

THE
YOUNG NATURALIST :

AN ILLUSTRATED MAGAZINE

ON

NATURAL HISTORY

CONDUCTED BY

JOHN E. ROBSON, & S. L. MOSLEY,

HARTLEPOOL.

HUDDERSFIELD.

VOL. III.

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TO

MRS. HUTCHINSON,

GRANTSFIELD, LEOMINSTER,

Whose skill in rearing Lepidoptera from the earliest stages is unrivalled,
and whose liberality with specimens, even of rare insects, is worthy
of emulation.

THE THIRD VOLUME OF THE
YOUNG NATURALIST

IS MOST RESPECTFULLY DEDICATED.



P. pilosaria



A. ascularia



N. zonaria



C. brumata



N. hispidaria.



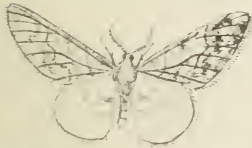
C. boreata.

WINTER MOTHS.

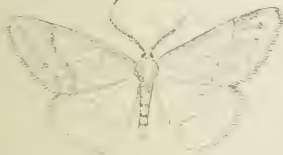




H. rupicaparia.



H. leucophaeria

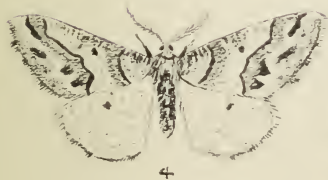


H. aurantiaria

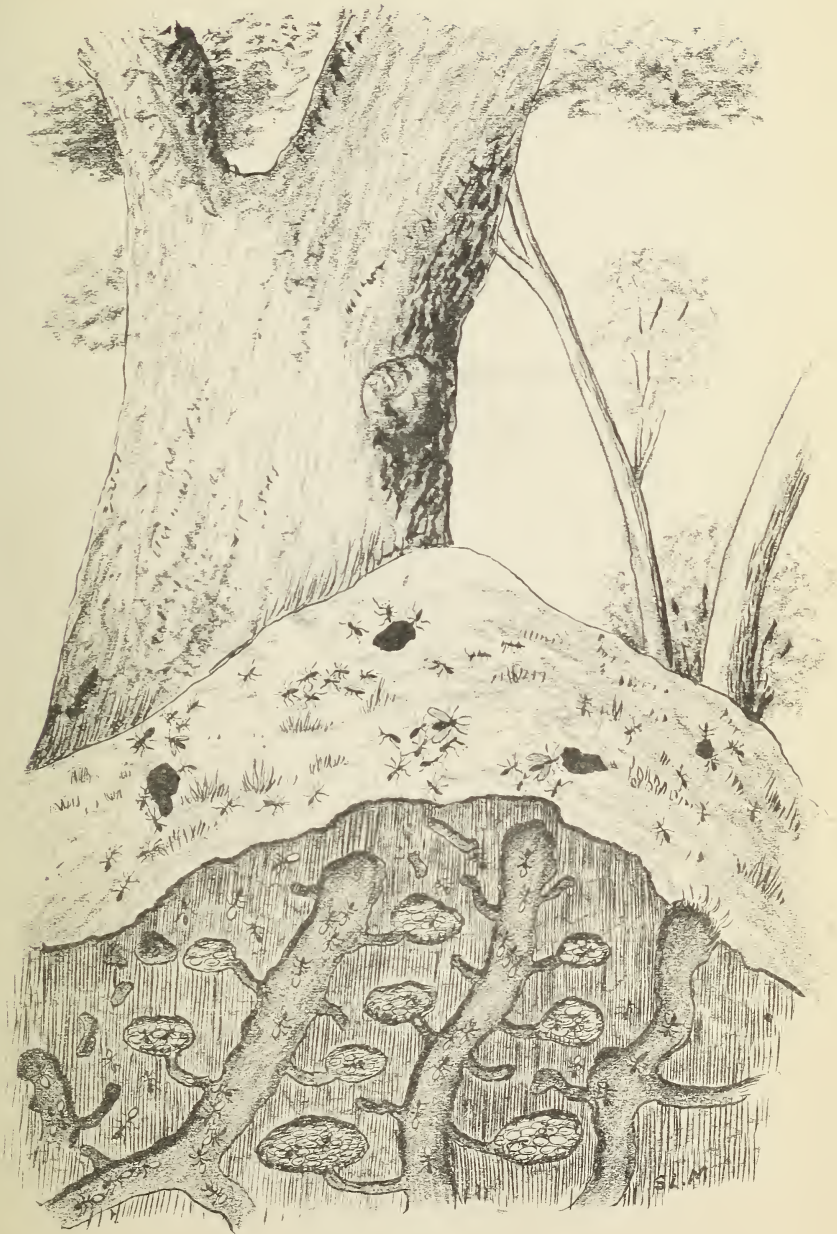


H. progemmaria



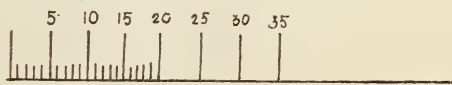
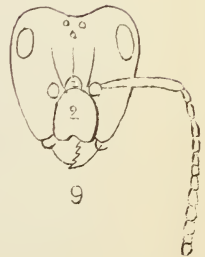
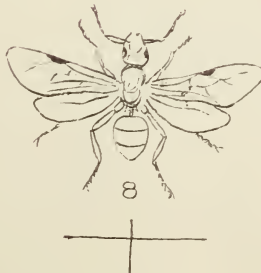
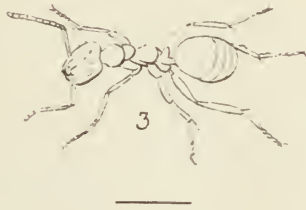
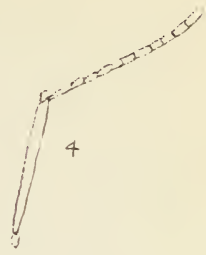
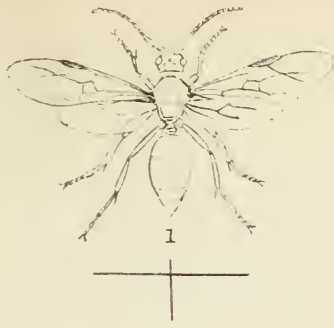






SECTION OF NEST OF FORMICA RUFA.





ANTS.

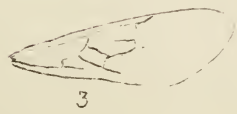
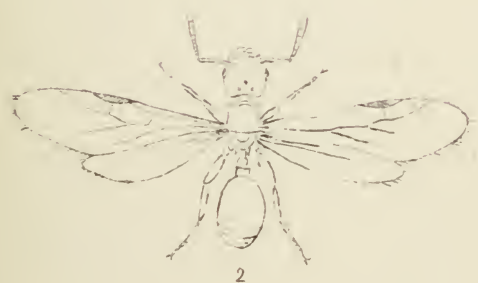
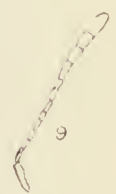
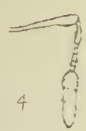
Genus *Lornica*.





VARIETIES OF DOMESTIC PIGEONS.

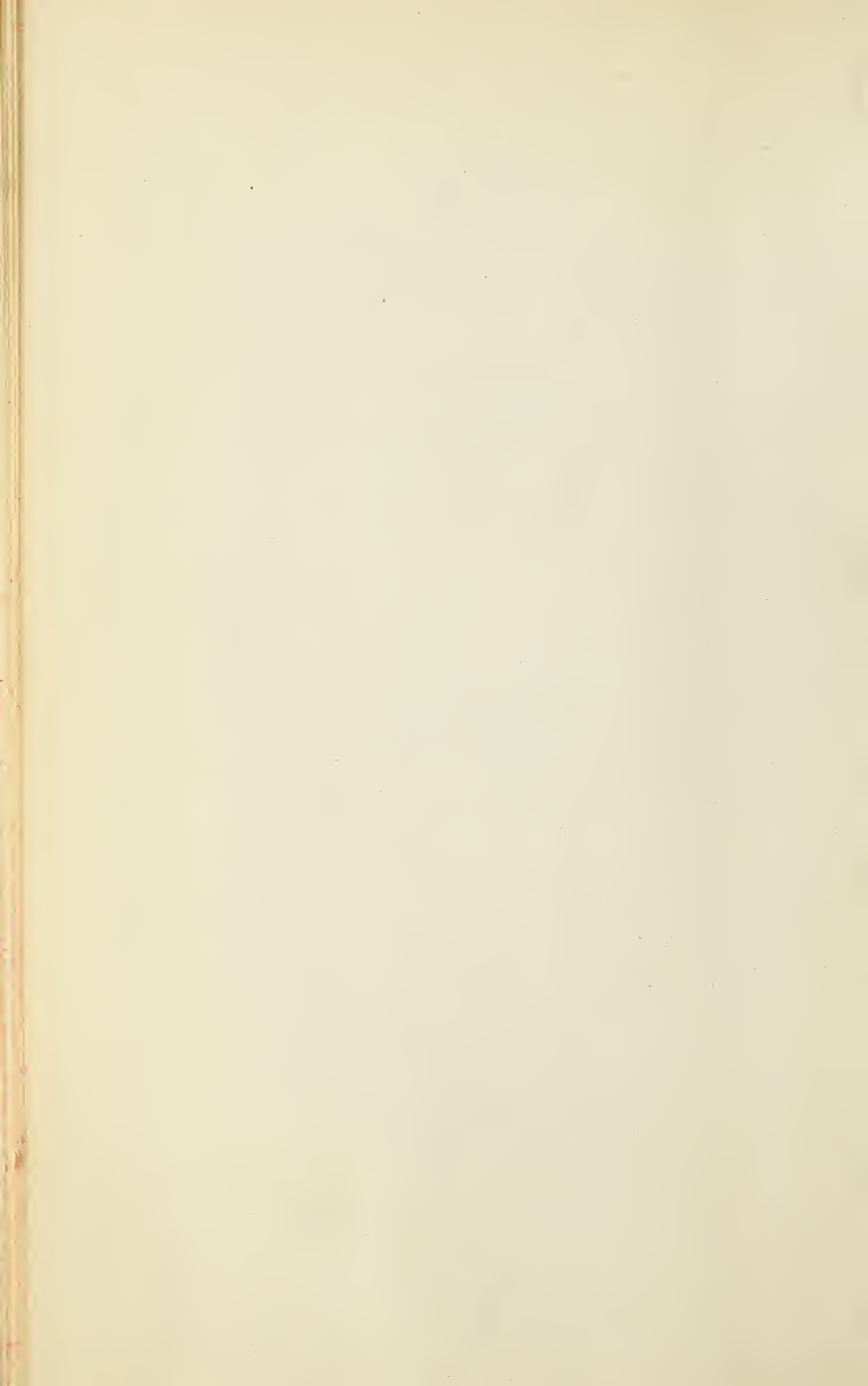




ANTS.

