood was out in August and September. I cannot be positive; but I believe the idea of its double-broodedness is altogether a mistake. How did the notion first originate? Was it from the *times* at which the insect is to be met with? One correspondent says,—"Surely there must be a second brood, as I have taken it in *June* and again in *August*." I do not see, however, that its occurrence in these two months establishes the fact of a second brood, for all who have taken the insect are well aware that it is commoner in *July* than in any other month. Of course a forward or backward season makes some material difference in the time of its appearance. Did any collector ever rear the moth in August from eggs laid in July? If so, my argument must be dropped. I have always noticed that eggs laid in June or July—and I have not unfrequently found them upon the little stems of heather, arranged in the neatest manner—soon produce larvæ, but they grow unusually slowly, and hybernate before being full fed. We all know what strange and unlooked-for peculiarities sometimes occur in the metamorphosis of any particular species when thoroughly investigated and closely watched, but in my mind it does seem strange that if there is a second brood of Cribrum the whole transformation of such a brood must be gone through in a month or six weeks, whilst its duly recognized changes take a year to complete; besides, if it is double-brooded, is not such an occurrence a departure from the habits and economy of the family to which it belongs? If the insect was common in June and again in August, and not in the intervening month, we may reasonably suppose there was a second brood; but since July is the recognized time of its appearance I do not think there is much foundation for supposing that the August specimens are produced from the moths which emerge in June. It may be that the larvæ hybernate in different stages of growth, and indeed it seems likely that a larva hatched in June would be nearer

maturity at the time of hybernation than one hatched a month or six weeks later, and so after hybernation the fullest fed larvæ produce the first moths. Certain it is that Cribrum is met with in its especial haunts at any time from the middle of June till the middle of August (although it is somewhat uncertain in its flight, seeming to be a good discerner of atmospheric differences), yet July is the month *par excellence* for its appearance. I trust my friends and correspondents will accept this as an answer to their several enquiries respecting the occurrence of a second brood of the species in question. —*G. B. Corbin.*

In what Stage do Acherontia Atropos and Sphinx Convolvuli pass the Winter?—It has been frequently asserted that specimens of both species, of these our largest Sphingidæ, developed in the autumn are unfertile, or that the eggs may be detected in a very *undeveloped* state, and that the species are perpetuated by developments of the insects in June. Is such the case? I cannot speak with regard to the rearing of Convolvuli, never having seen the larva, but at different times I have had a number of larvæ of Atropos, and all, with one exception, produced moths in the autumn: on *one* occasion a specimen passed the winter in the pupa state, and the moth emerged in the following June. Thus it seems that if the June specimens are the sole progenitors of the race, the *many* are developed for an apparently purposeless life, whilst upon the *few* devolve the whole responsibility of the continuation of the species. Such is, perhaps, the case with Atropos; but is it the same with Convolvuli, whose appearance in the autumn is—as far as I can learn—its only one with us? Did any reader of the 'Entomologist' ever take a Convolvuli at Midsummer? It may be asked,—Does Convolvuli ever pair in the autumn? One instance of its doing so has come under my observation, on October 4th, 1869, but no eggs were deposited, thought I kept the female for some time. All of us know how uncertain both Atropos and Convolvuli are in their appearance, in some seasons being scarcely met with at all, whilst in others they are comparatively common; but in the case of both species the autumnal specimens are, as a rule, more numerous than those to be taken in the summer, if indeed Convolvuli is ever met with at that season. Is it possible that in the case of Convolvuli we are indebted to a

continental supply when they are comparatively numerous in the autumn? We may almost answer in the negative, when we consider the range of the species (from Kent to Cornwall, and from Devon to Yorkshire), and the fineness and perfection of some specimens we have taken. I am quite aware that *one fact* is worth a whole volume of argument or theory, but for lack of the former we are compelled to make use of the latter, and sometimes by using one the other is found.—*G. B. Corbin.*

Lasiommata Megæra.—I do not think the occurrence of a bipupilled spot near the apical angle of the fore wings of Lasiommata Megæra is uncommon. I had never examined the insect with a view to detect the variation in question until attention was drawn to it by Mr. Byron Noel's enquiry in your last number (Entom. vi. 485), but I find I have in my collection sixteen specimens,—five captured in Yorkshire, two in Ireland (Howth), five in the Isle of Man, and four in Guernsey: of these, three from Guernsey and three from the Isle of Man have the spot bipupilled; the variety is not confined to either sex, but, so far as my collection goes, to the insects from Guernsey and the Isle of Man. I hope others will examine and report on the examples in their cabinets. The variation is, I think, of but slight importance amongst the Satyridæ, and it occurs in a considerable number of the species, amongst which may be mentioned Hiera, Mæra, Cordula, Pasiphae, and Tithonus, of all of which I possess specimens with a single, and others with a double-eyed spot. —*Edwin Birchall.*

Bombyx Quercus a whole Year in the Pupa state.—Is it not rather unusual for Bombyx Quercus to pass a whole year in the pupa state? Two caterpillars of mine spun up at the end of June, 1872, and finding that neither of the moths appeared at the usual time I kept them till this year, when on July 29th a fine male emerged from one chrysalis, and, four days after, another from a caterpillar that had spun up on July 2nd this year.—*H. A. Bull; Harrow, Sept.* 8, 1873.

[It would be interesting to know whether my correspondent admits the distinctness of the two races, formerly confused under the name of Bombyx Quercus, because they differ in respect of the time passed in the pupa state, and this will probably explain the fact he records.—*Edward Newman.*]

Deilephila livornica and D. Galii in Devon.—I think it worthy of being inserted in your 'Entomologist' that I have just obtained a specimen of D. livornica, bred by a Mr. Rickard, who found nine of the larvæ feeding on dock in a nursery in Plymouth, and who had the good fortune to feed them all up on that plant; and the same season, 1870, all came out perfect insects; one which had its wings crumpled up I also possess. I may mention that season I took six at petunias, and two Galii at verbenas. The above appeared to be all dark varieties of larvæ.—*John Purdue; Ridgeway, Plympton, Devon.*

Eriogaster lanestris.—I shall be much obliged if you will kindly tell me the name of the larvæ I forward to you, as I cannot find any description in your 'British Moths' that corresponds to them. They were found in May, feeding gregariously under a web on hawthorn; the eggs were covered with brown down, and continued hatching during June; the young larvæ were almost black, without spots, and having coral-red claspers. I expected they would prove to be E. lanestris; but now that they are full grown they do not answer to your description of Lanestris larvæ: they have no red warts on the back; and instead of three white spots have either two or four, and some of them have none; in the place of the pale gray lateral stripe they have a yellow line, interrupted at each segment, where it turns at a right angle half-way up the back, and forms the border to a square, velvety patch of short orange-brown hairs; the claspers are still coral-red. At the end of June, when Lanestris spins up, many of my larvæ were but a few days old, and they are only now beginning to form their cocoons.—*Frances Steele Perkins; Ashgrove, Rhuabon, North Wales, July* 29, 1873.

[I suppose the larvæ to be Eriogaster lanestris; but the box was broken and they had escaped.—*Edward Newman.*]

Supposed Occurrence of Leucania commoides in Kent.—During the first week in August I took, in a spot bordering on Romney Marsh, four specimens of a Leucania which was quite unknown to me, yet which I fancied might be only a variety of some known species. I forwarded a pair, male and female, to Mr. Doubleday, and he has sent me the following letter respecting them:—"*Epping, September 3rd,* 1873. I will return your two Leucania this morning, and hope you will receive them uninjured. Mr. Buckler has

made a drawing of the male, which I may send to Dr. Staudinger when I next write. After I last wrote to you it struck me that it was an American insect, and identical with one my late brother took in the State of New York. Guenée had the specimen to describe; and on referring to his description I find it agrees exactly with the specimen we have in the British Museum: I will look at them when I can get there. Guenée named it Commoides.—*H. Doubleday.*"
—*G. Parry; Church Street, St. Paul's, Canterbury, September* 5, 1873.

[Guenée describes Leucania commoides thus:—"The insect has the cut of Leucania Comma, to which species it is certainly very nearly allied; but instead of the little detached mark which that species has below the median ray of the fore wings, we find in L. commoides a broad and perfectly continuous stripe, and a second on the inner margin, which is totally wanting in L. Comma. The series of dots is very perceptible. The hind wings of the male are like those of the female in our Comma, that is to say, they are of a uniform blackish gray; the under side is darker and more shining. The abdomen of the male is much more hairy, and so are the two last pairs of legs, the tibiæ of which are provided on their inner side with two short, stout fascicles, besides the hairs, which are very thick. It inhabits the State of New York, U.S." *Edward Newman.*]

Species of Pterophorus requested.—The following plume larvæ are particularly wanted by me that I may complete the figures of all the British plumes. I shall endeavour to repay any working entomologist who can oblige me with even a single larva, and shall be delighted to give him credit for his discovery:—Platyptilia ochrodactyla, said to feed upon tansy; P. Bertrami, said to feed upon yarrow; P. tesseradactylus, food unknown to me; Amplyptilia acanthodactylus, said to feed on rest-harrow; A. lætus, food unknown to me; A. Pilosellæ, food unknown to me; Pterophorus pterodactylus, said to feed on dead nettle, &c.; and Cnæmidophorus rhododactylus, said to feed on dog-rose. So far I have worked the plumes out single-handed, but now appeal for help to my fellow-workers, who may be more favourably located than myself.—*C. S. Gregson; Rose Bank, Edge Lane, Liverpool.*

Phylloxera Vastatrix.—The newspapers inform us that

this insect continues to ravage the vines in the South of France, and it is added—"They are all the more formidable because they breed with such fearful rapidity. Although the statement that the insect begins to deposit eggs when only ten days old is an exaggeration, there can be no doubt that many generations of the Phylloxera are born within the space of a twelvemonth." Both this insect and Phylloxera coccinea appear to have been found in this country. Perhaps, therefore, some readers can inform me if the name at the head of this note is the one generally recognized for the vine-pest, and also if the males of Vastatrix and Coccinea have yet been discovered.—*W. Macmillan; Castle Cary, Somerset.*

[In 1868 Phylloxera coccinea is mentioned (Zool. S. S. 1333) as British. In 1869 I found it in such abundance on the oaks in Herefordshire as completely to disfigure them (see Entom. iv. 316, and a valuable note at the same place by Mr. Walker). The name "Phylloxera Vastatrix" is usually accepted as that of the root-pest of the vine, but this branch of the enquiry requires further elucidation: perhaps Mr. Walker will kindly inform us on this subject; he is at present engaged in examining the insect, as appears from his observations recorded in the current number of the 'Entomologist.'—*Edward Newman.*]

Insects as Weather Prognosticators.—I have no doubt but many of the subscribers to the 'Entomologist' will have noticed what true prophets our little friends the insect family are in *foretelling* changes in the weather. At the back of our premises there is a lumber-room, where a colony of spiders have taken up their abode; and although I have one of the best instruments that can be got, made by the celebrated Quadri, I can rely more upon these insects than the barometer. Then the ants,—what wonderful little fortune-tellers we have in them: see their hillocks on a morning when the day is going to be fine—all is activity and life, the parents hugging their big babies, and putting them on the side where the sun will shortly shine: take another morning, equally fine in appearance; but all here is still, and a sleepy look has taken hold of the few stragglers that may be about. Our collectors will have noticed, on a fine day, butterflies, moths, and bees, flying from flower to flower; but like magic all disappear: the bees are flying in twos and threes right away towards their homes; the butterflies and moths are not to be seen;

shortly a distant rumble is heard, a black cloud is seen overhead, and if the hapless lord of creation has not taken the hint from these minute teachers he will most likely get a wet shirt. Again, the cattle in yonder pasture are scampering about like mad things. "What is the cause?" we ask of the farmer. "Oh," says he, "it's going to rain, the gadfly bites." But an eminent naturalist gives us a little more information on this matter: flies bite keenly; Nature has endowed them with instinct to supply themselves with food, because there is a change approaching, that they may not have another opportunity. I ought to have stated in connection with the spider, that when the day was going to be fine the spider was out with his net on the middle of the square of glass catching his prey; but if the weather was likely to be wet he was in a corner, peeping out of his web like a sentry peering from his box.—*John Potts; 79, Spring Gardens, Doncaster, July* 22, 1873.

Locusts on a Balloon.—On Saturday evening last, about half-past eight, a balloon descended in a field about a mile from my house, and being near at the time I was on the spot almost as soon as the car touched the ground, and was immediately surprised (as was the aëronaut) to find a large quantity of locusts flying about all round the balloon; and on further inspection we found the balloon had a great many of the insects clinging to it, and a number remained on it till it was rolled up, some apparently dead from the effects of the gas escaping. No locusts have been heard of this summer in this neighbourhood. The balloon had come from Nottingham, about twenty-five miles from here in a straight line. The evening was beautiful, with a slight wind, from a little south of west.—*W. Robinson; Grantham; 'Field,' Aug.* 2, 1873.