Genus *Myrmica*.

S. L. Mosley, del.





1



2



3



4



5



6



7



8

HELIX MEMORABILIS.





S. Convolvuli.

From a drawing by Mr G. C. Bignell.

S. L. M. del.





S. Convolvuli



S. Pinastri





D. lineata

S.L.M. del.





D. Euphorbiae.



D. Galii.



The YOUNG NATURALIST.

A Penny Weekly Magazine of Natural History.

No. 104.

NOVEMBER 5TH, 1881.

VOL. 3.

TO OUR READERS.

A THIRD time we greet our readers at the commencement of a new volume. Time seems to have sped very quickly since the *Young Naturalist* was commenced. During the period we have had many discouragements and many encouragements. That the latter have predominated may be taken for granted, or it is probable this number, the beginning of a third volume, would never have made its appearance. We trust it may be so in all things with all of us.

We have, to-day, a few unconnected remarks to make on various subjects, and without further preface we take them up in turn.

EXCHANGE CLUB.—Several boxes have already been sent in, and we would be glad at as early a date as possible to receive others. To intending members we would say that the conditions of membership are that each person sends what specimens he can spare to Mr. John E. Robson, Bellerby Terrace, West Hartlepool, with a marked list of desiderata, and stamped addressed label for the return of the box. All specimens so received are then divided among the members, as far as possible

in proportion to the specimens sent in, and in accordance with their desiderata. Last year several insects were sent for distribution without return, and we were therefore able to send to those who sent for exchange better parcels than they would otherwise have had. This year we also have several species for distribution for which a return is not desired. In sending specimens they must be in good condition and well set, and the commonest species, except where very variable, are not wanted. We have a few bird's eggs and a few land and fresh water shells, which any one can have on application. We will publish a list of them at an early date.

MAGAZINE CLUB.—In the first number of Vol. ii. suggestions for a Magazine Club were made. Though the idea met with approval, there were not enough inclined to join it to warrant its commencement, and it was abandoned with regret. Some of our subscribers have written us again on the subject, but though we are very willing to assist we scarcely see that it is more likely to be successful this year than last. We would suggest, however, that if a few members, each taking in a different magazine, would arrange to exchange

with each other for perusal and return, even a very few could give advantage to each other. If any one inclined so to exchange their papers will communicate with us we will endeavour to arrange the matter for them. The magazines would have to be sent round to all who join, and go back to the owner at the end of the circuit. The cost would be nothing beyond the postage, say 3d. per month if there were six, 6d. per month if there were twelve different magazines.

BRITISH MOTHS.—We will be obliged to our readers if they will send us a list of the hawk moths and clear wings that occur in their respective localities, with notes on their abundance or scarcity, their regularity or irregularity of appearance, and any other point that may be worth naming. These lists will be of much more value to us as they are more numerous and complete. We would like every one of our readers to respond to this request. Our object, of course, is to trace the range in Britain of the various species, and to what extent they occur regularly. All information so supplied shall be properly acknowledged when it is made use of.

PARASITES.—During the past year we have not had nearly so many ichneumonid larvæ or pupæ sent as we had the year before. This is partly owing to us not having kept the matter so prominently before our readers. If, however, you have any larvæ or pupæ now that have either ichneumons or dipterous parasites in them; or if you have the parasites themselves, either in

pupa or emerged, and set or unset, we shall be glad to receive them if you do not want them yourselves, and to make you the best return in our power in whatever branch your studies lie. In sending such, let us know, in all cases, the name of the host from which they have emerged.

BACK NUMBERS.—After making up sets of Volume ii. we have a quantity of odd numbers left. These we will be glad to send in parcels post free to any address for distribution. Our friends will aid us very considerably by doing this for us. Those wanting back numbers to complete sets will please apply early, and also for odd plates.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, Bellerby Terrace, West Hartlepool; or to S. L. MOSLEY, Beaumont Park, Huddersfield.

NOTES, CAPTURES, &c.

RARE BIRDS AT DERBY.—A specimen of the Gray Phalarope has just been shot at Little Eaton, near Derby, and we have a splendid Rough-legged Buzzard and a Honey Buzzard that were shot here in the spring.—G. PULLEN, Derby.

S. CONVOLVULI AT DERBY.—I had a specimen female of *S. convolvuli* brought to me alive on September 4th, which I have put in the museum here.—G. PULLEN, Derby.

MIGRATION OF BIRDS ON THE EAST COAST.—On Monday, 17th October, thousands of larks were seen coming off the sea; they continued coming all day on the 20th. Large numbers of hooded crows, rooks, starlings, and wagtails were seen coming over the sea. A great many golden crested wrens have arrived, and may be seen in almost any hedgerow.—F. KERRY, Harwich.

EFFECTS OF FOOD IN PRODUCING VARIATION.

Various theories are put forth from time to time in the endeavour to account for the variation of colour or markings on the wings of Lepidoptera. One person feeds his larvæ always on the same food and produces varieties, he jumps to the conclusion that the result is owing to the uniformity of diet. Another, changes the food continually and procures varieties. He concludes that the constant change has made the difference. Both these cases are instances of a conclusion being arrived at without the premises being sufficient. The very fact that such opposite opinions are held is a proof of the insufficiency of the evidence. Mr. Gregson is one of the most successful variety breeders in the case *A. grossulariaria*, and it is said that he accounts for his success because he continually introduces a new strain into his colony of the insect. This would seem to be the most unlikely way of obtaining a succession of varieties, for the introduction of "new blood" from the normal form of the species would certainly tend to bring back the race to its former position, and the change that had been made would be lost. Some species are remarkably constant to one type, yet it often happens in such a species that a well marked variety occurs, either locally, or generally. On the other hand, others are variable to a very great extent, e.g. *grossulariaria* and *caja*; yet neither of these, nor any other very variable species has succeeded in producing a permanent well marked form. There are certain tendencies in variation, of which scarcely enough notice has been taken. Reds have a tendency to vary to yellow; yellows have a tendency to become white; other colours vary but in intensity as a rule, becoming lighter or darker, but not changing in hue. All the turnets produce varieties with yellow spots instead of red; and some European species which are banded with red, produce varieties

with yellow bands. This is like the red-banded Clear wings, which sometimes produce varieties with yellow bands. The Jersey Tiger *C. hera*, has a well known variety with yellow hind wings. Our more abundant Wood Tiger has red markings on the body of the female, while the yellow of the wings is changed to white in the variety *Hospita*. In the Common Tiger the tendency of the red to change to yellow is often very marked. If we go abroad the illustrations might be greatly increased in number. On the other hand, greens never vary to blue, nor yet to yellow, nor do these hues change in other directions. Next to these changes, the more important variations are produced by a greater or less preponderance of some colour already included in the hues of the normal form. Thus the var. *Combusta* is produced by the brown shade spreading over a larger portion or the whole of the wing. *Piceata* and many other named forms are from the same cause—the dark scales predominating. The reverse is the case in *Albinos*, or specimens with a tendency in that direction; the white or pale scales are more numerous. Melanism is perhaps the reverse of this, but sometimes black varieties appear in insects that have no black in their colouration. *Polydon*, for instance, has at best dark brown scales—none truly black—yet very black specimens are not unfrequent. These are but crude thoughts, more to raise a discussion than settle any point; but if food has such varied results in certain cases, why not in other cases, and why not an uniform effect. Is it not more probable that there are certain laws affecting variation that might be discovered by careful study and examination of a large number of specimens and species. It seems very doubtful whether food has any effect on colour; and we cannot help thinking of Gulliver's spiders, and how their keepers managed to have spider's webs of any colour they desired.

CONTRIBUTIONS TOWARDS THE FAUNA OF PLYMOUTH.

By MR. G. C. BIGNELL, M.E.S.

(Reprinted by permission of the author from the Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society, 1881.)

HYMENOPTERA, ICHNEUMONIDÆ.

Arranged according to the Rev. T. A. Marshall's Catalogue, published by the Entomological Society of London, 1872.

PART I.

(Continued from Vol. 2, page 363.)