[I know not whether Mr. Robinson is an entomologist; if so it would be interesting to know the technical name of the locusts found on the balloon. In the market-gardens about London, Acherontia Atropos is the locust; on the heaths of Surrey, Gryllotalpa vulgaris bears that name. The great death's-head larva is not very likely to be found "up in a balloon;" still it would be pleasant for entomologists to know what the species really was.—*Edward Newman.*]

Destructive Larvæ of a Dermestes.—I shall feel greatly obliged if you will name the larvæ, if they are larvæ, in the enclosed box. They have eaten my carpets for the last three

years, and appear to come up the joints of the floor-boards. I have repeatedly tried to keep them to see if they produce a moth or beetle. I am under the impression it is the larva of a beetle, but they usually die after keeping them a long time without changing into any other form. These I have had in a box since the 20th of May last, and they frequently shed their skins. I showed them to Mr. S. Stevens, and he advised me to ask you.—*G. Gray;* 71, *Castle Street, Dover, September* 20, 1873.

[They are the larvæ of one of the Dermestidæ; of course neither of the larger and more familiar species, Dermestes lardarius or D. murinus, but perhaps of Attagenus Pellio. Of this, however, I am by no means certain.—*E. Newman.*]

Contributions to the Collection of the Entomological Club.—S. R. Featherstonhaugh, a pair of Dianthœcia Barrettii and a series of D. Nisus (capsophila). Rev. P. H. Jennings, a series of Angerona prunaria varieties. James A. Tawell, six Lycæna Arion and six Acidalia pulchraria (Blomeraria). W. H. Tugwell, six Zygæna Meliloti. G. Guest, six Zygæna Meliloti. Thomas Eedle, a series of Antithesia salicana and Ditula Hartmanniana. Benjamin Standish, a specimen of Chœrocampa Celerio, taken in his own garden at Peckham. Mr. Davis, two pairs of Phycis Davisellus. For these presents I return, on behalf of the Entomological Club, my very sincere thanks.—*Edward Newman.*

Entomological Pins.—In reply to enquiry (Entom. vi. 488), long continental (British manufactured) entomological pins can be obtained at Edmondson's, Barnet Street, Liverpool.—*C. S. Gregson.*

Proceedings of the Kensington Entomological Society, August 8th and 22nd, 1873.

At the meeting held 8th August—

Mr. Lord exhibited a splendid specimen of Macaria alternata.

Mr. Cooper, a living specimen of Tropis dimidiata, one of the Australian Longicorns, which had been taken that afternoon in the grounds adjacent to the South Kensington Museum. Mr. Pascoe at once identified the insect, and remarked that no previous capture of this species in Great Britain had been recorded.

At the meeting held 22nd August—

Mr. Farn exhibited a fine series of Nonagria brevilinea, consisting of eight pairs, in magnificent condition, lately taken by himself at Horning; and a beautiful series of the rare Achatinella, taken at Yarmouth.

Mr. Bird, fine series of T. W-Album, T. Betulæ, Cynipiformis, Culiciformis, A. Urticæ, Unifasciata, Expallidata, and Asteris, all of which he had bred this season; and fine series of Muscerda, Griseola and Stramineola; and a long series of the female S. gigantellus, in splendid condition.

Mr. Moore, Adippe (bred), E. Expallidata, varieties of E. Subfulvata and Absynthiata, all of which were remarkable for their unusually large size. They were all bred by Mr. Moore this season. Mr. Moore also exhibited bred specimens of Cucullia Asteris, and preserved and living larvæ of that species, and pointed out the remarkable difference in the markings: the larvæ obtained from Wales having black bands, while those from Sussex are entirely without these bands; and this difference Mr. Moore observed to be constant.—*W. W., jun.*

Proceedings of the South London Entomological Society, August 28th, 1873.

The members of this Society held a special meeting on Thursday, August 28th, at their rooms, for the purpose of examining the most noteworthy insects captured by the members during the present season. The result was highly gratifying to those who were able to be present; and a proposition has been made by the president (Mr. J. R. Wellman) that similar meetings should be held quarterly.

Mr. Wellman exhibited several larvæ of the Ailanthus silkworm; also a large collection of insects, mostly bred by himself. The following species were reared from eggs, *viz.*: —Ennomos fuscantaria, Pericallia syringaria, Angerona prunaria, Cidaria russata, and C. quadrifasciaria; probably this is the first occasion that bred specimens of the latter have been obtained.

Mr. Farn supplied two cases, containing a most valuable collection of insects recently collected by himself in Norfolk, chiefly at Horning Fen. He had met with a very fine series (upwards of twenty specimens) of Nonagria brevilinea,

hitherto a very scarce insect in this country. The series of Gigantellus, Achatinella, Ophiogramma, Haworthii, and Canella, were magnificent, and fully prove that hard work in this branch of Natural History produces great results.

Mr. Tugwell sent specimens of the best species he found during the month of July in the New Forest and the Isle of Wight. Entomologists will find an account of Mr. Tugwell's excursion in the 'Entomologist' for September (vi. 476). The new burnet moth, Z. Meliloti, was shown; also specimens of Emutaria, Lunigera, Viridata, Geminipuncta, Roboraria, Orion, and many others.

Dr. Horley exhibited a beautiful series of Tryphæna Orbona *var.* Curtisii, bred from the egg, the larvæ having been carefully tended through last winter.

Mr. Champion brought a collection of Coleoptera from Braemar, containing nearly the whole of the species to be found in that northern locality in July,—the time of his visit. In addition to this large collection he was able to exhibit two rare beetles from Esher, called Nanophyes gracilis and Silvanus similis.

Mr. Boden's cases contained a few of his captures in the New Forest, and a series of Palealis from Folkestone; also curious varieties of Crambus and Agrotis.

Mr. West exhibited more than twenty species of Tortrices from his own neighbourhood, the series of Fœneana, bred from the roots of the mugwort (Artemisia vulgaris), being especially fine.

Mr. Allin, who accompanied Mr. Champion to Braemar, had, during his Coleopterous excursion, picked up a few pupæ of Lepidoptera under moss at a great elevation: one of the pupæ produced a beautiful specimen of Pachnobia Alpina. This is the fourth specimen that has been recorded as taken in Britain.

It will be readily seen from the foregoing list that no part of the British Isles has been entirely neglected by the members of the South London Entomological Society, with the exception of Wales. Many insects contained in the British lists are very local,—confined to an extremely limited area; and these can only be obtained by paying a visit to the particular locality. Hence the necessity for combined action on the part of entomologists.—*J. P. B.*

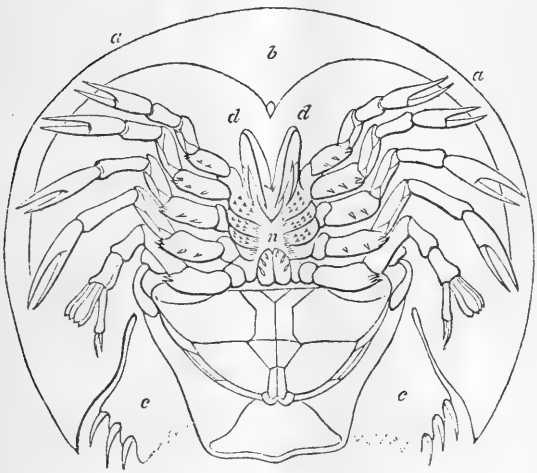
THE ENTOMOLOGIST.

No. 123.] NOVEMBER, MDCCCLXXIII. [Price 6d.

Capture of the King Crab (Limulus Polyphemus) *off the Coast of Holland; with Brief Notice of its Characters.*

By Edward Newman.

Fig. 1.



Limulus Polyphemus (under side, or ventral aspect; the lower portion of the animal being omitted in order to economise space). *a a.* Margin of the first or upper Shell or Shield. *b.* Portion of Shell reflexed or turned over. *c c.* Portion of the lower Shell. *d d.* Anterior pair of limbs. *n.* Pharynx.

The 'Zoologist' for October contains a record of the capture of four specimens of the king crab (Limulus Polyphemus) off the coast of Holland. The record is so circumstantial, and the name of the recorder, Mr. Southwell, of

Norwich, is so familiar, and so esteemed by naturalists, that I consider it a duty to transfer the record to these pages. If this remarkable genus be introduced in the Fauna of Holland, as undoubtedly it will be on the faith of Mr. Southwell's note, which I now reprint, there can be no reasonable doubt that it will eventually make its appearance in that of Britain.

"I have examined a fine specimen of Limulus Polyphemus, taken in July last, by the Yarmouth trawl-boats, about eleven miles off the Schelling Light, on the Dutch coast, in about ten fathoms water. Dr. Norman, of Yarmouth, tells me that certainly four have been taken, perhaps five, two of which are recorded in 'Land and Water' as L. longispina. I have not seen these specimens, but doubtless they are the same as the one which I have examined. A king crab is also recorded in 'Land and Water,' of 26th April last, as having been taken on the coast of North Wales: an editorial note appended says that it is a North-American species, and could not have been caught in North Wales. There can be no doubt, however, as to the locality of those brought in by the Yarmouth fishermen.—*T. Southwell; Norwich, September* 12, 1873." (Zool. S.S. 3740.)

Limulus Polyphemus is a native of North America, and frequents sandy shores, burying itself in the sand. Natural History books tells us that this habit is induced by a desire "to escape from the heat of the sun, which would be fatal to it." This may be so, but a few years back we had several living specimens of Polyphemus in the fish-house of the Zoological Gardens, and these exhibited at all times a propensity to burrow, whether the weather was hot or cold, sunshiny or cloudy. Other species of the genus Limulus inhabit the waters of the Eastern Archipelago, of India, China, and Japan: the long bayonet of one species inhabiting the Moluccas, and called the Molucca crab (Crabe des Moluques), is used by the natives as a spear or arrow, and is said to inflict dangerous wounds. In North America Polyphemus is familiarly known as the "stewpan-fish" (Casserole), from its resemblance in shape to that useful culinary utensil; and the shell, after the body and legs have been removed, is frequently used for ladling water. Leconte, the American entomologist, tells us in addition that in the United States king crabs are sometimes given to the pigs as food; and

Latreille, that the Chinese eat the eggs of a species of Limulus which inhabits their seas.

The structure and entire appearance of the king crab is so different from that of a crab, in the ordinary acceptation of the term, that I think I may be allowed to say a few words in the way of definition, premising, however, that my knowledge of the creature is almost exclusively derived from books; for, although I have possessed from time to time many specimens of Polyphemus, I have never studied them with a view of making an accurate and detailed description.

Laying the creature on its back, as in fig. 1, the anterior margin of the shell, *a a*, presents a flattened edge, which is distinct and well defined in the middle, but vanishes towards the extremities: below this margin is a flattened area, *b*, bounded below by two arcuate lines, which meet in the middle at a small tooth or button, comparable to the keystone of an arch; in the figure this is equidistant from the letters *b*, *d d*: below this flattened area is a considerable concavity, in the centre of which, *n*, is an obvious aperture, called the "pharynx," by general consent of entomologists, and around this are arranged, in a somewhat radiating position, twelve limbs, each of which terminates in a didactyle claw, very similar to those with which one or more pairs of the legs of decapod crustaceans are usually furnished. These limbs vary considerably in size and length, but they scarcely ever project beyond the margin of the shell, and are concealed when we look at the back of the animal (see fig. 2, p. 534). We search in vain for antennæ, palpi, mandibles, or maxillæ, of the usual crustacean character, and it is, possibly, from this apparent absence of these familiar organs, that entomologists have thought it desirable to assign the functions, or at any rate the names, of these organs to one or other pair of the twelve limbs, but there is little accord among authors in this repect. Notwithstanding the manifest difference in the length and size of these limbs, there is an obvious similarity in their form and fashion, as will be very observable in the figure (fig. 1) which I have copied from Savigny. The first pair of limbs, *d d*, are very much shorter and smaller than those which follow, and seem to consist of only two joints: *first*, the basal joint, seated on a small flattened plate, which has been called the upper lip or

labrum; and the *second*, terminal, or claw-joint, which is elbowed or bent back on the basal joint. To this definition it may, perhaps, be reasonably objected that the articulated or thumb portion of the claw is in reality a third joint. The remaining limbs progressively increase in size and length until the fifth pair, and, counting the moveable thumb as one, all these have six joints. The sixth pair of limbs has seven joints: the penultimate joint of this pair is differently constructed from the penultimate joint of the other pairs, since it has five lamellæ attached on its outer side; the terminal joint is very slender, and bears at its extremity the usual didactyle claw, both the finger and thumb of which are moveable. Following the sixth pair of legs is a small and somewhat obcordate plate with a median suture, and again beyond this are certain semi-membranous plates, the sutures in which indicate joints, and these plates, covering the breathing apparatus, are supposed, and with much reason, to correspond with the swimming legs of ordinary crustaceans. The basal joint or coxa of the claw-bearing limbs is produced on its inner margin into a kind of flattened lobe, having its edge sharply serrated or toothed, much in the same manner as the maxillæ of some Coleoptera, and evidently performing the same function, namely, the laceration and comminution of food: thus, without expressing the slightest judgment on the *homologues* of these limbs and their constituent parts, it is obvious that they are the *analogues* of the lacerating and comminuting organs in the mouth of Coleoptera and decapod Crustacea, for they perform exactly the same functions. The comminuted food enters the pharynx or pharyngeal channel, and passes forwards and upwards into the œsophagus, a direction somewhat at variance with its course as usually understood. I cannot express any surprise that entomologists, finding in Limulus a structure so widely different from that with which they were familiar in decapod and other crustaceans, should have experienced some difficulty in assigning appropriate names to the organs they observed, or that there should be but slight accord in their views of the homologues of the several organs.