LIMNERIA.—

albida. Bred from *Gonepteryx rhamni*

difformis. Bred 8th May, 1879.

fenestralis. Bred from *Botys verticalis*.

majalis. Bred from an old Oak-Gall
(*Cynips kollari*.)

mæsta. Bred from *Hybernia peggemmaria*
and *defoliaria*.

obscurælla. Bred from *Hemithea thymiaria*.

unicincta. Bred from *Eupethecia rectangulata*, and *lomasipilis marginata*.

lugubrina. This is a new British species which I bred from *Ecophora flavimaculælla*, feeding on the flowers of the wild carrot growing on the cliffs under the citadel (1879).

interrupta (Holingr.) New British species captured 15th May, 1880.

vulgaris. New British species, captured.

clausa. New British species; bred from *Hybernia peggemmaria*

carbonaria. This is a new British species which I bred from *Cidaria pyratiata*.

MESOCHORUS.—This genus appear to be hyperparasites.

gracilentus. This is a new British species which I bred from *Gonepteryx rhamni* larva, and I believe it to be a hyperparasite on *Limneria albida*.

sericans. Bred from *Exorista vulgaris* pupa (a dipteran), out of *Abraaxas grossulariata* larva.

fulgurans. Bred from a *Casinaria vidua* pupa, out of *Abraaxas grossulariata* larva.

semirufus. Bred from *Eupithecia castigata*.

sylvarum. Bred from *Apanteles* cocoons out of *Vanessa atalanta* larva.

olerum. Bred from *Casinaria vidua* pupa, out of *Abraaxas grossulariata* larva.

EXETASTES.—

fornicator.

osculatorius. Bred from *Mamestra brassicæ*.

calobatus.

albitursus.

BANCHUS.—

pictus. Bred from *Selenia illunaria*, 15th March. 1881.

falcator.

MESOLEPTUS.—

testaceus. Bred from *Eupethecia castigata*.

ECLYTUS.—

omatus. Bred from *Tortrix heparana*.

MESOLEIUS.—

hamulus. Maker, 5th June, 1880.

(To be continued.)

RANDOM NOTES ON BRITISH REPTILES.

By J. OSBORNE.

A Toad in Stone.

The favourable comments of Mr. Gregson, on my paper on The Mole, have encouraged me to pen a few notes on such of the British Reptiles, as I have had opportunities of observing; and I hope I will not lose all character for speaking the truth, when I begin by saying that I have seen a toad that was dug out of solid rock. I know that many hold the tales told of frogs and toads imprisoned for centuries, or even longer periods, in solid stone, or in the hearts of trees, to be mere fictions. Experiments have been made by scientific men that prove conclusively enough the impossibility of such things, if they were not almost self-

contradictory. But all the evidence and all the experiments in the world cannot prove to me that what I have seen was untrue. Yet I know that the first statement I have to make about it, will be received with a smile, as much as to say, "Oh! of course not—that ends the matter." The statement is, that I was not present when it was exhumed. But I had better tell the story from the beginning. The place was a limestone quarry, where stone of a loose friable nature, was obtained; not solid enough for building purposes, it was being burned for lime on the spot. On one occasion, as the men were working in the quarry, the exposed surface of the rock being between twenty and thirty feet from the surface, they came upon a toad securely imbedded in the stone. Every has heard of toads in stone, and the men were at once eager and interested. The proprietor was present, and was sent for to the spot, and though, of course, the hole was broken open, the greater portion of it remained intact. This was carefully got out, and though from the friable nature of the stone, it was broken into two or three pieces, it was easily put together to show the cavity. The proprietor brought all away, and he favoured me with a visit before he took it home. I examined it very carefully. It was not more than one-fourth so large as a full-grown toad. By this I mean that it was about half as long and half as broad. The skin was much paler in hue, though in other respects it resembled that of the common toad, but it was quite dry. There was no exudation even when touched, but the skin seemed to be slightly inflated and then to collapse again. It made no attempt to move, except when placed in an awkward position, when it worked itself, more by slight twisting and writhing, than by any natural movement, to its normal position. The eyes were of the usual colour, and were very bright, but I could not satisfy

myself that it had any sense of vision. In the shade, or the full glare of the sun, or with a light held close to its eyes, it was quite undisturbed, and did not appear to notice any difference. On examining its mouth I was surprised to find that there was no opening. The skin of the lips appeared to have grown together. There was a suture or line, where the opening should have been, but all were quite close. The nostrils, however, were open, and the animal breathed at intervals. I do not know of anything else worth naming. In all other respects it was a toad. Small and rather cadaverous looking, but an unmistakable toad. It was exhibited in a shop window in the town for some time, but its change of habitation did not prove beneficial to its health, and spasmodic movement of its limbs and jaws set in; it appeared to breathe with difficulty, and as it inhaled, its jaws were twitched as if it were struggling to open its mouth. I watched it for many an hour during the last fortnight of its life, but I was not present when it died. In its final struggles it had ruptured the thin skin that had formed over the opening of the mouth, and this could now be noticed hanging in small shreds from either jaw. I would have liked to open it, to examine its stomach, but it was sent to some one in connection with some of the museums, and I never could learn anything further about it. Some, I suppose, will discredit the whole account, others will think I have been deceived. Some few, perhaps, will believe. I, at any rate, have no doubt, whatever, that the toad I speak of was dug out of the solid rock, more than twenty feet below the surface. How it got there, and how it lived while there, I can form no idea. If it got any nutriment at all it must have been by absorption through the skin. Rain water would percolate freely enough through the stone, and might carry with it some slight

animal or vegetable matter. But I need not make any suggestions. All these ideas have been thrown out before, and the matter is as much a puzzle as ever.

Newts Growing Smaller.

We had an aquarium when I was a boy at home. It was of considerable size, perhaps four feet long by two feet wide, with water a foot deep. The rock work in the middle was raised above the water, and a number of ferns, &c., grew on the top. Into this we introduced two Newts. I did not then know there was more than one species, and I expected these, which no doubt were the Smooth Newt (*Lophinus punctatus*), to be the Crested Newt (*Triton cristatus*) in an immature state. They were placed among the ferns with the idea they would make their way into the water, but they did not do so, and after a few days they had disappeared. Nothing more was seen of them for a long time. I regret I cannot say how long, but I should think more than one year, perhaps more than two. Some new ferns were being planted on the top, and a piece of the stone was removed in the operation. There, underneath it, in a cavity between it and the slate on which it was built, were the two missing newts. But so changed. They were unmistakably smaller—shorter as well as less in bulk, and they had a shrunken, shrivelled, starved look about them, the skin appearing to be

“A world too wide for their shrunken”—

forms. From this time food was placed at intervals within reach of these little creatures. Generally they took it, but I do not think we ever saw them do so. Now that we knew where they were, they were often turned out. If they were put into the water they soon scrambled back; and still they shrunken and shrunken till their death. During all the time they were observed, they seemed to be in a state of semi-torpority, such as I have since seen them in during winter and spring when I have found

them under stones. They were rather stiff and very slow in their movements, which they seemed to make unwillingly, and when put in the water were generally a short time underneath before they seemed to make an effort to get out.

I have placed these two notes in succession as possibly having some bearing the one on the other.

The Sand Lizard growing a New Tail.

I have often had this pretty little lizard as a home pet. It is a great acquisition to a window fernery, and does not seem to do any harm to the ferns. Like the coster who had “finished jumping on his mother,” it “loves to lie a-basking in the sun,” and will soon become so tame as to take a fly from your fingers. But it was not to speak of its habits in this way that I refer to it, but to its power of growing a new tail. When at large it is a very active creature, and not easy to capture. You have to be very quiet and very quick if you wish to obtain one. Should you seize it by the tail, it runs on as if nothing had happened, leaving the tail in your hands. The tail so cast off will writhe and “squirm” for a considerable time. If the day be warm it will continue to move for from twenty minutes to half-an-hour. Should you capture the lizard as well as the cast-off tail you will find the little creature is no worse or very little for the member it has lost. In a day or two a scar will form over the joint: this gradually enlarges, becomes pointed, and is soon like a very short, stumpy tail. It continues to grow, and before the summer is over the animal has acquired a tail as perfect as before. So far as I could observe, the entire tail commenced to grow at once, not one joint at a time, but altogether, lengthening out by degrees. It seems very marvellous that it should be able to produce jointed bones in this way. Whether any other limb could be reproduced I am not able to say, but should be glad to learn.

THE AGRICULTURAL ANT.

(Atta malefaciens.)

There is a remarkable ant, a native of Texas, which has been described as follows by Dr. Lincecum:—

"The species which I have named "Agricultural," is a large brownish ant. It dwells in what may be termed paved cities, and like a diligent, thrifty, provident farmer, makes suitable and timely arrangements for the changing seasons. It is, in short, endowed with skill, ingenuity, and untiring patience, sufficient to enable it to contend with the varying exigencies which it may have to encounter in the life-conflict.

"When it has selected a situation for its habitation, if on ordinary dry ground, it bores a hole, around which it raises the surface three and sometimes six inches, forming a low circular mound, having a very gentle inclination from the centre to outer border, which on an average is three or four feet from the entrance. But if the location is chosen on low, flat, wet land, liable to inundation, though the ground may be perfectly dry at the time the ant sets to work, it nevertheless elevates the mound in the form of a pretty sharp cone to the height of fifteen to twenty inches or more, and makes the entrance near the summit. Around the mound in either case the ant clears the ground of all obstructions, and levels and smooths the surface to a distance of three or four feet from the gate of the city, giving the space the appearance of a handsome pavement, as it really is.

"Within this paved area not a blade of any green thing is allowed to grow, except a single species of grain-bearing grass. Having planted this crop in a circle around, and two or three feet from the centre of the mound, the insect tends and cultivates it with constant care, cutting away all other grasses and weeds that may spring up amongst it, and all around outside the farm circle to the extent of one or two feet more.