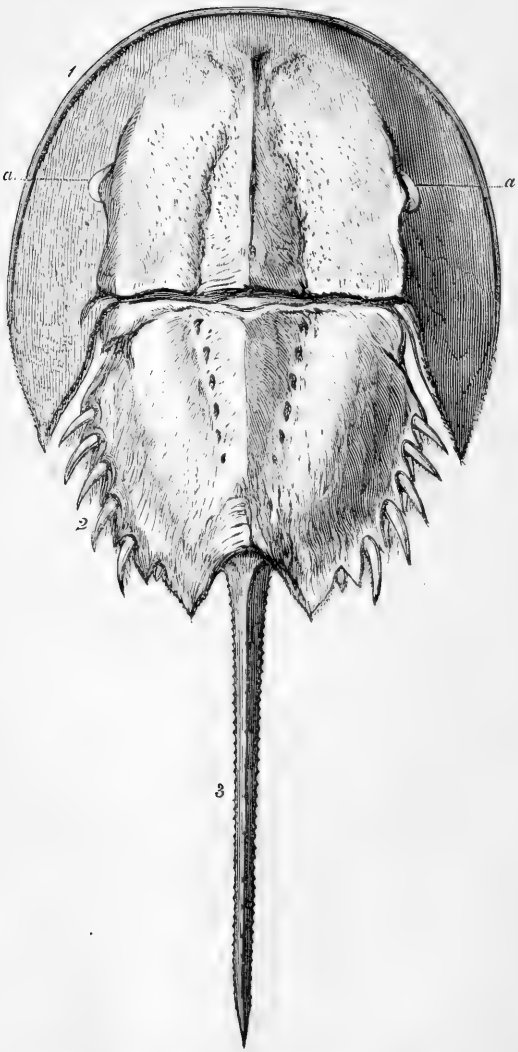
The first description which I would mention, but I by no means consider it the best, is in the 'Règne Animal,' which I believe was completed in 1815: it is cited by Savigny the

following year, 1816, in his 'Animaux sans Vertèbres,' pp. 64 and 116, and an admirably clear figure, accompanied by details, is given in plate viii. Limulus is again described by Latreille in 1825, at p. 304 of his 'Familles Naturelles;" a second time, by the same author, in 1829, at p. 184 of the fourth volume of the second edition of the 'Règne Animal;' and a third time in 1831, at p. 442, of the same author's, 'Cours d'Entomologie.' The first and third of these works are little known, and never cited on this side the Channel, nor have they—even in the native country of their illustrious author—the reputation they undoubtedly deserve.

The whole of Savigny's profound remarks are based on the theory that all the articulated animals possess essentially the same organs of manducation and locomotion, but that these organs are vastly and wonderfully modified: this theory is fully explained, and is clearly rendered feasible, if not absolutely established, in the investigation of the seven classes of hexapod insects. In my 'Grammar of Entomology' and 'Familiar Introduction' I have fully adopted Savigny's theory; but now that I come to consider the king crab, and read its character in Nature's book, even with Savigny's explanations, I feel great difficulty in accepting the latter as satisfactory. The difficulty becomes still greater when we introduce the crab, the lobster, and that strange being Apus cancriformis, into consideration. Hence I conclude that the theory may without hesitation be accepted, so far as the hexapods are concerned, but that it requires much care in extending it to the apiropods.

Turning the animal on its stomach we see at once that its circumscription somewhat resembles that of a boy's kite, the anterior margin being semicircular, and the lateral margins oblique and connivent. This kite-shaped figure is covered by a hard and polished shell or shield, transversely divided into three parts or sections, united together by powerful hinges, which stiffen and become almost immoveable after death. The first section (1) is broad and semicircular in front, produced into two points behind; nearly in the middle we observe a raised portion, and on this are three ridges or keels; one of them is shorter than the others, and medio-dorsal; the others lateral; the medio-dorsal keel has two ocelli, or simple eyes, at its anterior extremity, one on each

Fig. 2.

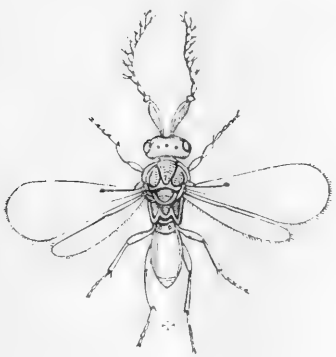


LIMULUS POLYPHEMUS (upper side, or dorsal aspect . 1. First or upper Shell or Shield. *a a*. Facetted eyes. 2. Second or lower Shell or Shield. 3. Bayonet-shaped tail-like portion of Shell. The King Crab is about two feet in length.

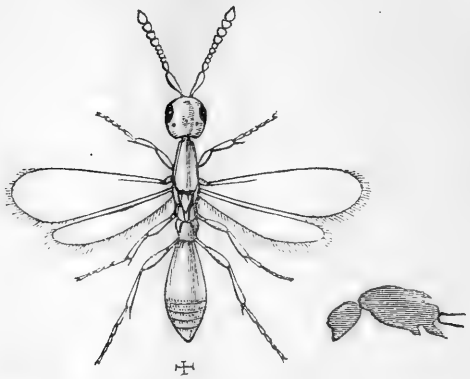
side of a small projection or tooth; and each of the lateral keels has a much larger lunate or reniform eye, *a a*, facetted like the eyes of insects generally, and firmly soldered into the substance of the shield, like the dead-eyes on the deck of a ship, but partially concealed by the keel, of which they may be said to form a part. The second section of the shield (2) is much narrower than the first, and also narrower behind than before; it terminates in a concave posterior margin; its circumscription is somewhat triangular, but very obscurely so; the sides are oblique, and each bears twelve sharp teeth, six of which, placed alternately, are fixed, and constitute an absolute portion of the shield itself, while the other six are longer, and are articulated to the shield, but the articulation is rigid, and imperceptible when the animal has been dead for some time. The third section is a narrow, solid, trigonal, scabrous, bayonet-like, instrument, having the appearance of a tail, and gradually tapering to a point (3).

EDWARD NEWMAN.

Notes on the Oxyura.—Family 1. *Platygasteridæ.*
By FRANCIS WALKER, Esq.

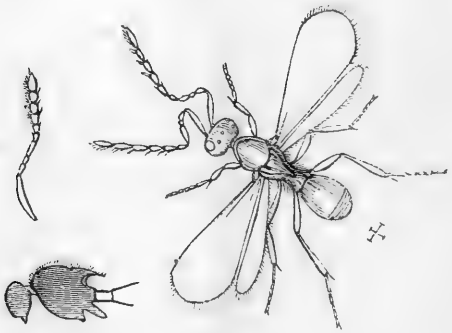


IPHITRACHELUS LAR, male.

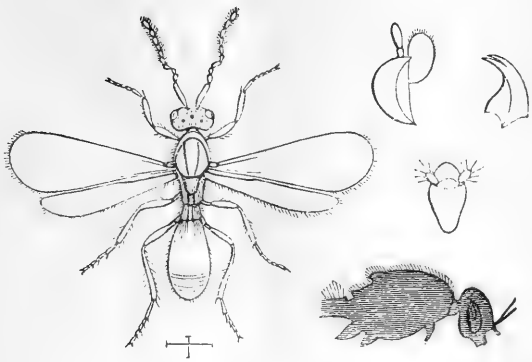


PLATYGASTER CATILLUS, female; thorax, vertical section.

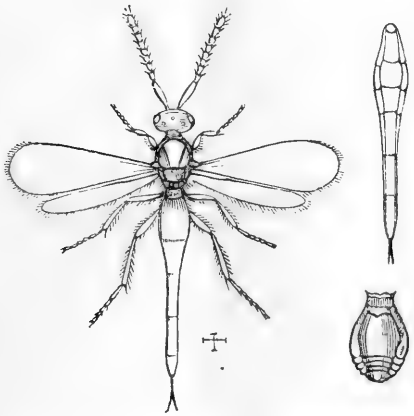
PLATYGASTER COCHLEATUS, vertical section. PL. VELUTINUS, antenna of male; antenna of female.



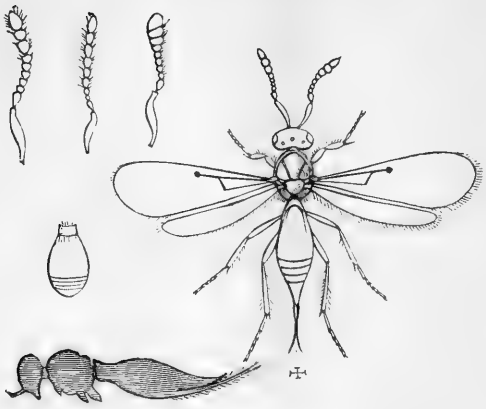
PLATYGASTER TIPULÆ, male; female, antenna; female, thorax, vertical section.



PLATYGASTER RUFICORNIS, male; thorax, vertical section; trophi.



PLATYGASTER ATTENUATUS, female; abdomen of a male and female Platygaster.



Inostemma areolata, female; antenna of female; antenna of male; antenna of I. scrutator; abdomen of male I. areolata, vertical section.

The wing-structure of the Platygaster tribe is quite different from that of the Mymaridæ: in the latter the vein or bone takes the initiative, and the membrane is wholly wanting or is only slightly developed; in the former the vein is generally not existent, or is merely rudimentary. Platygaster appears in most parts of the world, and is dependent on Cecidomyzidæ for its means of subsistence between the egg-state and the perfect-state: it is much more abundant in North Europe than in South Europe, and may, like many other minute Hymenoptera and Diptera, have been partly expelled from the latter region by the multitude of minute ants which occur in the vegetation. Prof. Foerster's synopsis of the genera is translated as follows:—

A. Submarginal vein with a knob at the tip.
a. Tarsi 4-jointed. - - - - Iphitrachelus.
b. Tarsi 5-jointed.
* Antennæ 9-jointed, serrated in the male. - Allotropa.
** Antennæ 10-jointed, not serrated in the male.
† Wings with a basal and middle vein.
‡ Three last joints of the flagellum much larger than the preceding joints, forming a club. - - - - - Metaclisis.

‡‡ The last joint only of the flagellum larger than the preceding joints. - - MONOCRITA.
†† Wings with no basal and submarginal vein.
‡ Lateral ocelli nearer to the third one than to the inner border of the eyes. - - ISOSTASIUS.
‡‡ Lateral ocelli nearer to the inner border of the eyes than to the third ocellus.
§ Female with a horn on the first abdominal segment. - - - - INOSTEMMA.
§§ Female with no horn on the first abdominal segment. - - - - ACEROTA.
B. Submarginal vein with no knob at the tip.
a. Scutellum more or less elongated, not semicircular, or when shortened then always compressed on the sides, with a pointed wart-like tip.
* Thorax compressed on the sides. - - PIESTOPLEURA.
** Thorax not compressed on the sides.
† Scutellum elongated, without a spine-shaped or wart-like tip.
‡ Furrows of the parapsides deep. Club of the antennæ of the female not determinate; two last joints distinct. - - - XESTONOTUS.
‡‡ Furrows of the parapsides indistinct or wanting. Club of the antennæ of the female 4-jointed; two last joints as one. - AMBLYASPIS.
†† Scutellum elongated, with a spine-shaped or wart-like tip.
‡ Scutellum ending in a more or less stout spine.
§ Lateral ocelli nearer to the inner border of the eyes than to the third one. Club of the antennæ in the female 4-jointed. - LEPTACIS.
§§ Lateral ocelli not nearer to the inner border of the eyes than to the third one. Club of the antennæ of the female 3-jointed. Head rhomboidal when seen in front. - ISORHOMBUS.
‡‡ Scutellum somewhat shortened and compressed on the sides, pointed or wart-like at the tip.
‡ Abdomen very much elongated. - - ECTADIUS.
‡‡ Abdomen not unusually elongated.
§ Second ventral segment much contracted in the female. - - - - SACTOGASTER.
§§ Second ventral segment not contracted in the female. - - - - SYNOPEAS.

b. Scutellum not elongated, usually semicircular or cylindrical.
* Scutellum quite flat. - - - ANOPEDIAS.
** Scutellum not flat.
† Head cubical. - - - - ISOCYBUS.
†† Head not cubical.
‡ Scutellum with a hair-tuft at the tip. - TRICHASIS.
‡‡ Scutellum with no hair-tuft at the tip.
§ Border of the abdomen with a very broad rim. - - - - - HYPOCAMPSIS.
§§ Border of the abdomen with no broad rim.
× Scutellum separated from the scutum by a deep suture. - - - - POLYGNOTUS.
× × Scutellum not separated from the scutum by a deep suture. - - - - PLATYGASTER.

The genera are thus twenty-one in number, and, without expressing an opinion whether they are or are not needlessly numerous, a few remarks may be made on them with reference to the British species which are included in them. Iphitrachelus, Inostemma, and Platygaster, are already known as British genera. Allotropa is founded on Inostemma Mecrida, Metaclisis on I. areolata, and Monocrita on I. Atinas. The next genus, Isostasius, includes Platygaster punctiger, a species that is of much importance in agriculture, by appropriating to itself Cecidomyia Tritici, a fly that is very injurious to wheat. The genera Acerota, Xestonotus, Isorhombus, Synopeas, and Anopedias, may be passed over till more can be said of the species which they include: these are not mentioned by Foerster. The genus Piestopleura is founded on Platygaster Catillus; Amblyaspis is represented by Platygaster Larides, P. Nereus, and P. Roboris; Leptacis includes P. Tipulæ, P. Nydia, P. Laodice, and P. Nice; P. Craterus is the typical species of the next genus Ectadius, which is followed by the genus Sactogaster: in the latter there are two described British species, P. Osacer and P. ventralis; and Foerster mentions that he has four more, one of which is parasitic on Cecidomyia Pisi: these four are very likely also British, and therefore the characters of them are translated in anticipation of their discovery. P. ruficornis, P. Erato, P. Matuta, and P. Cotta represent Isocybas; and Trichasis claims P. Pisis, P. Remulus, and P. Didas. A species of Hypocampsis is parasitic on Cecidomyia Strobi. P. striolatus is the type of

Polygnotus. Last comes Platygaster, which formerly included all the above genera, but Foerster does not mention any of the species which it still retains. Platygaster Siphon of Foerster, described and figured in one of his earlier works, may be placed under Acerota. Thomson's synopsis of the genera is here abbreviated; it does not seem equal to that of Foerster.

A. Subcostal vein abruptly clavate before the middle of the wing. Petiole of the female with a recurved horn at the base. - INOSTEMMA.

B. Wings with no subcostal vein. Abdomen of the female with no horn.

a. Antennæ in both sexes with a 4-jointed club; funiculus slender; vertex of the head narrow, bordered. Ocelli nearly contiguous to the eyes. Dorsal lines of the mesothorax obsolete, or none. Scutellum with a slender apical spine. Abdomen subsessile, convex above; first segment wholly, second at the base, covered with thick gray down. - SYNOPEAS.

b. Abdomen petiolated.

* Head twice as broad as the compressed thorax. Club of the antennæ 4-jointed. Scutellum with an apical spine. - - - PIESTOPLEURA.

** Head not or hardly broader than the thorax. Scutum with obsolete dorsal lines.

† Scutellum with no basal groove, parted from the scutum by a slight transverse line.

‡ Scutellum attenuated into an acicular spine. Abdomen almost orbicular in both sexes. - LEPTACIS.

‡‡ Club of the antennæ of the female 4-jointed; two last joints connate. Scutellum pubescent, conical, depressed. Abdomen woolly at the base. - - - - AMBLYASPIS.

†† Scutellum with a distinct basal groove, parted from the scutum by a rather deep transverse line. - - - - CERATACIS.

** Vertex of the head with a rim. Scutum with two lines. Scutellum thickly pubescent at the tip. - - - TRICHASIS, ANOPEDIAS.

*** Vertex of the head rather thick, without a rim. Scutum with two lines.

ISOCYBAS, HYPOCAMPSIS, PLATYGASTER.

The species of Sactogaster are distinguished as follows:—

A. Third and following abdominal segments much shortened, and together not much longer than the second. - - - - - Osaces.
B. Third and following abdominal segments much longer than the second.
a. Segments from the third to the sixth much curved. curvicauda.
b. Segments from the third to the sixth almost straight.
* Scutum sharply divided from the neck.
† Fifth abdominal segment slightly shorter than the sixth. - - - - - subæqualis.
†† Fifth abdominal segment two-thirds as long as the sixth. - - - - - Pisi.
** Scutum coalescing with the neck.
† Second abdominal segment round, when seen sideways. - - - - - longicauda.
†† Second abdominal segment not round, when seen sideways. - - - - - ventralis.

FRANCIS WALKER.

Notes on Southern Indian Lepidoptera.

By WILLIAM WATKINS.

(Continued from p. 509.)

I ARRIVED in Secunderabad the latter end of February, 1871, and was much disappointed to find that the surrounding country was one vast plain, almost devoid of vegetation, a few palm-topes being the only relief. The hot season commenced in March and lasted until August, during which time we had no rain: everything was fearfully parched and dry, and there appeared hardly any insect-life; indeed, I despaired of getting anything at all, as I could see no traces of food-plant. The first rains set in on the 26th of August, and two days afterwards insects were abundant. I was astonished at their sudden appearance, and could hardly believe myself: hitherto I had strolled out to the most inviting place and found literally nothing; yet on the 29th of the month I started, net in hand, to a place some three miles distant from the cantonment of Tremulgherry, named Moulali, which consists

of several huge rocks piled on each other: on the summit are the tombs of several Fakeers, and at the base is an artificial lake, on the banks of which I obtained Papilio Hector, Coon, Polymnestor, and Dissimilis; Vanessa Orithya, P. Cardui, a species of Teras, Argynnis Selene, Œgocera Venulia, Diadema Lyria, Lycæna Alexis, Pieris Napi, Callidryas Argante, Pontia Nini, Thestis Marianne, and Pieris Epicharis. Several species of Arctia came to light, some of them most beautiful; Lubricipeda was amongst them, but the remainder were unknown to me. I was sitting in my quarters writing one evening, when a friend from home visited me by flying on to my desk: it was a male of Zeuzera Æsculi; I never saw it before nor since in India. On the 25th of the month a large Sphinx larva and pupa were brought to me from an officer's compound, and on the 29th the pupa emerged: it was a fine female Chœrocampa Nerii; I never before saw this beauty alive. I collected almost every evening during the month of September, mostly in gardens round the cantonment, and had one whole day's collecting at Moulali on the 14th of the month, when I met with all the species named for the 29th of August, besides two very pretty species of Anthocharis,—one like Cardamines, but devoid of the underneath markings, and the other tipped with magenta. On the 4th of the month I was examining the foliage of a Scotch fir growing in a compound near the barracks, when I found several larvæ, which, although not feeding in rolled-up leaves, like Clostera, put me much in mind of the larvæ of Curtula. I also found some pupæ spun up in the crevices of the bark, and on the 6th one of them emerged; the imago is certainly Clostera Anachoreta, or a very closely-allied species. On the 11th I bred a male of Chœrocampa Nerii from a larva obtained on the 25th of August; thus it had only taken seventeen days to undergo its changes. I obtained the following species at dusk, hovering over flowers:—Chœrocampa Elpenor, C. Porcellus (most abundant), Deilephila Celerio, Sphinx Convolvuli (most abundant), Macroglossa Fuciformis and M. Stellatarum, C. Nerii, Œgocera Venulia, Plusia Gamma and P. Chrysitis, Agrotis exclamationis and A. Segetum, Caradrina cubicularis, and a species of Leucania; besides other Noctuæ. Amongst the Sphingidæ the commonest species was Porcellus, and I notice it invariably prefers Zinnias to any other flowers, whilst

Sphinx Convolvuli is caught exclusively at marvel-of-Peru flowers; Deilephila Celerio comes only to petunia blossoms. The weather for the greater part of the month was cool, and nearly every day we had some showers. The Sphingidæ continued common throughout October, but the butterflies were worn; and thus it appears there are only two months in the year at all worth collecting at Secunderabad.

Undoubtedly I could have done better than I did if I had had the time and health: in common with many others this failed me in that wretched station, most appropriately named the Graveyard of India. Although not a prolific locality for other families than the Sphingina some good Bombyces were taken by other collectors; none of the species were British ones. Bombyx Linea is remarkably common here. Chœrocampa Nerii was pretty common; its head-quarters I believe to be the grounds of Tremulgherry Military Prison, as there are several oleander shrubs there. I visited the place on the 19th of September, and found that the leaves had been much eaten, indicating the unmistakable presence of the larvæ of Chœrocampa Nerii. I was told that some large green caterpillars had been taken from off the shrubs, and killed.

In conclusion I have to remark that insects in this country seem widely distributed, and not at all particular as to climate, as upon analysis of the foregoing it will be seen that several of the species occurred at all three places,—on the borders of China, in baking Secunderabad, and at an elevation of seven thousand feet above the level of the sea,—neither of them varying in the least from the original type.

WILLIAM WATKINS.

Wellington, Neilgherries, East Indies,
July 21, 1873.

Entomological Notes, Captures, &c.

Vanessa Antiopa in Surrey.—I was so fortunate as to take a fine specimen of Antiopa on the 6th of August last, on Hindhead Hill, near Haslemere. It was flying over the top of the hill in company with another, which, however, I could not take.—*C. W. Haig-Brown; Eton College, Windsor, October* 12, 1873.

Vanessa Antiopa in Kent.—While walking on the banks of the Medway, about three miles from Tonbridge, on the eastern side of the town, on Saturday, September 27th, I saw, and nearly succeeded in capturing, a specimen of Vanessa Antiopa. It, however, escaped, I having no net with me at the time; and as I have not since heard of its capture I take the liberty of writing this.—*H. R. Ash; Judd House, Tonbridge, Kent, October* 24, 1873.

Lasiommata Megæra (Entom. vi. 485, 521).—Following Mr. Birchall's suggestion that entomologists should examine the specimens of Megæra in their cabinets, I have looked into mine, and find what I think to be one or two rather singular varieties. One (a female) has a second small-pupilled black spot *above* the large one on the apical angle of the fore wings; another (a male) has a similar spot, but situated *beneath* it. I have a third variety (a male), the colour of which is brown, without any fulvous markings, the dark brown band crossing the middle of the fore wings deepening almost into black. I think with Mr. Birchall that the Satyridæ are peculiarly liable to variation: two specimens of Tithonus I possess are very dissimilar to the normal type, the fore wings of one being of an uniform tawny colour, without any markings whatever, save the usual bipupilled black spot; of the other, the ordinary bright orange-brown being almost white.—*Joseph Anderson, jun.; Alresford, Hants.*

Sphinx Convolvuli.—In answer to the question, "Does S. Convolvuli pair in the autumn?"—having had a female brought me about September 12th, which has laid a good number of eggs—I may conclude they do. The eggs are very dark brown. Can any of your readers inform me the name of the food-plant which the larvæ will eat.—*M. Mond; Lewes, October* 3, 1873.

[The food-plant of Sphinx Convolvuli is *traditionally* the field bindweed (Convolvulus arvensis); practically it has been found twice on Impatiens noli-me-tangere, in the North of England; and a score or more have occurred feeding on balsams in the garden of the Luxembourg, in Paris.—*Edward Newman.*]

Trichiura Cratægi (Entom. vi. 514).—In reply to Mr. Raynor's query respecting the time when the larvæ of this

species emerge from the eggs, I may say that they usually appear about the middle of April, but the eggs do not all hatch at once, a few of the larvæ generally appearing daily for two or three weeks. The cage in which they are kept should stand where the morning sun can shine upon it, as the larvæ are fond of basking in the sunshine.—*Henry Doubleday.*

Bombyx Quercus (Entom. vi. 521).—This species occasionally remains a year in the pupa state, although the ordinary time is only a month; but there is nothing remarkable in this, as some specimens of many species of Lepidoptera remain two, three, or more years, in the pupa. A person residing here has now some living pupæ of Cucullia Verbasci from larvæ obtained in 1869.—*Id.*

Bombyx Callunæ.—The larvæ sent by Mr. Clogg, of East Looe, are those of this species, the females of which drop their eggs at random without attaching them. The young larvæ seem to feed on the plant growing nearest the spot where the eggs happen to fall. They hybernate at this season.—*Edward Newman.*

Eremobia ochroleuca in Kent.—Having seen in the last number of the 'Entomologist' a notice of the capture of E. ochroleuca in Surrey, I beg to state that in August, 1872, I took it in some profusion, *flying by day*, between Gravesend and Rochester. I took at the same time specimens of Dysthymia luctuosa. I believe the above-mentioned locality is not given in your 'British Moths.' Is it not also unusual for E. ochroleuca to fly by day?—*M. T. Madeson; Wellington College, Wokingham, Berks.*

Cucullia Gnaphalii in Darenth Wood.—I have two pupæ of Gnaphalii, the larvæ from Darenth Wood, Kent, taken by a friend last August.—*Augustus Priest;* 16, *Menton Road, Kensington, October* 4, 1873.