The cultivated grass grows luxuriantly, and produces a heavy crop of small, white, flinty seeds, which under the microscope resemble ordinary rice. When ripe it is carefully harvested and carried by the little workers, chaff and all, into the granary cells, where it is divested of the chaff and packed away. The chaff is taken out and thrown beyond the limits of the paved area.

"During protracted wet weather it sometimes happens that the provision stores become damp and are liable to sprout and spoil. In this case, on the first day, the ants bring out the damp and damaged grain and expose it to the sun till it is dry, when they carry it back and pack away all the sound seed, leaving those that had sprouted, to waste.

"In a peach orchard, not far from my house, is a considerable elevation, on which is an extensive bed of rock. In the sand beds, overlaying portions of this rock, are fine cities of the Agricultural Ants, evidently very ancient. My observations on their manners and customs have been limited to the last twelve years, during which time the inclosure surrounding the orchard has prevented the approach of cattle to the Ant farms. The cities which are outside the enclosure, as well as those protected in it, are at the proper season invariably planted with ant-rice. The crop may accordingly always be seen springing up within the circle about the 1st of November in every year. Of late years, however, since the number of farms and cattle has greatly increased, and the latter are eating off the grass much closer than formerly, thus preventing the ripening of the seeds, I notice that the Agricultural Ant is placing its cities along the twin-rows in the fields, walks in gardens, inside about the gate, &c., where they can cultivate their farms without molestation from the cattle."—*Extracted from Letter to Mr. Darwin, published in the Journal of the Linnean Society.*

THE YOUNG NATURALIST.

E. G. MEEK,

NATURALIST,

56, BROMPTON ROAD, LONDON, S. W.

Supplies Entomologists with every requisite:—Steel Knuckle-jointed Net, 4/6. Self-acting Umbrella Net 7/6. Ladies Umbrella Net, 5/-. Wire Ring Net, with Brass Screw 2/-. Pocket Folding Net, four Brass Joints, 4/6. Balloon Net, 20 by 18, for beating, 6/-. Telescope Nets, 6/-. 8/6, 10/6. Self acting Sweeping Net, 8/-. The New beating Tray, for Collecting Larvæ, &c., 15/-. Pocket Larya boxes, -/6, 1/-. 1/6, 2/-. and 3/-. Sugaring Tin, with Brush affixed, Corked Setting Boards, -/6, -/7, -/8, -/9, -/10, -/11, 1/-. 1/2, 1/4, 1/6, 1/8, 1/10, and 2/-. Breeding Cages, 2/6, ditto, with two compartments, 5/-. Tin Y, -/6, Brass Y, 1/-. Corked Store Boxes, best make 2/6, 3/6, 4/-. 5/-. 6/-. ditto, covered in Green Cloth, book pattern, 16 by 11, 8/-. Mahogany Pocket Box, with Glass and Slide in groove, 4/6. Exchange Lists, 1d. Entomological Pins, any size; gilt or plain, 1/- per box. Silvered pins, four sizes mixed, 1/- per oz., postage 1d. Bottle of Mite Destroyer, 1/- Willow Chip Boxes, four sizes, nested, 2/6 per gross. Setting and Drying House, complete, 10/6, 12/6, 15/- and 20/- Pocket book, -/6, 1/- and 1/6. Postal box, -/6, Pocket Lanthorns 4/-. 5/-. and 10/6. A Zinc Oval Pocket Box, 1/3 2/-. and 2/6. Pupa Diggers 2/- and 3/-. Brass Chloroform Bottles, 4/-. The New Glass Killing Bottle, charged ready for use, 1/-. 1/3, and 1/6. A large assortment of British Insects kept in stock. Cabinets of every description made to order; estimates given. New price Lists sent on receipt of stamp. All orders, when accompanied by Post Office Orders, will receive immediate attention. Post Office Orders to be made payable at Brompton Road, S.W.

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‘THE NATURALIST;’

Journal of the Yorkshire Naturalists' Union, and General Field Club Record.

Edited by C. P. HOPKIRK, F.L.S., and G. T. PORRITT F.L.S. Monthly, price 4d., or 4s. per annum (in advance).

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 105.

NOVEMBER 12TH, 1881.

VOL. 3.

LINNÆUS.

REFERENCE is so constantly made to this illustrious man, and the contraction "L" occurs so frequently after the name of species in all departments of natural history, that it may not be amiss to lay a brief outline of his life before our young friends; which we condense from the biography by Sir W. Jardine in the Naturalist's Library.

Carl Linnæus was born in Sweden, at Rashult, in the province of Swaland, on the 24th May, 1707. His grandfather was called Ingeman Bengtsson, and the surname with which we are so well acquainted, was adapted from a large Linden or Lime Tree, growing on the farm on which his father, Nils Linnæus, was born. This custom of giving names from natural objects is said to have been not uncommon in Sweden, and it is an interesting coincidence that the surname, destined to become so famous, especially among botanists, was directly derived from a botanical object. Nils Linnæus was a clergyman who devoted much of his leisure to the cultivation of his garden, and inheriting his father's taste for plants, Carl from his earliest years was in the habit of spending much of his time in the same

pursuits. Intended for his father's profession, he entered school at nine years of age, but his distaste for the necessary studies was developed very early, and his attention seemed turned to botany from the first. At the age of sixteen he is said to have been known among his college companions by the name of "The Little Botanist," and very shortly afterwards his instructors gave his father to understand that it was but wasting his money in endeavouring to force his education in the way he wished. A Dr. Rothman, whom the father had consulted for some complaint or other, suggested that the botanical studies of young Carl might be more serviceable in medicine than in anything else, and offered his services to help him in that career. Young Linnæus now found an opportunity of following his favourite pursuit, and was not long before he ventured to criticise the arrangement of Tournefort in reference to various plants. With difficulty he obtained admission to the university at Lund. Here he lodged with a Dr. Kilian Stobæus, who had both an excellent library and collections of shells, birds, plants, &c., &c. To these young Linnæus had free access, and here he be-

gan to form a herbarium or *Hortus siccus*. Next year he removed to Upsala, where there was an extensive botanic garden. His parents could only allow him a very small sum, and while here he was at one time barely able to procure the necessaries of life. But he soon made new friends and became assistant to Dr. Celsius, in whose house he now resided. It was here that he first saw the importance of the stamina and pistils of flowers, and the first sketch of his system, "*De Nuptiis Arborum*," was written here. He began to lecture publicly, and to take the students on botanical expeditions in the neighbourhood of Upsala.

In the year 1731 he obtained an appointment through the interest of his friends to explore Lapland for the Royal Academy. Most of the journey was performed on foot, and he traversed not less than 4000 miles, taking note of everything he saw, discovering new plants, &c., &c. On his return he was rewarded with the payment of his expenses, some £10, and considered himself amply repaid by the information he had gained and the new plants he had discovered.

Linnæus at this time applied himself to the study of mineralogy, and proposed to deliver a course of lectures, but other lecturers, jealous of his reputation, objected that he had not the necessary qualification, that of doctor of medicine. The lectures were therefore not proceeded with, and his financial position became anything but satisfactory. Money,

however, never seems to have been a consideration with the young naturalist, and he set out on an expedition to the great Swedish mining district to improve his knowledge of mineralogy. On his return he was introduced to Dr. Morens, and fell in love with his eldest daughter. But however little the enamoured youth thought about money, the prudent father, who liked his proposed son-in-law well enough, thought it would be better if he had some means of maintaining a wife before he took one. They were to wait three years, and if at the expiration of the time his prospects were more favourable he might expect an affirmative. He now decided to follow medicine, and set out to Harderwick where he soon received the degree of M.D. On his return he stayed some time at Amsterdam, and Dr. Gronovius was so pleased with his sketch of the *Systema Naturæ* that he offered to pay the cost of publication. It was printed in the form of tables, and so was commenced that system, the advantages of which we are yet enjoying. From Amsterdam Linnæus came to England, but was very coolly received by Sir Hans Sloane and Dillenius, to whom he had flattering testimonials. He returned to Holland, visited Paris, and then returned to Sweden, where he commenced to practise as a physician in Stockholm. He soon had an extensive practise, and receiving some lucrative appointments was now in a position to marry, and Dr. Morens raising no further objection, the marriage was solemnized on the 26th June, 1739.

TO CORRESPONDENTS.

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THE MANDRAKE.

(*Mandragora officinalis*.)

By J. P. SOUTTER, Bishop Auckland.

The Mandrake belongs to the natural order *Solanaceæ*, an extensive and widely distributed cohort, which includes such varied and well-known plants as the potato, tomato, tobacco, cayenne, henbane, belladonna, &c. Many of these possess virulent poisonous properties, usually of a narcotic character, and the mandrake has suffered from the evil association, and has required a doubtful if not disreputable character, although the whole plant may be said to be harmless and innoxious in its nature.

The common mandrake is a native of the countries bordering the Mediterranean Sea, where it is often met with growing wild in considerable profusion. It is characterized by a large, fleshy, parsnip-like root, which is usually forked, and is surmounted by a crown of large entire leaves, completely surrounding and concealing the flowers, which are borne on slender stalks about four inches long. The blossoms are large, bell-shaped, of a white colour with a blush of purple. The fruit is the size of a small apple, of a spongy consistence, orange yellow when ripe, and with an unpleasant taste. Perhaps about no vegetable production has more fanciful and absurd things been said and written than about the mandrake. It is pretended that the forked root resembles the human body, so crafty cheats have carved a head and arms to it, to assist the folly of superstition by artfully increasing the similitude, and attributing to the plant thus fashioned supernatural powers. Nor did this measure the depth of their deception, for very frequently the root of the common white bryony was similarly fashioned, and like modern Birmingham bronzes, by being buried in the earth for a short time acquired a coating or hue indicative of age, and were then sold as the genuine article, and were doubtless equally efficacious. A profitable trade was formerly carried on in this country by travelling quacks and mountebanks in these manufactured mandrake roots as incentives to love. They formed one of the most indispensable ingredients in the love-philtres or potions which were so much in request in the dark ages; and although the custom has fallen into disuse in this country it possibly still lingers on the continent, as in the beginning of the present century they were freely exposed for sale in seaport towns in France. To add to the value and virtue of their wares, the vendors told the most fantastic stories of the difficulty of obtaining

mandrake roots. It was said to be a creature having life, engendered under the earth from the seed of some dead person put to death for murder. Shakspeare was also quoted where he says

"And shrieks like mandrakes torn out of the earth,
That living mortals, hearing them, run mad."

So these medicine men said that the mandrake shrieked when its roots were pulled out of the soil, and that any person who heard this unearthly sound would certainly lose their reason; so they trained dogs to this dangerous work by fastening them to the plants, and when at a safe distance, calling them, when they dragged the priceless plant from its native resting place. This and more to the same effect, delivered with the well-known volubility of these peripatetic practitioners, would doubtless cause the roots to command a ready sale. We can see and hear the same tactics practised in our populous provincial towns and villages any market day.

Shakspeare also associates poppy with mandragora

"Give me to drink Mandragora * * *
That I might sleep out this great gap of time:
My Antony is away."

An appropriate allusion to the potent narcotic effects of certain of its congeners. In oriental countries "He has eaten mandrake" is used as a proverb, of an indolent, apathetic, sleepy man, from the stupifying properties of the plant. That they were once esteemed as powerful sedatives is extremely probable, for long prior to the discovery of more potent anesthetics, such as chloroform, amputations and severe surgical operations were said to be performed under the influence of *Mandragora*. But they are now wholly obsolete as medicines. Another piece of folk-lore connected with this plant is that a small dose makes a person conceited and vain of his beauty, whilst a large dose makes him an idiot. Anciently the fruit of the mandrake was called love-apples, because they were considered to excite amorous inclinations. The English name love-apple

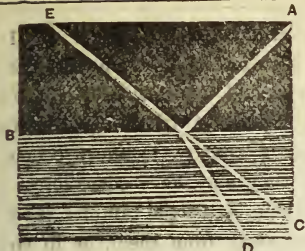
is now bestowed upon the allied tomato (*Lycopersicum esculentum*), a barbarous name meaning the wolfish peach, and referring to the loveliness of the ripe fruit, rivalling the peach in beauty of form and colour, but wholly worthless as an edible fruit, although used by cooks as an ingredient in sauces. That the plant translated "mandrakes" in the Bible is the same as that we are now considering is doubtful, but that its reputed virtues were the same is evident. Those interested may read the story in the 30th chapter of Genesis, where the finding of mandrakes in the field by Leah's son, and the curious compact betwixt his mother and Rachel as to their disposal, forms a striking commentary on their reputed efficacy. They are also referred to in the same connection in the Song of Solomon, vii. 13.

OPTICAL PRINCIPLES OF THE MICROSCOPE.

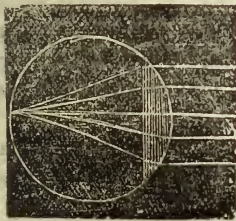
Abstract of a Lecture, delivered by George Brook, F.L.S., before the Huddersfield Literary and Scientific Society, Oct. 24, 1881.

This was the first of a course of lectures upon "Preparing and Mounting Microscopic Objects," and the lecturer begun by stating that at the outset he would explain some of the optical principles upon which a microscope is constructed. He should have even to explain some of the common laws of optics, known to most of those present, but he hoped this would render his subject more complete.

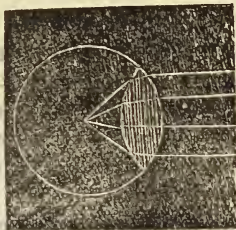
To begin with then, a ray of light passing through a lens is bent or refracted. This is because the glass, of which the lens is composed, is of a denser material than the air; but it is only those rays which fall obliquely upon the surface of the lens that are *refracted* or bent. As an experiment, cause a ray of light *A* to fall obliquely upon the surface of water *B* and



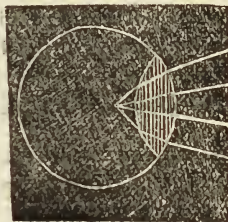
instead of passing straight on to C it is bent to D. This ray will be bent more or less according to the density of the material it enters. But all the light does not pass through the water, but a portion of it is *refracted* or thrown back to E, and these reflected rays always leave the surface of the water at the same angle at which they touch it. It sometimes happens that all the rays are reflected, as you may see, by holding a tumbler of water in a ray of light at a certain angle, when all rays will be reflected upwards, while under the glass it is quite dark. Passing by this general law, we next come to a lens. It may be taken for granted that the curved surface of a lens is some part of a circle. This diagram represents what is known as a plano-convex lens; that is, plain or flat on one side, and convex on the other.



Now, if we cause parallel rays of light to fall upon the curved side of the lens, those rays are brought to a focus, at the opposite side of the circle of which the curved surface forms a part. That is, the outside rays of light falling upon the glass obliquely are bent, and are again bent in the same manner upon leaving the glass. The action of parallel rays, upon a double convex lens would be to bring them to a focus, not at the opposite side of the circle as before, but in the centre,



because the rays reach the inner surface of the lens at a greater angle, and consequently come to a focus sooner. If the rays diverge before they reach the lens, they are brought to a focus at a greater distance from the lens. If they be converging rays which fall upon the lens, they are brought to a focus sooner, or before they reach the centre. A



lens will make an image as you may see by holding a lens at a proper focus between a lighted candle and a sheet. It is upon these principles that all our microscopes, both simple and compound, are constructed. But when they began to make microscopes they found several difficulties were in the way; two particularly. One of these difficulties was what is called "spherical aberration." I will try and explain the meaning of this. The rays of light which fall upon the outside of the lens come to a focus before those which pass through nearer the centre, consequently all the field or all the object under the microscope could not be brought into focus at the same time. The easiest way and the way mostly employed now in making cheap microscopes is to put in what is called a stop, that is a circular piece of opaque material with a hole in the centre, so placed as to prevent the outside rays from passing. It is then only necessary to make the lens larger than required and use the central

portion only, which answers the purpose, and only loses a little magnifying power. (Other methods were explained for better class instruments.) One other difficulty was that the objects seen through the microscope were surrounded by coloured lines. This is caused by the different colours which compose what we usually call "white light," being refracted in different degrees in passing through the lens, the blue rays being refracted most and coming to a focus before the red, which is refracted least. This was got over by employing a combination of lenses of different refractive power, such as those made from flint glass, crown glass, &c.

The construction of the simple microscope, the compound microscope, the binocular, and the different kinds of lenses were then explained, and illustrated by photos from the lantern.

A CHAT ABOUT THE SLOWWORM.

By HENRY ULLYETT, Hon. Sec. to the Folkestone Natural History Society.

(The following paper is extracted from "The Naturalist's Circular," which was published a few years ago, but died for want of the support it so well deserved. The editor, W. H. Groser, Esq., has kindly sent us several numbers with permission to reprint anything we think suitable for our pages. We have pleasure in reprinting the following article, and will reprint others in future numbers.)

I remember one of my companions telling me that during one of his rambles after wild flowers a slowworm had sprung at him from the bank, and only just missed fixing on his face. As he firmly believed the creature to be of a deadly nature, he regarded this as a wonderful escape. We both knew little of natural history then, and accordingly I congratulated him on his being still alive; indeed, to tell the truth, I

felt rather envious, and wished that I could relate such an escape. But this was many years ago, and the slowworm is now one of my many pets. A box of these creatures is certainly a novelty to most people; for though they may have come across one or two in their occasional rambles, it was only to jump away from them, or to strike at them with a stick; whereas before a box with a glass front they can gratify their curiosity, and at the same time feel perfectly safe.

You may dilate on the curious traits of your little *protéges* to an admiring audience, and they listen to you with about the same feelings as those experienced by the crowd before a cage of tigers, when Mattoko the great tiger-man is giving a lecture on his captives. Will you test the truth of your assertions about the creature's harmlessness by taking one into their hands? "Ugh!" (quite involuntary), "no, thank you!" I recollect once taking a few to a natural history meeting (where certainly folks ought to have known better), and one happened to get on the floor: it was ludicrous to see how instantaneously the floor was vacated, and every lady at least was standing on a chair or bench. Poor *Anguis fragilis*! he was picked up by a friend and replaced in his box, to his own satisfaction and that of the ladies.

Slowworms used to be very plentiful in the Quaker's burial-ground in a town where I once lived, and were killed by dozens when the grass was mown, the man using a stick about ten feet long, so that he might be out of danger. On lifting up the flat tombstones we often came upon six or seven at once; and although the creature in a general way deserves its name, it can in times of peril make off pretty briskly, as it attempted to do then: On being seized it twists itself in and out between one's fingers in a manner peculiarly unpleasant to those unaccustomed to it. I took home three or

four and put them into a good-sized box, with some earth and rockwork, beneath which they soon formed regular hiding-places. They are not all of the same colour, some being of a rich sienna brown with darker markings, and others of a dull leaden hue: whether this denotes distinction of sex, or is due to old age, I am not prepared to say; but all the very old ones I have seen were of the dull hue, and I never saw any young ones that were not bright brown. I came across one at six a.m. once in a ramble up a lane. I was hunting for molluscs, and heard my dog barking as if she had made some discovery, such I found was the case. She had surprised a slowworm as it was retreating, and without endeavouring to touch it was performing a circular dance round the hole it was entering. I seized it before it made good its escape, and carried it home to some others.