Dianthœcia Compta.—Mr. Gregson asks (Entom. vi. 518) if this species is British (Irish). I am somewhat surprised that he, above all, should ask that question. Surely he must know whether his own captures are British or not, and I would advise him to test his own specimen in a damp box,—I mean the one he showed me when I called upon him in Liverpool, and which he told me he took on the Big Hill of Howth. He also assured me he took a wasted Compta in Wales some

years ago. I must confess I am somewhat puzzled to know how a moth can prove itself to be another species, after a lapse of several years, by laying nine eggs. However, as regards my own six specimens I must refer him to his very intimate friend Mr. John Warrington, late of Tranmere Hall, Cheshire, who not only saw me capture Compta (not *var.* of Conspersa), but captured one himself. As regards others not being able to find it, I may say Barrettii is not a Manx species. I know Port Jack well, and have spent night after night searching for D. cæsia, but never took Barrettii, although I have caught sixteen specimens in a night on the coast of Ireland. Again, with Sesia Philanthiformis, Mr. Gregson tells us it is common at Howth, but I have failed to find it, although I have worked the Hill of Howth yard by yard; also the adjacent islands, *viz.*, Ireland's Eye and Lambay. Perhaps I may be more successful another season.—*E. G. Meek; 56, Brompton Road, S.W., October* 1, 1873.

Larvæ of Xanthia gilvago and X. ferruginea.—On the 4th of last June I beat some larvæ from the bunches of green seeds on a wych-elm: they fed only on the seeds, and about the middle of June went down in the soil. I supposed them to be Xanthia gilvago, as they answered almost exactly to your description, but to my disappointment Xanthia ferruginea emerged from the pupæ. In your 'British Moths' you do not mention elm as the food of Ferruginea, but of Gilvago; and Mr. Greene also says Gilvago feeds on the seeds of the wych-elm. I should be glad if you could tell me how to distinguish between the larvæ, for two or three years ago I bred Gilvago from larvæ off the same tree, and I cannot remember any difference in their appearance.—*Anne Steele Perkins; Ashgrove, Ruabon, October* 10, 1873.

[I regret to say I am unable to give the required information at present, but hope to receive it from a friend.—*Edward Newman.*]

On the Antennæ of Eristalis tenax.—The terminal joint on each antenna is flat on the inner surface and gibbous on the outer one, and both surfaces are thickly and evenly covered with very minute hairs, just such as terminate the dorsal surface of the antennæ of P. Capitis; but the second joints of E. tenax are smooth and polished, with only a few

comparatively large hairs at their outer edges, and the first or basal joints are smooth like the second ones. By a parity of reasoning this would seem to indicate that the terminal joints are purely sensitive organs of touch. The large hairy bristles spring from just within the margin of the flat sides of the terminal joints of the antennæ, and around the base of each bristle there is a transparent ring of horny substance, while all the rest of the structure is black and opaque; each of the very minute hairs of the terminal joint has a similar very minute transparent circle. The small hairs on the single long bristle on each terminal joint are all projected outward and upward. These long bristle-like organs are probably ordinary feelers, while the delicate hairs of the terminal joints of the antennæ are discriminative organs of touch. As to the terminal joints being auricular organs I can see no evidence whatever of their performing such a function, as there are no orifices of any sort on any part of them, while the delicate organs of touch completely cover their surfaces.—*J. S. Bowerbank.*

[It having been on several occasions suggested that the antennæ of insects were auditory organs, I examined the very conspicuous antennæ of the common drone-fly (Eristalis tenax), with the kind assistance of Mr. Henry Deane. Nothing definite resulted from the investigation, but I found during the examination so much to excite admiration and doubt that I decided on appealing to Dr. Bowerbank for his opinion, and with his invariable courtesy and kindness he has sent the preceding note.—*Edward Newman.*]

Aphides and Honeydew (Entom. vi. 463, 502).—Nearly a century ago the Abbé Boissier de Sauvages stated that he had observed two kinds of honeydew, one of which he considered to be an exudation from the leaves of plants, and the second to owe its origin to Aphides. I am strongly inclined to the Abbé's opinion, which is partly confirmed by Dr. Hooker's observations. Mr. Walker suggests that the specks on the leaves of the limes might have been caused by the flowers; but when Dr. Hooker began his observations the limes could not have been in bloom. The presence of Aphides on currant-trees soon attracts attention from the blisters on the terminal leaves of the shoots, which are always first attacked by these insects. Several currant-trees were trained against a wall in

my garden facing the north-west. In 1868 these trees appeared perfectly healthy till about the end of May, when the leaves were suddenly covered with honeydew so thickly that they looked as if they had been varnished, and a drop hung at the tip of almost every leaf. I could not see a blistered leaf or a trace of an Aphis upon them, and there were no standard-trees near the wall. In the course of a week or two, after the appearance of the honeydew, the leaves began to change colour, and soon afterwards the whole of them, and also all the fruit, dropped off. Most of the trees died the following winter, and the two or three which were alive in the spring only put forth a few weak shoots. I do not believe that the honeydew on these trees was caused by Aphides, which sometimes exist in large numbers on trees without any trace of honeydew being seen.—*Henry Doubleday; Epping, October* 15, 1873.

Extracts from the Proceedings of the Entomological Society, March 17 *to April* 7, 1873.

Sexual Difference in Insects having Ocellated Spots.—Mr. Bates put some questions to the meeting, suggested to him by Mr. Darwin, with a view to eliciting information as to sexual differences in insects furnished with ocellated spots; and also as to sexual differences among the Buprestidæ. A conversation ensued, in which Mr. Jenner Weir stated that in Satyrus Hyperanthus the spots were more numerous in the female than in the male, and Mr. Butler remarked that Drusillus had double spots in one sex. It was also stated that Mr. Saunders had detected corresponding sexual differences in the Buprestidæ.

New British Diptera.—Mr. Verrall exhibited a specimen of Laphria flava, *L.*, one of the Asilidæ, taken in Scotland, not having been hitherto discovered in this country. Also the following Syrphidæ, namely:—Syrphus Compositarum, *Ver.*, S. flavifrons, *Ver.*, and S. punctulatus, *Ver.*, all new species; together with S. annulatus, *Zett.*, S. barbifrons, *Fall.*, and S. nigricornis, *Ver.* (= obscurus, *Zett.*), the last three having been found in this country for the first time.

Dragonflies devoured by an Asilus.—Mr. M'Lachlan stated that he had been informed by Lord Walsingham that

when on his recent visit to California and Texas he had frequently noticed dragonflies preyed upon by other large insects whilst flying through the air. These latter were, no doubt, some species of Asilus; but it was the first time he had heard of dragonflies being preyed upon by other insects, as they had hitherto been supposed to be free from such attacks.

American Cynipidæ.—Mr. Müller read the following remarks, communicated to him in a letter from Mr. W. F. Bassett, of Waterbury, Connecticut, U.S. "I found, early in the spring, almost as soon as the buds began to swell, large numbers of a female Cynips—the species unknown to me—ovipositing in these buds. I had seen the same in the two preceding seasons, but in only a few instances. The insect, standing on the summit of the bud, thrust the ovipositor down between the bud-scales, but did not in any case, so far as I noticed, penetrate the scales. I inferred that the eggs were laid in or on the embryo leaf. I marked several trees where I found these female flies, and watched with much interest to see what species, if any, would be found on them. I found the leaves, when developed, to contain galls of C. q.-futilis, *Osten-Sacken*, and with few, if any other, species intermixed; and the abundance of this species was in close agreement with the number of females ovipositing before the leaves appeared. These galls, when found at all, are usually very numerous, and on some of these trees there was hardly a leaf that did not contain from one to eight galls, each of which would produce from three to five insects. The fly of C. q.-futilis (*found in both sexes*) is much smaller than the species I found ovipositing. I think that when we come to find out the true history of these dimorphous and, in one generation, unisexual species, we shall find that those composing the generation of females are generally larger, and perhaps structurally distinct from the bisexual brood. What form of gall these apparently immediate progenitors of C. q.-futilis may come from I cannot say, though I still hope to trace them to their gall. I repeated last spring the experiment tried several previous seasons,—that of raising a brood of flies from the galls found in the form of irregular swellings on the twigs of an oak growing near my residence. I raised an immense number, all of which were females; and in June

I reared still greater numbers, male and female, from enormously swollen petioles of leaves of the same tree. These two broods are remarkably alike, so much so that I could not separate them if mixed. There is, in this instance, no perceptible difference in the size of the individuals composing the two broods. It seems to me to be settled now that most, if not all, our species of Cynips are double-brooded, and that one of these generations consists of females only. Besides the two cases I have mentioned, where the connexion between the two broods is apparently well established, there are so many one-gendered species that we may reasonably suppose each to be the progenitor of some one of the equally numerous double-gendered species, but whose relationships have not yet been observed. I am willing to venture the remark that probably no one-gendered species exists—that those apparently unisexual species, C. q.-punctata, *Bassett*, C. q.-spongifica, *Osten-Sacken*, and those European species which, though reared in countless numbers, have as yet been found only in the female sex, will be found to be double-brooded species, one of which will be exclusively female, and the other male and female. I have two or three years tried to raise a colony of C. q.-punctata, *Bassett*, by placing the large polythalamous galls on uninfected trees just as the insects were ready to escape. So far I have failed to rear any galls of this species. Now if these females really reproduce the same kind of gall I ought to have succeeded, for I colonized several hundred individuals on a single small tree, and many more on other trees in different seasons. Of course the inference to be drawn from the failure of my attempt to raise these galls has no scientific value, but had I succeeded in raising the galls the fact would have been received as satisfactory proof that these female flies could produce generation after generation of females without the aid of the male element. I take the ground that the reproduction of gall-insects without the intervention of the male is limited to a very few, if not even to one generation; and that all our unisexual species are dimorphic forms of double-gendered species. I wish yourself and all others interested in working out the singular history of this family would give attention to these points. And may I ask you to inform me if anything has been written within a year or two that throws any light

upon them, as I am aware that my non-intercourse with the entomological world for a year or two past has left me far behind possibly on this very point. I was able last spring to settle, to my own satisfaction at least, a question raised by myself in the first article I published on the Cynipidæ,—the question whether the woolly galls, C. q.-seminator, *Harris*, and C. q.-operator, *Osten-Sacken*, were or were not abnormally developed leaves. I took the ground that they were, that the eggs were deposited in the oak-bud, that the small seed-like gall was only a modified leaf-stem and blade, and that the wool was only an enormous development of the pubescence always present on the young leaves. Mr. B. D. Walsh opposed this idea, and, either in a published paper or in a letter to me, denied that the gall had any connexion whatever with the bud or leaves. Last spring I was so fortunate as to find two galls of C. q.-seminator in their earliest stage, and was able to watch them in their development. They are really developed from buds, and are, as I supposed, only modified leaves. The smooth shining cell or gall is the petiole of the leaf, and the tuft of long woolly hairs that terminates the cell is only the enormous development of the leaf's pubescence."

Haggerston Entomological Society, Exhibition.—The Haggerston Entomological Society intend holding their annual exhibition on the 13th and 14th of November, 1873, between the hours of six and eleven o'clock. The committee will be glad to hear from any gentlemen willing to exhibit. All communications to be addressed to the Society's Rooms, 10, Brownlow Street, Dalston.—*R. G. Bury, Secretary.*

Contributions to the Collection of the Entomological Club.—W. Machin, four Arctia Urticæ, four Sideria Achatana, six Ditula semifasciana, two Ypsolopha horridella, two Coleophora saturatella, two C. albitarsella, two C. solitariella, two C. vitisella, two Scotosia vetulata, four Rhodophæa formosella, two Euchromia flammeana, two Teras caudana, and two Sciaphila nubilana. J. Jenner Weir, two Agrotera nemoralis. For these presents I return, on behalf of the Entomological Club, my very sincere thanks.—*E. Newman.*

At Home.—Edward Newman will be at home, at 7, York Grove, Peckham, every Friday evening, at six o'clock, until further notice.

THE ENTOMOLOGIST.

No. 124.] DECEMBER, MDCCCLXXIII. [Price 6d.

Controlling Sex in Butterflies. By Chas. V. Riley, M.A.*

(Entom. vi. 372.)

The article with the above title by Mrs. Mary Treat, in the March number of the 'Naturalist,' has attracted a good deal of attention, and most naturalists will be proud that a lady has set the example of making such investigations. But while I fully concur with the authoress in the deduction that the female in insects, and especially in Lepidoptera, "requires more nourishment than the male," I cannot follow her in the other conclusion, "that sex is not determined in the egg of insects." Were this conclusion well founded it would upset what most physiologists of note believe to be a fundamental principle, *viz.*, that, in the individual, sex is determined at the moment of conception, no matter at what stage of growth it becomes ascertainable by us. That such is the case with the higher animals will scarcely be doubted, and to reason from analogy that it is the case with the whole animal kingdom is quite as natural, though equally as unsafe, as it was in years gone by to argue that *lucina sine concubitu* was an impossibility, or that larval reproduction, in insects, could not possibly take place. It is, therefore, worth while to weigh the evidence for and against the possibility of controlling sex in larvæ.

Mrs. Treat, whom I know to be a good observer, and whom I esteem as a correspondent, had already, in 1871, communicated to me her belief that she could control the sex in butterfly larvæ, and though I then gave her my opinion that her experiments were by no means satisfactory and conclusive, for the reason that many of the larvæ

* Reprinted from the 'American Naturalist,' September, 1873.

experimented on died, we find her discoursing in the following unqualified manner in 'Hearth and Home' for January 13th, 1872, in treating of Papilio asterias:—"When the worms become of the right size cut off their supply of food, and every one will produce a male butterfly! On the other hand, even after they have left their food-plant and selected their place to change to the chrysalis, disturb them, make them leave their place, and coax them with a fresh supply of their favourite food, and continue to feed them for about two weeks longer, and all will be females!"

Led by Mrs. Treat's observations to test the question, I last summer conducted a few experiments, which resulted very differently from those recorded in the article referred to, and which, after briefly reviewing the article, I will detail. In waiting for some of these results I have been obliged to defer writing this article till the present time. In the first experiment with Papilio asterias, mentioned by Mrs. Treat, some of the larvæ died, and we are not told whether the number experimented with was large or small. In the experiment with the same insect in 1872 we are told that of seventy-nine specimens that had been labelled males (a few chrysalides having died) three females only were produced. On the other hand, those that were well "fed up," and labelled females, produced sixty-eight females and four males. The original number so labelled is not given, and it is not stated whether any chrysalides failed to produce the imagines; so that we are left to infer that seventy-two were experimented with, and that they all produced the butterfly,—a success in rearing which is remarkable. In the third experiment with twenty larvæ, nine females and eight males were produced, the other three failing. In the experiment with Vanessa Antiopa more than half the larvæ died, and in the trials with Anisota rubicunda some also died and were parasitized.

Now Papilio* deposits its eggs singly, and from experience in breeding Asterias, Troilus, Turnus, and Ajax, from the egg, I am satisfied that it would be very difficult to get any great number to hatch on the same day, or to become chrysalides or imagines on the same day. The eggs must have been gathered singly, or the larvæ of different ages

* I use the term in the old, and not in Mr. Scudder's, sense.

taken on the same day, or of the same age on different days. Of a given number thus gathered I should expect the sexes to be about equally divided, and we in reality find that of the one hundred and seventy-one larvæ, particularly mentioned, the sexes are almost equally proportioned in number, eighty-eight males and eighty females having been obtained, and a few chrysalides (which, as we shall presently see, would most likely be females) perishing. In Anisota, on the contrary, the eggs are deposited in batches, and it is more easy to get a number of larvæ of the same age. Mrs. Treat's experience with her thirty-three larvæ is quite opposed to mine with the same species.

Mrs. Treat does not tell us whether she did or did not use any discretion as to the size in selecting her intended males and females; and this is a very serious omission, as, by the criterion of size alone, among larvæ of the same age, the sexes in many species may be separated with considerable certainty. I regret also that she has not specified at what age, and whether always at the same age, the treatment of "feeding-up" and "shutting-off" was begun, though we may infer, from what is said, that it was after the last larval moult.

Mrs. Treat speaks of keeping larvæ eating beyond the period of pupating, or rather of preparation for that change, and of "starving" them, as though there was hardly any limit to these processes. Analysed, what meaning do these expressions convey? Very little. They are deceptive! Most Lepidopterous larvæ, in a state of nature, would come under the head of "feeding-up," as they usually have an ample supply of food at command, and eat their fill. While, therefore, it is perfectly possible to stunt such larvæ by furnishing them with a scant supply of food, and thus to prolong the period and diminish the amount of their development, it is utterly impossible, in the great majority of cases, to get them to eat after they once commence to prepare for the chrysalis state. This is my firm conviction, after ten years of pretty extensive insect-rearing; and I think that most experienced insect-raisers will agree with me. If disturbed after preparing to pupate, most larvæ will repeatedly renew similar preparations, but if too often frustrated they will either transform without the proper preparation or die. They are, doubtless,

prompted to forsake their food and prepare for the transformation by the changes already taking place in the system, and in the great majority of cases the mandibulate is already giving way to the haustellate mouth, and has become impotent to perform its wonted labour. Larvæ can neither be forced nor stuffed beyond a certain limit, and this limit is attained by every well-fed larva in a state of nature and in the vivarium, so that if Mrs. Treat's theory had any real foundation, almost all insects that were not "starved" ought to be females. A high temperature will cause rapid development, but it does not cause a greater aggregate amount of feeding.

But to my own experiments. Of the six insects chosen, the sexes in some differ in the most remarkable manner, while all show sufficient disparity to render mistakes in separating the sexes impossible. They are, also, all common in this section, so that others will have no difficulty in verifying my facts. Except in the case of Thyridopteryx I made no attempt to "feed-up," my efforts all being in the direction of "starving," or, as Mrs. Treat would put it, of producing males. Neither have I relied entirely on my own observation; for, being necessarily absent from home, at intervals, the experiments, with explicit directions, were at such times left in charge of Mr. Otto Lugger and Miss Mary E. Murtfeldt, both well practised in rearing Lepidoptera. I would also premise that the stunting process began from the time of hatching, and that it was carried so far that, of the less hardy species, many died under the treatment. It was, also, especially enforced towards larval maturity. The species chosen were:—1, Thyridopteryx ephemeræformis; 2, Orgyia leucostigma; 3, Clisiocampa Americana; 4, Hyperchiria Io; 5, Hemileuca Maia; 6, Anisota rubicunda.

1. *Thyridopteryx ephemeræformis.*—Two lots: lot 1, consisting at first of between thirty and forty individuals, and abundantly and constantly nourished; lot 2, of thirty individuals, and very poorly nourished, or "starved." From lot 1, twenty-eight cocoons were obtained, of which fifteen were males and thirteen females, all of them attaining the imago state. From lot 2, eighteen cocoons were obtained, which produced twelve males and six females, two of the females failing to perfect, and dying in the chrysalis state, in which the sex is readily determined. The stunted lot produced, on

an average, smaller specimens, and were later in developing, the first male appearing September 15th, against September 10th, on which day the first male in lot 1 appeared. Some of them, however, were of the usual size. Besides these two lots, which were in small vessels and very strictly watched, I had a great number in a large breeding-cage, which were so thoroughly neglected that fully one-half died. No accurate account was kept of them, but of upwards of fifty chrysalides obtained fifteen were females. This is a tough insect, and will stand very rough treatment; and the last mentioned were repeatedly allowed to wander around the cage for three days or more without a particle of food.

2. *Orgyia leucostigma.*—Started with a lot of forty, which were very carefully watched and very insufficiently fed. From them eighteen cocoons were obtained, ten of which were actually females and eight males. I naturally looked for a different result in this case, as there is a very perceptible difference in the size of the sexes, and the female larva grows one-third larger than the male, requiring, in consequence, a greater amount of nourishment. I had also noticed in previous rearing of this species that the males often passed through but three larval moults, while the females passed through four; but to show that the number may vary in the same species, according to circumstances, Miss Murtfeldt assures me that under this stinting process the former went through four moults like the females. Similarly, Prof. Westwood has informed me that a larva of Megatoma [Tiresias] serra, which he once kept on flies and insufficiently fed, lived for three years, and moulted no less than fourteen times.

3. *Clisiocampa Americana.*—Started with a batch of upwards of fifty just hatched. Obtained only nineteen cocoons from them, the rest dying from hard treatment. Five small females and nine males were obtained, the others dying in chrysalis.

4. *Hyperchiria Io.*—Twelve taken from Baptisia, soon after the fifth or last moult. Furnished very stintingly with food. All pupated. Two male moths issued in the fall; four males and three females this spring, three being yet in the chrysalis state. At the same time I had two other lots feeding, with ordinary care, on Sassafras and Amorpha, and in both lots the males have so far preponderated.

5. *Hemileuca Maia.*—One brood of upwards of one hundred, from an egg-belt fastened around a peach-twig. Endeavoured to feed them on peach-leaves, which were not to their taste, until more than half had died. Stinted the rest as much as possible, until only thirty-two entered the ground. Of these fifteen produced males and eight females, the rest being yet chrysalides.

6. *Anisota rubicunda.*—About fifty larvæ of all ages, of the first brood and badly stinted, gave twenty-two chrysalides; and these gave eleven females, seven males,—the rest dying. Upwards of a hundred, hatched from eggs deposited in confinement by one of the above females, and likewise stinted, gave fifty-six chrysalides.

I watched these with a good deal of interest, as, from the necessarily weakened condition of the parents, I expected a large proportion of males; but I was doomed to disappointment, as but three moths—two females, one male—issued on the 21st and 22nd of May. In examining the remaining chrysalides I find them all dead, and I cannot help thinking that this excessive mortality is attributable to the stinting process they endured as larvæ, more than to any other cause, as the earth containing them was kept in the best condition.

While these experiments were being carried on I had many hundreds of the common silkworm (Bombyx mori) feeding on Osage orange (Maclura aurantiaca), a great number of which succeeded admirably out-doors under netting, and others in-doors. Two of the lots in-doors were fed sparingly, and not well cared for. No precise records were kept, and very many died; but of the imagines obtained I recollect very well there was no disproportionate number of males.

On the whole, if these experiments indicate anything, they indicate that where more males than females are obtained from stinted larvæ it is attributable to the fact that the females, being largest and requiring most nourishment, succumb most readily under such treatment; rather than that the sexual characteristics are modified and determined by such treatment. Mrs. Treat's facts are, in some respects, remarkable, but, bearing in mind the influence of the condition of the parents on the sex of the offspring, it will not do to draw conclusions too rashly; for every experienced entomologist knows that occasionally, in a particular brood of larvæ,

one sex or the other will greatly preponderate, where no especial treatment was followed in the rearing.

While, therefore, I do not think that the facts yet in our possession warrant the belief that the quality or amount of food has any influence in determining sex in the individual once out of the egg, I do believe, with Thomas Meehan, Henry Hartshorne, and others, that there is a certain relation between organic vigour and sex, and that the latter may be determined in the offspring by the amount of vigour or vitality —creative or organic force—in the parents, and that the female is in some way connected with increased, and the male with lessened, vitality, for strong arguments may be adduced in favour of such a belief.* Certain curious facts in the natural history of some of our gall-making Cynipidæ lend singular weight to these views. From these facts, ascertained by Mr. H. F. Bassett, of Waterbury, Connecticut, there can be little doubt that many of the species produce two distinct kinds of galls, alternating with each other,—the one vernal, the other autumnal. The former produce flies with a due proportion of the sexes, and the latter produce nothing but large females.† In other words, the directly fecundated and more highly vitalized eggs produce nothing but large females, while the parthenogenetic offspring is smaller, and composed of both males and females.

* See 'American Naturalist,' vi. pp. 692, 747; and 'Missouri Entomological Reports,' iv. p. 65, and v. p. 85.

† To give a single illustration:—A large wool-gall, the modification and deformation of a bud, is tolerably common on our black oaks. The flies produced from it (Cynips q.-operator) are bisexual. Mr. Bassett has witnessed the female depositing in acorns of the same trees on which the wool-galls occur. The product of these eggs is a pip-like gall (C. q.-operatola of my manuscript), which develops between the cupule and the fruit. It is quite irregular in form, but with the apical end tapering more or less to a point, and the basal end rounded. It is greenish when young, yellowish when mature, and the larva rests in a cream-coloured ovoid cell, easily freed from its pip-like covering. The gall is generally numerous enough to render the acorns abortive, and I have known it since 1869. In August, 1871, while visiting Mr. Bassett, I collected a number from Quercus ilicifolia, and brought them home in the hope of rearing the flies from them. This spring, after a lapse of about twenty months, and just as the oak-buds were bursting, I succeeded in obtaining a number of flies, every one of them females, and agreeing with C. q.-operator, except in being larger. Singularly enough this very year Mr. Bassett succeeded, for the first time, in finding the producer of the woolly-gall, C. q.-operator, ovipositing in buds; and his description leaves no doubt that the flies he thus discovered are identical with my bred specimens.