Their general food consists of the small white and grey slugs so common and so mischievous in gardens; and their mode of eating is very peculiar. If hungry, on seeing a slug crawling along, the slowworm approaches it, eyeing it intently, and then quietly seizes it across the middle—there is no darting, nothing sudden—it merely opens its mouth and leisurely lays hold of its prey. Of course, from the nature of the food, we see that there is not the slightest necessity for rapid movements, as there is with a near relation, the sand lizard, which has to catch flies. So with the swallowing; it is done very gradually, and often takes a long time, a considerable quantity of fluid covering the mouth meanwhile. If the slug has been crawling over the earth and has anything adhering to it, the slowworm will take it to a stone, and rub its prey against it till all is detached. This shows the possession of a considerable amount of reasoning power, as it was only done when necessary. I could not always provide slugs for it, and occasionally it

would take earthworms, but it did not like them so well.

Like other lizards, it is under the necessity now and then of changing its skin, which does not come off entire, but in several detached portions, which peel off, the creature assisting the process by twining its body in and out among rough substances. One of mine changed May 1st, and again July 14th. The common name of blindworm is so utterly inappropriate that I cannot conceive how it arose, though many country people now will tell you that it cannot see at all. But it is very evident that it discovers its food more by sight, than by any other sense; and its eyes are peculiarly pretty, and without the baleful aspect of those of such creatures as the viper. My slowworms buried themselves in the garden during the winter, and one reappeared March 28th, very sluggish and sleepy, and ate nothing for several days. The property of throwing off the tail, and in time reproducing it, must be well known to my readers.

On the warren here they are exceedingly plentiful under the large stones. Their usual length is about thirteen to fourteen inches, but I have one now in my possession nineteen inches and a half in length, of which the tail measures eleven inches. This must be considered a monster.

I began with an anecdote, and I will end with one. A friend of mine was hunting for some slowworms underneath some stones, and wanted very much to move one immense rock, having an intuitive knowledge of the presence there of a host of victims. But it was beyond his strength, and he called in the assistance of two soldiers who happened to be passing by. When the stone had been overturned there lay several slowworms, among which my friend immediately darted, seizing two or three in each hand. The sight was too much for the soldiers, who precipitately fled, waiting for neither thanks nor largess.

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VOL. 3.

LINNÆUS.

PART II.

NOW that Linnæus was happily married, and in comfortable circumstances, his reputation begun to excite envy and jealousy, and many were the attacks made upon him. He wisely resolved to abstain from controversy, but published "a brief sketch of his life, a list of his works, and the various testimonials given to his talents by the most eminent men of the day," with the idea that it was unnecessary to reply to small men when so many great men approved of what he had done. Yet he was not above criticism, and in a private letter says "Who could observe everything with sufficient accuracy? Correct me in a friendly manner and you shall have my best thanks. I have done all I could do. A great tree cannot bear a lofty top when only it first begins to shoot off."

He now aspired to the botanic chair, at the university of Upsala and offered himself as a candidate on the death of Rudbeck. He was not successful in his desire, it being given to Dr. Rosen, who had studied longer and had greater claims on Upsala; but the following year he was appointed to the chair of

medicine in the same university, and by an arrangement with Dr. Rosen they exchanged posts. Before removing to his professorship he made an excursion to the islands of Oeland and Gothland to endeavour to find an earth from which porcelain could be made. In this matter he was not successful, but he discovered above one hundred plants not previously known to be indigenous. During this journey he first pointed out how *Arundo arenarius* could be made serviceable in binding the loose sand of the sea shore.

He was now at the head of the botanists of Sweden, though only thirty-four years of age, and he commenced work in earnest. The gardens at Upsala did not contain fifty exotic plants when he took charge of them, but he soon increased the number to above 1100 species, and in a few years the gardens were equal or superior to any in Europe. The usual number of students was about 500, it was soon doubled, and in 1759, when he was rector, there were 1500. He used to make exploring expeditions to various parts of the country, and sometimes as many as two hundred students would accompany him. When anything remarkable was

found a signal was given, and they all gathered together to hear their leader's remarks. In this way his students were taught his system, and when they left the university, they were prepared to promulgate and defend it.

Linnæus was now at the height of his fame. He was admitted a member of most of the scientific societies of Europe. He held various lucrative public appointments, and was so highly esteemed by King Frederic Adolphus that he not only received a patent of nobility but was admitted to the private friendship of the monarch, who was an ardent naturalist, as was also his Queen. He was now called Von Linne, and assumed a coat of arms in accordance with his new rank. Perhaps the most flattering evidence of his fame was an offer from the king of Spain, who invited him to Madrid, where he proposed to give him an annual salary of 2000 pistoles, letters of nobility, and above all, to allow him the free exercise of his own religion. Linnæus, however, was an ardent patriot, and while he acknowledged the honour proposed in most grateful terms, he said "if he had any merits they were due to his own country." The income he was now receiving from his various public appointments was such that he was able to purchase the Villa of Harmanby, some three miles from Upsala, and for the last fifteen years of his life he generally resided there during the summer. It was not, however, altogether for retirement that he did so, for his pupils followed him there, and many of them used to take lodgings in the

neighbouring villages. He erected a little building on an eminence in his grounds, from which he commanded a view of the surrounding country. Here he kept his collections, and here he used to deliver lectures to those of his pupils who had followed him.

At this period of his life he was much troubled with severe attacks of gout, for which the best remedy was to be shown a collection of novelties. On one occasion he was so ill that he had almost entirely lost the use of his limbs and was confined to bed. The return of one of his pupils named Kalm from North America with a number of new plants and other things had such an effect upon him that his desire to see them and delight at examining them effected a cure.

He was now fifty-six years of age, and feeling himself past his prime he desired to resign office. The king in a most flattering manner refused to accept his resignation, increased his salary, and appointed his son to be assistant in the professorship. This appointment of a very young man to a chair which was looked on as most difficult to fill, was indeed a high compliment to the merits of his father. Relieved in this way from the most onerous of his work, Linnæus continued to perform his public duties till within two years of his death. In 1771 he resigned his office of rector in the assembly, and selected for the subject of his oration on retiring the "Delicæ Naturæ." The oration was considered so beautiful that the students in the Swedish provinces sent a deputation to him asking for its translation

into Swedish. Two years afterwards he was chosen member of a committee to superintend a better translation of the Bible into Swedish, and the task of ascertaining and describing the plants and vegetables mentioned there was entrusted to his care. To show that the vigour of his mind, notwithstanding his arduous career, was still unimpaired, it may be mentioned that in 1774 he prepared a catalogue of a collection of plants from Surinam, making out thirteen new genera and about forty species not previously described. Shortly after this he received a warning that the end was near. While lecturing as usual in the botanical gardens he had an apoplectic stroke, from which he did not quickly recover. From this period he declined gradually, though for two years longer he continued at intervals to perform his public duties. In 1776 he had a second stroke which affected his speech. He continued to feel his wonted interest in the treasures of his museum, to which he used to be carried, and his spirits always revived when any new or rare production reached him. At the end of this year he had a third stroke, his right side was paralyzed, softening of the brain set in, and his mental faculties gradually wasted away. He continued in this distressing state for nearly a year, sometimes suffering greatly from his former complaint; but he gradually became insensible to pain, and expired in his sleep on the 10th January, 1778, in the seventy-first year of his age.

He left behind him a son and four

daughters. The son, who only survived his father about five years, left no children, and with him the male branch terminated.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, Bellerby Terrace, West Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Several correspondents are thanked for lists of Hawk Moths occurring in their localities. We shall be obliged for others.

NOTES, CAPTURES, &c.

VARIETY OF *SAXICOLA ÆNANTHE* (?)—
On the 18th August last, I shot a Wheatear, with the head and neck and upper part of the back white. I am not quite certain if it *S. ænanthe* or a different species, it looks a trifle larger than *S. Ænanthe*.—F. KERRY, Harwich.

L. *CAMELINA* LARVÆ IN NOVEMBER, &c.
—I took larvæ of this species at Richmond, Yorks, on the 1st November, not nearly full grown. They were on tree trunks, and there was not a leaf left for them to feed on. Under such circumstances do they die or hibernate? I also took on tree trunks, two specimens of *Z. rhizonitha*, when there were several degrees of frost, the ground being frozen quite hard.—ALFRED WOODS, West Hartlepool.

HEDGEHOGS.—A short time ago I was staying at a farmhouse, in Shropshire, One evening I was going a walk along a lane when I heard a strange grunting noise, I looked over the hedge into a field, and saw several hedgehogs feeding on the carcass of a dead sheep. They were so intent upon feeding that they allowed me to pick them up without showing any signs of fear. I took two back with me, carried one inside my hat, and the other wrapped up in a handkerchief. For several days I fed them upon bread and milk, and crab apples. I

went early one morning after, to the same field and found another hedgehog feeding upon the carcase; it was nearly all finished up now, there was nothing much left but bones. When I went back home I put them into a box, with two or three bricks on, to keep the lid down. The next morning I found that they had both gone, and the lid and bricks were in exactly the same position as I had left them the night previously. They have a great power of lifting weights with their snout. I have not seen or heard anything of them since.

CRANES.—I believe cranes are rather plentiful in Shropshire, I have seen several there recently. One that was shot in August was stuffed with sage and onions and cooked, and very much resembled the tame goose in taste.