The curious facts, as now understood, in the economy of the common bee-hive, seem at first to militate against the conclusion that food has no influence on the sex of larvæ, but in reality they do not, though they indicate that the sex may be altered or determined after partial or imperfect conception has already taken place. All eggs not directly impregnated produce drones or males (*not females*, as "A. S. P.," by a singular lapse of thought, has stated on p. 177 of the March number of the 'Naturalist'), while those which are impregnated at the will of the mother produce females either partly or fully developed, *i.e.*, workers, or queens. The rule with animals is that the eggs perish unless vitalized by the direct influence of the male spermatozoa. Nevertheless, parthenogenesis in many of the lower forms of animal life, and especially in insects, is an admitted fact. And what does it imply? To my mind it implies that in exceptional cases the male element is sufficiently potent to vitalize the eggs in the second generation, or that it may endure until succeeding generations; that, in short, to use Owen's words, "the spermatic virtue of the ancestral coitus" may influence the descendants. Von Siebold does not accept this explanation, but there are many facts which indicate that it is a true one, and the male element becomes exhausted in time, and is needed sooner or later for the continuance of the species.

Parthenogenesis has repeatedly occurred in species which normally cannot multiply without direct sexual intercourse, *e.g.*, in Bombyx mori, Sphinx ligustri, &c., while in a great number of others the embryo, in eggs not directly fecundated, develops up to different stages. What in some species is the exception becomes the rule with others, of which the hive-bee is an example. The male element may be said to possess all degrees of potency in its influence on the reproductive function of its immediate issue, as the embryo in eggs not directly fecundated attains all degrees of development before death. In cases of parthenogenesis it is potent enough, vital enough, to cause full development of the offspring for one or more generations, though, in the majority of instances, and especially where this mode of reproduction does not occur as a rule, this offspring is most frequently male. Finally, it may be so potent, as in what is termed thelotoky, that females instead of males are produced.

The eggs in a virgin queen bee may, therefore, be said to be already partially fecundated,—sufficiently so to produce males or drones; but they must be more thoroughly vitalized, by the direct male influence, before the female sex can be stamped upon them. Even here, however, the sex is not changed after the deposition of the eggs, and it is not the influence of food which produces the change.

Though I believe that the evidence is against Mrs. Treat's conclusion, I hope she will continue her experiments, with that thoroughness and exactness of which she is capable. Nature's contrivances for the maintenance of life in all its wonderful and varied phases are inexhaustible, and we are ever laying down rules and theoretical laws, only to find them violated and upset, as we more truly interpret her ways. She is as watchful of the myriad invisible atoms that mantle o'er the pond with green, or of the unseen swarms that fill the air, "though one transparent vacancy it seems," as she is of the higher forms of life. Plastic, she conforms in every conceivable and inconceivable way to the wants of her immense family. She shows us—

> "The ant's republic and the realm of bees;
> How those in common all their stores bestow,
> And anarchy without confusion know;
> And these forever, tho' a monarch reign,
> Their separate cells and properties maintain,"

and calls loudly on us to read aright and solve her yet many untold secrets.

CHAS. V. RILEY.

Entomological Notes, Captures, &c.

Larva of Sphinx Convolvuli (Entom. vi. 545).—I think the answer to Mr. Mond's query in the last number of the 'Entomologist' about the food-plant of the larva of Sphinx Convolvuli is an unsatisfactory one, and as but little is known about this caterpillar in England I send a translation of Dr. Boisduval's description of it. He says:—"This larva varies greatly, not only in the markings, but also in the ground colour, which is sometimes of a bright green, sometimes of a

dark green, very often of a light brown, and sometimes of a dark brown. Among the green individuals we have observed three varieties. The first is of a bright green, with two rows of black spots along the back, and seven oblique white lateral stripes, and the horn is fawn-coloured on the upper side and black beneath. The second variety is of a dark green, with two black lines along the back, and seven oblique stripes of the same colour on the sides. The third variety is green, with six longitudinal rows of black or brown spots, and the head and horn ferruginous. The brown individuals are equally variable. The first variety, which is rather common, is of an olive-brown, with two black lines along the back, and seven oblique stripes of the same colour on the sides; the head and the 1st segment of the body are of a ferruginous-red; we may also remark that there is upon the sides of each segment a large white spot. In the second variety the three anterior segments have whitish longitudinal lines. The third variety is entirely brown, with the back darker than the sides. Besides these six varieties intermediate ones are not rare, and sometimes almost the whole of the body of this larva is intersected transversely by a multitude of very fine black lines. This caterpillar lives upon various species of Convolvulus, but particularly upon the Arvensis; it is rarely found upon the Sepium; it is sometimes found upon plants of Convolvulus tricolor and Ipomea coccinea, which are cultivated in gardens. To obtain this caterpillar it should be looked for in July in fields where Convolvulus arvensis grows among plantations of potatoes or beans, where it is rather common, and from its large size is easily discovered. The perfect insect is disclosed in September, but a part of the pupæ remain through the winter, and the moths appear in May and June of the following year." My friend M. Constant says that Sphinx Convolvuli is commoner at Autun than S. Ligustri, and adds that the presence of the larvæ in potato-fields is easily detected by the excrements lying round the plants of Convolvulus arvensis; and upon lifting them up the larvæ will be found beneath them. Some years ago one was brought to me with some larvæ of Atropos, and another which was found upon a garden-hedge which was overgrown with Convolvulus sepium, upon which the larva had doubtless been feeding.—*Henry Doubleday; Epping, Nov.* 14, 1873.

Dianthœcia compta (Entom. vi. 518, 546).—Haworth erroneously considered Dianthœcia conspersa to be the Compta of continental authors, and he was the first person who introduced the name into our list. Mr. Gregson asks if the true Compta is really British. I may say in reply that I have never seen a British specimen; examples probably existed in some of the old cabinets, as the dealers of that time were not more scrupulous than some of those of the present day, and many continental and also American specimens were sold as British. Nearly thirty years ago the late Richard Weaver bred a number of specimens of D. conspersa from larvæ which he found in Ireland on Silene maritima; several of these strongly resembled Compta. I sent one or two of them to my friend M. Guenée, who said that at first sight they might easily be mistaken for this species. Mr. Meek did not show me one of his Irish captures, and therefore I cannot say to which species they belonged. I have seen some reputed British specimens of Compta (two of which were sent to me for examination by the Rev. Henry Burney), but they were most certainly continental specimens, which had been relaxed and re-set. The larva of Compta is very different from that of Conspersa, and feeds upon various species of pinks (Dianthus): it is common on the garden pinks in the neighbourhood of Paris. I do not think it has ever been found upon any species of Silene, and I am not aware that any of the Dianthi grow upon the coast of Ireland. Having had the opportunity of examining a considerable number of specimens of some of our rarer Lepidoptera which had been sold as British, nearly all of which proved to be re-set continental specimens, I unhesitatingly say that I believe a very large majority of the specimens of Daplidice, Lathonia, Leucophæa, Albipuncta, Nigrocincta, Purpuraria, and many others, which now exist in collections of professedly British Lepidoptera, are in reality continental: they can be purchased at from threepence to sixpence each; and so long as collectors will give as many pounds for them as they cost pence, I am afraid there is no probability of a stop being put to these disreputable proceedings. It is now almost impossible to say what insects are really British, as living pupæ of various species are regularly obtained from France and Germany; and the fact of an insect being exhibited alive is

no proof of its British origin,—living butterflies and moths can be easily obtained from the Continent by post. All interest in collections of Lepidoptera as British is destroyed by the introduction of these continental specimens, which often differ considerably from ours.—*Henry Doubleday; Epping, November* 15, 1873.

Chœrocampa Celerio at Southport.—I beg to inform you that on the 12th September a specimen of C. Celerio was brought to me by a gardener, who found it at rest upon an outhouse early in the morning. It is a fine specimen, and was apparently just out of the chrysalis, as the silvery lines on the wings were very bright and distinct.—*Hartley Burton; The Warren, Birkdale, Southport.*

Chœrocampa Celerio at Bolton.—On the 7th of October a fine male Celerio was taken at Bolton, and is now in my possession.—*J. B. Hodgkinson.*

Yellow Variety of Zygæna Filipendulæ.—In answer to Mr. Forbes, I have just seen a yellow variety of Zygæna Filipendulæ, taken this year, near Finchley, by a collector living here.—*C. G. Thomas; The Grove, Highgate, N., October* 15, 1873.

Chesias spartiata.—I captured on the 27th September a specimen of Chesias spartiata, which was attracted by the lamp on the dining-room table. I mention the circumstance, as in your 'British Moths' you merely name Glasgow as a Scottish locality.—*W. B. Simson; Marler House, by Blairgowrie, October* 8, 1873.

Occurrence of Xanthia aurago at Llangollen.—Whilst staying at Llangollen recently I sugared in various localities, "prospecting" around the district, and on September 25th I took the first Xanthia aurago I ever saw alive, at sugar, which I had spurted on to the leaves of birch-trees, in the celebrated birch wood, where S. Scoliæformis is taken. I had sugared about a mile through this wood, but only took one specimen. I am not aware of any capture of X. aurago on this side of England or Wales before. Llangollen is forty miles south south-west from here, and its nearest registered capture before is York, which is about twice that distance east of us.—*C. S. Gregson; Rose Bank, Fletcher Grove, Liverpool, October* 5, 1873.

Dasypolia Templi attracted by Gas-lamps.—After leaving

church last evening a friend and I took a walk, and, as is my usual practice, I cast a glance up at the lamps, and espied a specimen of D. Templi inside a lamp, which I secured by climbing; then another turned up, and the same *modus operandi* had to be gone through, which was by no means an easy one, for one suffering through rheumatism. Finally, an outside lamp seemed to be worth exploring: my friend let me stand on his shoulders, and I could see more than we had pins for, so we set off to borrow some, and again I mounted the lamp; by sheer necessity I managed to get astride of the cross-bar to keep both hands at liberty, and there I pinned five specimens and lost two, making seven in all in one lamp. —*J. B. Hodgkinson;* 15, *Spring Bank, Preston, October* 20, 1873.

Cucullia Gnaphalii and C. Asteris larvæ in Kent.—I had the pleasure of taking the larva of C. Gnaphalii on the 10th of August, near Seal, Kent; and again on the 17th and 24th. Also a good number of C. Asteris larvæ on the 4th, 10th, 17th, 24th, and 25th, at the same place, and at Darenth Wood.—*James Bryant.*

Sesia Allantiformis near Greenhithe.—It may be interesting to the readers of the 'Entomologist' to know that I was fortunate enough to capture a male specimen of Sesia Allantiformis of Newman in the month of July, 1872, near to Greenhithe Station. It was exhibited at the monthly meeting on the 6th of November, and at the annual exhibition on the 13th of November, 1873, of the Haggerston Entomological Society.—*Id.*

Hyponomeuta padellus.—The enclosed moths have just come out of their cocoon, and, as I can find no description of them in your 'British Moths,' I shall feel very much obliged if you will inform me what they are. I have just found its caterpillar in a web: it feeds on hawthorn.—*J. Benson; Hawnby, near Helmsley.*

[I have some doubt as to the name of this common and most destructive insect. Haworth calls it Erminea Padi, considering that the same species infests both the apple and the hawthorn; but he describes five varieties. Mr. Stainton, our only other English author who has described these insects, also considers the apple ermine and hawthorn ermine to constitute but a single species, which he calls

Hyponomeuta padellus, and says "On apple, hawthorn, &c.," 'Manual,' vol. ii. p. 308. I believe the apple-feeder is the insect described by Guenée as Malinellus. The reason why these insects are not described in my 'British Moths' is that they belong to the section called Micro-Lepidoptera, whereas I have only described the Macro-Lepidoptera. — *Edward Newman.*]

Epunda lutulenta at West Wickham.—I have lately taken two specimens of Epunda lutulenta, both males, at sugar, in our garden here (West Wickham): one on the 15th, the other on the 22nd of September. This is, I think, a new locality for this species.—*W. A. Forbes; West Wickham, Kent, October* 4, 1873.

Description of the Larva of Depressaria Capreolella, Zell. —Length under quarter of an inch; form rather slender; colour bright yellowish grass-green, slightly irrorated above. Head glabrous, green; eyelets pronounced; lips dark. Corslet bright green, bordered across the top. Dorsal and subdorsal regions faintly defined; the upper papillæ, two on each segment, small, the lower ones larger, and the spiracles plainly indicated. Spines few and small, except on the anal segment, on which there are a few strong spines. General appearance slender, cylindrical, bright green, irrorate. First discovered by Mr. Hodgkinson and myself, on the Lindal New Road, from Grange, in Cartmell, to Witherslack, feeding on the leaves of wild carrot (D. Carota), July 29, 1871. Since taken by both of us in distant localities,—Lincolnshire, Westmoreland, Cheshire, and Denbighshire.—*C. S. Gregson; Rose Bank, Fletcher Grove, Liverpool, October* 15, 1873.

Note on Coleophora albicans.—In August, 1870, I collected a lot of the young larvæ of Eupithecia succentureata, feeding upon Artemisia vulgaris growing around New Brighton sandhills, and upon the flowers of this plant I observed plenty of young larvæ of C. albicans just forming their curious cases, so brought a bag-full of plants home, and planted them near my bee-house on a waste place, where they could grow uninterfered with. In September, 1871, I observed a few cases of the moth doing well; and in September, 1872, there were plenty of cases, but I failed to see a single moth in any year yet. Now, in October, 1873, there is no end of fine fat cases

of C. albicans, in which are full-fed larvæ, some on the mugwort flowers and seed, and others sticking here and there about on anything; these latter having evidently taken up winter-quarters, happy in a new locality.—*C. S. Gregson.*

A New British Coleophora.—During the past winter I have taken rather freely the cases and larvæ of a new Coleophora from the seed-heads of Juncus maritimus. The larvæ form their cases in the seed capsules, and are difficult to discover, unless these are rubbed off the plant over paper, when those tenanted by larvæ will be seen walking away. The imago emerges in June and July, and resembles very closely C. Cæspititiella, but appears to be less glossy and somewhat smaller, with shorter, broader wings. It is more abundant in our salt marshes than Cæspititiella, and will no doubt be found mixed with that species in most collections. It passes the winter and spring in the larva state. Mr. Stainton has seen the larva and imago, and has pronounced it new.—*Henry Moncreaff;* 145, *High Street, Portswood.*

[I would propose this new species of Coleophora should be called *C. maritimella* of Moncreaff.—*Edward Newman.*]

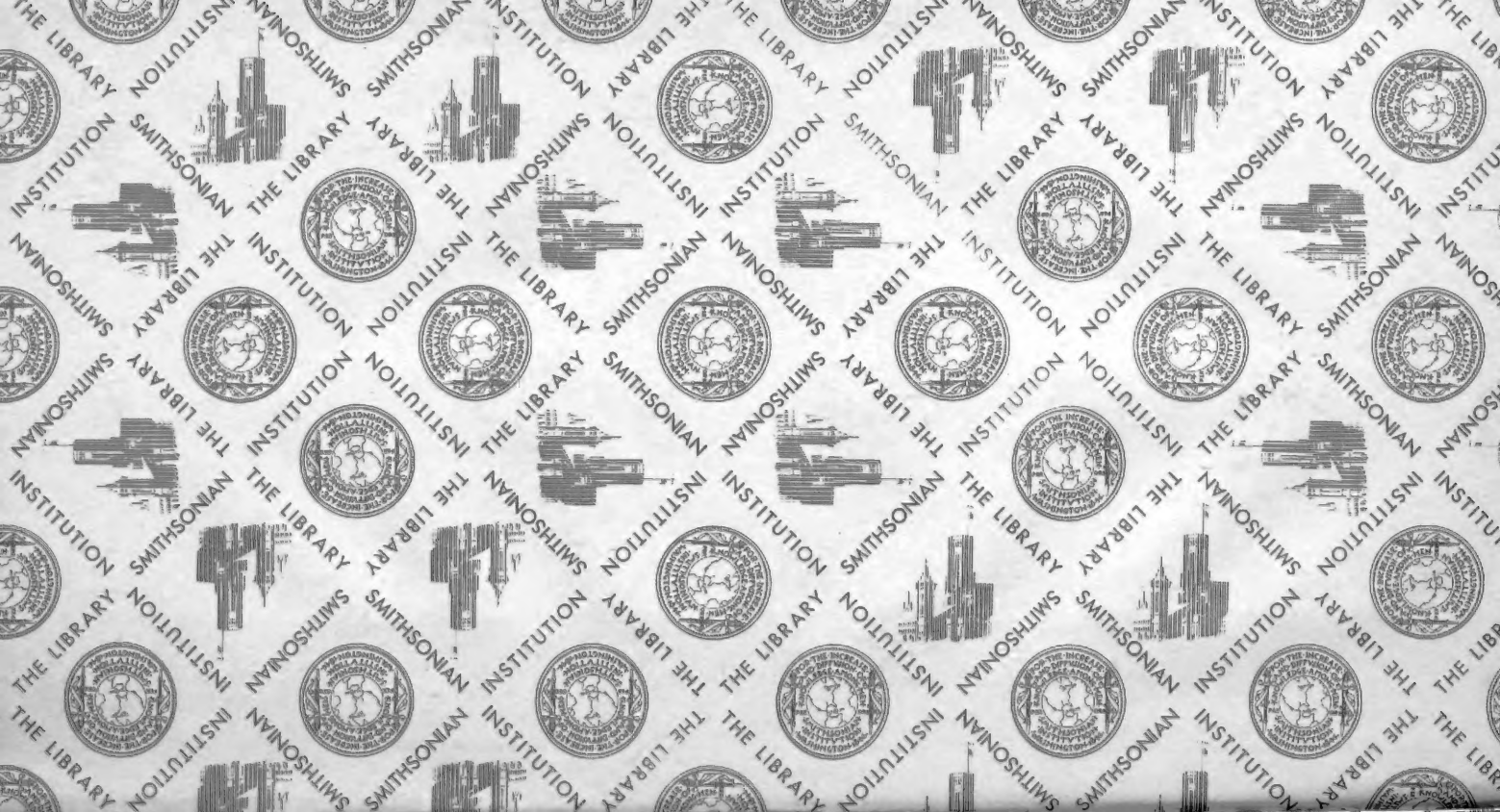
Curious Instinct in Bees.—I have heard to-day of a curious feature in the instinct of bees. In and around San Franscisco there were no bees. Several swarms were imported from this country: they in their usual manner stored up honey, &c., for the winter. Of course no winter came; and from that time the bees gave up storing honey, and simply devoted their energies to the propagation of their species, and procuring food for themselves. Is this a known circumstance in connection with these interesting creatures? [*Rev.*] *G. C. B. Madden; The Vicarage, Armitage Bridge, Huddersfield, Yorkshire, November* 4, 1873.

Living Insect in African Gum.—We hasten to send you an insect found alive this morning in a piece of gum in which it is embedded. It is common enough to find "flies in amber" and other gums, but never to our knowledge have they been found *alive.* One of our assistants seeing an insect in a nodule of Sierra Leone copal, broke it, and perceiving it to move its head brought it to us for inspection. So far as we can see it appears to be the larva of a beetle nearly half an inch long, with some of its legs and its head free; it has been

very lively, and has moved its mandibles continually. We have sent it to you in a box, but fear that it will not reach you alive; but to place the fact of its being so *now* beyond dispute, we have shown it to a number of scientific and other credible witnesses, who can certify the fact. You will perceive that it is in a nodule of gum without flaw, so that it will furnish an interesting enquiry how the insect can have existed as it has done for several months at the least. We have no information respecting the age of gums, but since the insect was first entrapped in the viscous gum it must have required many months before it could have hardened as we now find it. Doubtless the readers of the 'Entomologist' will be interested in this case.—*Mander Brothers; Wolverhampton, October* 29, 1873.

[The insect did not reach me alive, having been delayed in transit, owing to an unfortunate misdirection of the packet; nevertheless there is no reason to doubt the fact of its having been alive when forwarded. It has now been carefully removed, and exhibits all the characteristics of having recently possessed life. If an insect is enclosed alive in gum, in a cavity which is considerably larger than its body, which has been the case in this instance, the length of time it will live will depend upon various circumstances. I would suggest that the insect crawled into a miniature cavern, and that the entrance closed afterwards, for the gum becomes soft at a comparatively low temperature, and I find by experiment the present specimen does so at a temperature below 140° Fahr. Of course if an insect gets entangled in a gum or resin that is viscous, its life is soon over. This has not been the case in the present instance: the limbs were free from any viscous adhesions; therefore the insect must have entered the cavity *sponte sua*. The finding an insect alive in such a situation is extremely interesting, but it must on no account be considered analogous to the phenomenon of "flies in amber:" the gums imported from the coast of Africa are recent exudations, and are daily in the course of formation. Knowing something of the nature of these African gums, for there are many, and very variable as to the temperature at which they soften, I must decline expressing any opinion as to the period this insect had passed in confinement.—*Edward Newman.*]

EDWARD NEWMAN, PRINTER, DEVONSHIRE STREET, BISHOPSGATE.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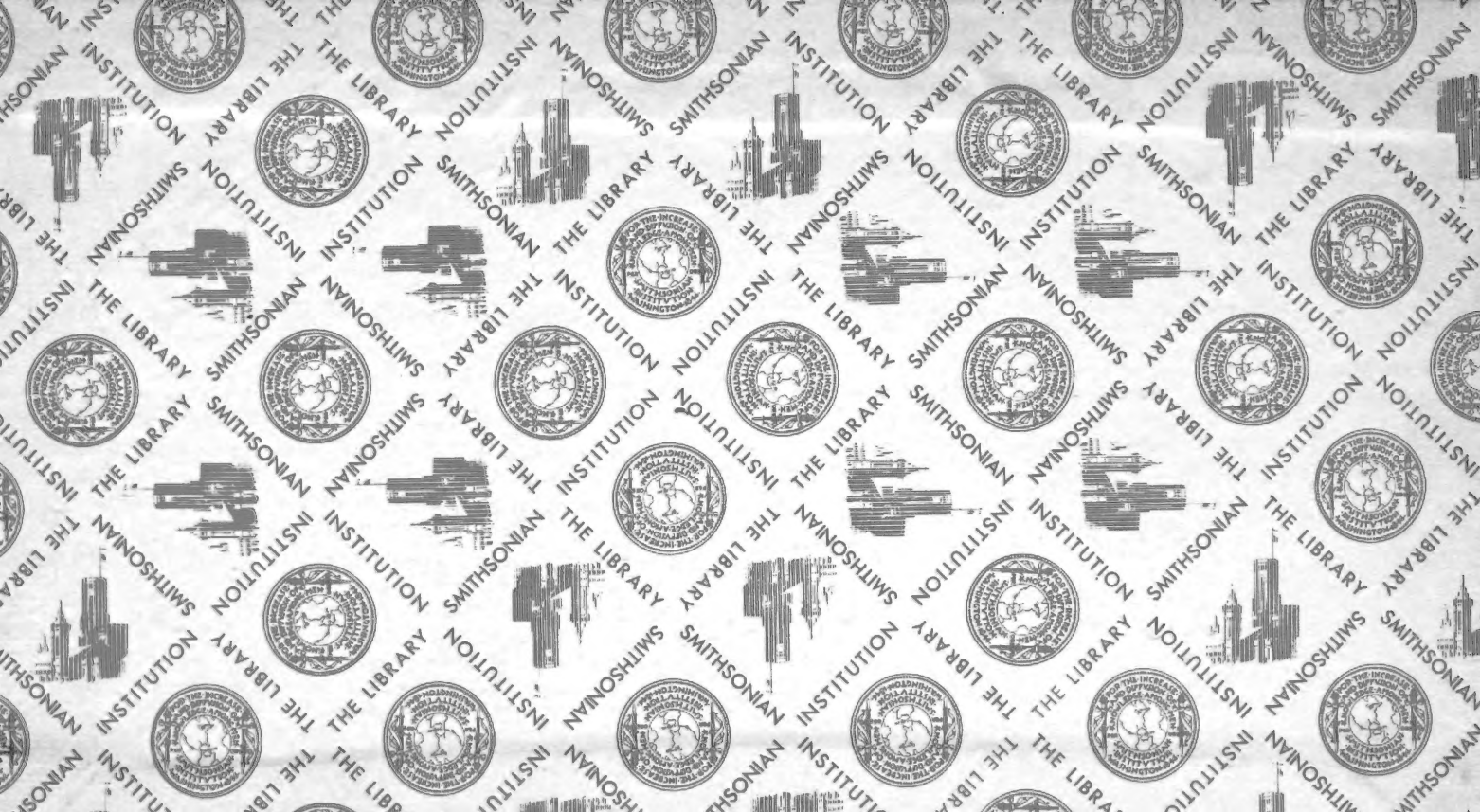
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