CHIMNEY MARTINS have stopped very late this year. I saw several at Clent, in Worcestershire, the last week in October.

HOUSE SPARROW building in November, owing to the mildness of the weather—Birmingham.

SILVER Y. MOTH.—I caught a Silver Y Moth on the trunk of an oak tree, in Sutton Park, Warwickshire, 6th November.

WASPS have been very plentiful this year at Sutton. A swarm formed a nest inside a pump, and were a great nuisance, being so close to the house. The woodwork of the pump was decaying and there were several holes in it.—W. H. BATH, Birmingham and Sutton Coldfield.

CONTRIBUTIONS TOWARDS THE FAUNA OF PLYMOUTH.

BY MR. G. C. BIGNELL, M.E.S.

(Reprinted by permission of the author from the Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society, 1881.)

HYMENOPTERA, ICHNEUMONIDÆ.

Arranged according to the R. v. T. A. Marshall's Cata-

logue, published by the Entomological Society of London, 1872.

PART I.

(Continued from page 4.)

THEMATOPYGUS.—

vellicans. Taken at Widewell farm, Tavi-Road, 4th August, 1880.

EXOCHUS.—

alpinus. Bred from a *Tortrix*, feeding on honeysuckle, in May (possibly *T. xylosteana*.)

BASSUS.—

cinctus.

evsultans.

pictus.

nigritarsus. Bred from *Bombyx quercus*.

pulchellus.

cognatus.

festivus.

METOPIUS.—

micratorius.

RHYSSA.—

persuasoria.

EPHIALTES.—

emperor. Taken at Bickleigh.

tuberculatus. Taken at Plymbridge.

PERITHONS.—

varius. Bred from an old bramble stem.

PIMPLA.—

examinator. Bred from *Tortrix viridana*, 14th July, 1880; also from a pupa found in an old burdock stem (29th April, 1879).

turionella.

flavonotata. Bred from *Tortrix viridana*.

scanica. do. do.

stercovorator.

brevicornis.

GLYPTA.—

ceratites.

hesitator.

scalvris.

LISSONATA.—

caligata. This is a new British species, which I bred from *Anticlei badiata*. *Caligata* remains in the pupa state

longer than its victim. I therefore presume it confines its attacks to *badiata*.

variabilis.

bellator.

cylindrator.

HYTODIAETUS.—

coryphaeus. Bred from *Tortrix viridana*.

HOGAS.—

reticulator. Bred from half-grown larva of *Odonestis potatoaria*.

circumscriptus Bred from *Ebulea crocealis*

ICROPLITIS.—

alvearia. Bred from *Boarmia rhomboidaria*.

GATHIS.—

nigra. Plymbridge, 5th May.

ERILITUS.—

atrator.

OMOLOBUS.—

discolor. This is a new British species, which I bred from *Cabera pasaria* (24th September, 1880.

MACROCENTRUS.—

lincaris. Bred from *Botys verticalis* and several noctuæ.

Clarence Place, Stonehouse, Plymouth,
31st March, 1881.

THE HERMIT CRAB.

Salt water aquaria are not very easily managed on a small scale, and with every facility for obtaining a constant supply of fresh salt water, if such an expression be allowable, I never succeeded well but once in keeping the plants and animals any length of time. On this occasion I kept all my seaweeds and live stock in good health for over six months, and much interest I took in observing their habits. Perhaps the most attractive objects to me were a number of small hermit crabs. To watch them dragging about the heavy shell, to see them feed, and above all to observe the manner

in which they changed shells were unfailing attractions. It is probable that an account of this performance has been penned before, but as my object is to interest "young naturalists" there will not be much harm in its repetition. Hermit crabs (*Pagurus*) are crustaceans, which have their abdomen unprotected by a shell, and being elongated, and rolled on itself, it is especially adapted for living on the empty shells of the various species of mollusca. As it grows larger, like a man with an increasing family, it finds its house is too small for it, and it must remove to a larger one. If you attempted to drag one of them out of its temporary home you would find that it would suffer itself to be torn limb from limb rather than quit its hold. Yet there is no attachment between it and the shell, of the same kind as there was with the original inhabitant, and when it so wills it can change its residence very easily. When the crab finds itself growing uncomfortable, it seeks a larger shell. These must be supplied to it in an aquarium. When it finds one it thinks suitable, it first extends its body from its own shell into the new one as far as possible but without quitting its hold. After this examination of the interior, it will turn the empty shell over and over several times to get out any air bubble that may be in it. It then commences to remove the sand grains or whatever else there may be inside. This it does by going in, head foremost, and with its large claws bringing out whatever may be there. If there is much inside the new shell this process takes a long time, for it is brought out grain by grain. Sometimes it is necessary for the crab to penetrate so far into the other shell that it is obliged to expose the soft portion of its body, but it never loses its hold of its own shell with the organs provided for the purpose. After it is all ready, it then appears to look about to see that no enemy is near, then placing its large

claws on the lip of the new shell, it whisks out its curved abdomen, and quick as thought it is snugly esconced in its fresh abode. The action is exactly like that of the gymnast vaulting over a rail, the arms of the gymnast representing the large claws of the crab, and his body and legs its abdomen. As soon as it is in it gives itself a twist or two to get comfortably into its new abode; but it often happens that it has left some sharp sand grain or other substance in the innermost recesses of the shell, which irritates the soft body and cannot be endured. The vaulting process is gone through again and it is back into its old home. Another excursion into the interior, the obstruction is removed, and again it vaults lightly into the new shell, and if it feels more at ease will march off. It very often happens, however, that after it has gone a little distance, feeling probably not so much at home as it did before, that it will return to the old shell. Sometimes this exchanging process will go on for hours. First it is in one and then in the other; not able to reconcile itself to the new abode, or not able to tear itself away from the shell in which it had been so comfortable. Sometimes after this changing has gone on for half a day it will finally march off in the old shell and abandon the new one altogether. I have seen, too, when a crab has been in its new abode for some hours it has fallen in again with the old shell which it evidently recognized, but it has now had time to expand a little and has got comfortably settled. Nevertheless, it generally tries its old house once more, has a look into the interior and then vaults in, to find it decidedly too small and very uncomfortable. After doing this once it never takes any further heed of the old shell, no matter how often it may come across it. I am conscious that I have described this most interesting proceeding very imperfectly. No words can describe the comical effect of the jump, tail-foremost

into the new shell, and when it jumps out again directly and again begins to investigate the inner whorls, it is easy to see what is the matter. I could sit all day watching these crabs, and they are far from the most interesting objects of a salt water aquarium. It is much to be regretted we have not yet learned how to manage them on a small scale, so as to be available for homes of taste.

NATURAL HISTORY DIARY:

By J. W. CARTER.

October 2nd.—As I was going to Ilkley I saw vast flocks of Golden Plovers on Rombalds moor. I also saw *C. haworthii* flying plentifully in the afternoon sun, and feeding on *Calluna vulgaris* on the moors above Morton. Noticed three immature swallows flying leisurely about at a somewhat great height near Bingley. This was the last date on which I saw any of the Hirundines. (E.P.P.B)

October 9th.—Saw a flock of Redwings and Fieldfares on Blackhills. *O. dilutata* was in abundance. Took one specimen of *E. tiliaria* in Bingley Wood.—(E.P.P.B.) The latter is evidently not a common species in this district, this is the fourth recorded in about six years.

October 16th.—My brother and I took one specimen of *A. aprilina* at rest on the trunk of a tree in Bingley wood.—(E.P.P.B.)

October 16th.—A person sent my brother a specimen of *V. urtica* which he had caught a few days previously, and notwithstanding his having had it flying about in his office it was in excellent condition. I remember seeing one of this species apparently quite fresh from pupa at rest on the side of a house close to my residence on the 14th of October, 1880, just previous to the great snowstorm.—(E.P.P.B.)

October 29th.—*H. defoliaria* was quite common at Shipley Glen. *H. aurantiaria*

extremely abundant, whilst *C. boreata* was just beginning to appear, as was also *C. brumata*.

October 30th.—Took *Hybernias*, very common. We noticed a few mealy Red-polls feeding in company with Lesser Red-polls and Tits amongst alder and sycamore trees by the side of the river Aire, near Cottingly bridge.—(E.P.P.B.)

NOTES ON TINEINA.

This week we commence a series of "Notes on Tineina," which we hope to continue. These minute moths ought to be collected when the collector is young, and has good eyes to see them. The beauty of some of them is not excelled, nor even equalled by any of the larger moths; and the species are so numerous, that turn wherever you will, there is always something new to be had. Many parts of Britain have never been worked at all, so that there are certain to be many species yet waiting to be discovered by some enterprising collector. We hope, therefore, that some of our readers, if they have not already done so, will begin to collect and *study* these minute gems. With the object of aiding them, we compile these notes; and from week to week, as far as possible, we will name some species that will be likely to be met with during that week: so that the collector, when he has read his Saturday's Y.N., may seize his net or his boxes, and sally forth to the most likely place he knows for the species described. Let him make a firm determination to find it too, if possible before the succeeding Saturday, and if he only adheres to this rule, his collection will work up wonderfully. It will frequently happen, when he is searching for one species, he will find another. In such a case, if he does not already know it, we should be glad if he would forward some of them to us, as many new species may thus be brought to light.

We begin then with

COLEOPHORA CÆSPITIITIELLA, Zell.

Go almost anywhere where rushes grow, and look at the seed heads, you will be almost certain to find a number of whitish cases sticking thereto. These are the cases of *Coleophora cæspitiitella*, and each contains a greenish brown larva, with black head and plates on 1st, 2nd, and last segments. Having found them, if in a safe place, it will be best to leave them in their position through the winter; but if inconvenient to do so, cut off the rushes, bring them home, and put them in a flower pot, covered with muslin, and place them outside to remain till spring, when they may have fresh rush flowers put in. These larvæ may be found up to May. The moths appear in June and July, and have long pointed wings, with long fringe. The fore wings are yellowish drab, with the costa white, expanding to about 5½ lines.

LEMNATOPHILA PHRYGANELLA, Haw.

This species is now on the wing in woods; beat the underwood for the males, and examine the tree trunks for the females. It is generally common. The male is nearly uniform brown, with dark grey hind wings, and expands to about 10½ lines. The female is very different, all the wings are pointed, the fore wings are very pale grey, with blackish markings, and only expands to eight lines. Haworth thought it to be another species, and called it *Novembris*. The name is the first of the *Tineina* in Doubleday's list.

"AT HOME."

Weather permitting, Mr. Mosley will have a ramble this day (Saturday), in search of Tineina and other insects, to Mollicar Wood. Beginners, residing in the neighbourhood, may meet him at his house, at two o'clock. "At home," Nov. 26th, from 6 to 9.

E. G. MEEK,

NATURALIST,

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 107.

NOVEMBER 26TH, 1881.

VOL. 3.

IT'S ONLY A MICRO.

HOW often it happens when a young beginner is out for a few hours collecting with an "old hand," to whom he looks up as a guide and instructor, he will call the attention of his companion to some minute gem sparkling with gold and silver, but so small that he doubts if it be really a moth or not, but feels sure if it be so, that it is a rare prize. How often it happens that his instructor stamps all the enthusiasm out of him by the remark, "Oh, it's only a micro! I never went in for those." And the despised micro is left without further notice. If the experienced collector did not "go in" for micros, the beginner is not likely to take any further notice of them. In this way many a good micro-lepidopterist may have been, so to speak, nipped in the bud before the bud was ever formed.

We desire now to urge this branch of collecting upon the attention of our readers in the hope that some of them may take to it; and it is much easier for observers and collectors when several are working together at one branch, and can give mutual assistance by comparison of notes and an intimation of what each is doing. It is not very creditable to

British entomologists that nearly all of them tread constantly in the same well-beaten track, rarely diverging either to one side or the other. The macros are well collected, so well that many of them are almost exterminated in their best known localities. The Large Copper is a thing of the past, though a specimen is said to have been seen not very long ago. *P. acis* is almost as rare. *P. arion* and *H. actæon* are both spoken of as being very rare now compared to what they used to be. So of many other species that could be named. On the other hand, it is seldom the case that a new species turns up, and to find a novelty might be considered the *ultima thule* of a collector's ambition. Among the smaller lepidoptera there are, no doubt, very many species yet to discover, and a large proportion of them are probably new to science, have never been discovered before. Many and many a square mile of British ground, especially in the wilder parts of our island, have never been trod by the foot of an entomologist; and in such places, numbers of these little gems are patiently waiting discovery. But even close to our own doors there are discoveries to make. It is seldom that a

year passes over but some new micro is found, even in localities that have been well collected over for years. There are, however, many other good reasons why you should turn your attention to the micros. When the macro collector has, by hard work and constant application, by much exchanging and occasional purchase, got together a pretty complete collection, he sighs like Cæsar for new worlds to conquer. Why should he not commence with micros and endeavour to have a complete collection of British lepidoptera. We do not want to discourage anyone who would rather collect *Coleoptera*, *Diptera*, or even go in for the bugs, but only to draw attention to this neglected branch of Lepidoptera. Another reason that may be urged is that from the smallness of their size a very small cabinet will contain the whole of them; and to people of limited means—and nine-tenths of collectors are of limited means—a small cabinet, meaning a small outlay, is an undoubted advantage.

Last week we gave an account of two species of *Tinea*, and told you how and where to find them. We propose to do the same week after week, and if you would but try to find the species we name from time to time, you would be astonished how your collection and your knowledge would increase. We have said "if you would but try," we would rather say "if you will." "I will try" does not mean very much—it may mean very little indeed. "I will" is a good, bold determination that always leads to success. "I'll try" may be very well

sometimes, but only when the speaker puts all his will into it, and then it means "I will" We shall be pleased to hear from any one who succeeds in finding the species we name from time to time, and trust our readers will send us word now, for the success of one will always encourage others. We shall also be glad to hear from those who discover other species in their search for those we name; and we shall be pleased to name them for them if they are not acquainted with their names.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, Bellerby Terrace, West Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

We tender our thanks to F. KERRY, of Harwich, for beautiful nests of the Reed Wren and Reed Bunting, sent for figuring in our Hand-book.

Has anyone got a nest of the Great Grey Shrike or Woodchat?

H. ANDREWS, Aldboro'.—The large pupæ are probably *Eavorista vulgaris*. It has been bred from many lepidopterous larvæ, but we shall be better able to name them, as well as the others, when they emerge.

EXCHANGE.

On receipt of box and return postage will send a few unset *Brumata*, *Boreata*, *Aurantiaria*, and *Defoliaria*.—B. ILLINGWORTH, 3, Rebecca Street, City Road, Bradford.

Wanted, some pupæ of *S. ocellatus*.—I. ELLIS, 32, Swallow Street, Huddersfield.

NOTES, CAPTURES, &c.

A. ALNI AT DERBY.—As Mr. J. Nixon, a friend of mine, was going to his garden, on August 11th, he was surprised to see a boy with a full-grown larva of *A. Alni* in his hand, that he had picked off the hedge close to the town. He secured it for a few pence to the great delight of the finder. It has now safely turned to a fine pupa.—G. PULLEN, Free Library and Museum, Derby.

V. CARDUI.—We did not see a single specimen of *V. cardui* last summer, though the two previous years they had been very abundant in this neighbourhood. Can any of the readers of the *Young Naturalist* tell me whether they have been taken in other localities, or whether their non-appearance has been general this year.—R. PRESCOTT DECIE, Bockleton Court, Tenbury.

RARE BIRDS AT HARWICH.—On October 14th, I shot a Green Sandpiper, it is very seldom we see these here after the middle of September. On the 17th, a fine specimen of Richardson's Skua was shot, it is in mature plumage, and of the white-breasted variety; three others were seen. On the 27th, a male Great Crested Grebe was shot, it was partially in summer plumage, still retaining a good portion of its crest.—F. KERRY, Harwich.

HOUSE MARTINS IN NOVEMBER.—On Saturday last, 19th November, I saw a pair of House Martins hawking for flies, opposite to my office window. I noticed them just about nine o'clock, and called the attention of others to them. They disappeared before noon.—ALFRED WOODS, West Hartlepool.

CAPTURES AT BIRMINGHAM.—On Nov. 4th I caught 3 *Brumata* and 1 *Defoliaria* on lamps, although it was raining. On Nov. 11th, I caught 2 *H. Pennaria*, 6 *Brumata*, 1 *Defoliaria* and 1 *Dilutata* on lamps. *Bru-*

mata are very abundant everywhere here.—GEO. F. WHEELDON, Birmingham.

CAPTURES, &c., IN NOVEMBER.—On the 10th November I bred a male *P. populi*, from pupæ found under loose bark on Wych Elm, at Richmond, Yorkshire. They were seven or eight feet from the ground. On the 12th, I took *D. Cæruleocephala*, on a tree trunk at Greatham, and the same day I bred the only *P. gamma* I have reared this season.—ALFRED WOODS, West Hartlepool.

BRITISH BIRDS, THEIR NESTS AND EGGS.

By S. L. MOSLEY.

Genus IX., *Circus*.

CIRCUS.—The Greek name of some kind of hawk.

The members of this genus may be distinguished from all the rest of the *FALCONIDÆ* by their more elongated form, the long slender tarsi, and the pointed wings, which reach, when closed, almost or quite to the end of the tail, and in this respect differing much from the last genus. Their close proximity to the Owls is manifest by the soft loose state of their feathers, by their having a frill of short stiff feathers round the cheeks, which can be raised or depressed at pleasure, and by their laying white eggs. Three species are native of this country.

13. MARSH HARRIER.

Circus Æruginosus (Linn.)

Harpye } (France.)
 Busard de Maris }
 Fisch-geyer, &c. (Germany.)
 Bod y giverni (Anct. Brit.)

ÆRUGINOSUS.—

Size.—Male, length 1ft. 8in. or 9in.; expanse, a little over 4ft. Female, 1ft. 10in. or 2ft.; expanse 4ft. 5in. or 6in.

Plumage.—The Harriers, at least the males, of the several species are subject to great changes, with regard to colour; and there is no wonder that the males and females of the same species should, at first, have been taken for distinct species. The present species, though not subject to change to the same extent as the two next to be described, varies considerably between the nest plumage and the garb of maturity, and I feel by no means certain as to which should be described as the adult dress. The adult is figured and described by Yarrell as having the tail and wing coverts bluish grey, and he states that this state of plumage is arrived at after the third moult. Gould, in his magnificent work on the "Birds of Great Britain," gives two plates, one of them representing the adult bird in this same state of plumage. Morris also gives a similar figure as the adult bird. If this be the regular adult plumage, it seems strange that out of the many specimens which have come under my notice, not one of them should have been in this particular dress. I know of no instance of its having occurred in this plumage in Britain, and Blyth states that it has not occurred even in Europe; though Mr. Bond states that he has seen two specimens killed in this country, with a decided tint of grey on the wings and upper side of the tail, but not nearly so light as some foreign specimens which have come under his notice. On the contrary, it is stated to be of common occurrence in India, and Jerden states that Gould and Yarrell took their figures from Indian specimens. This information I obtain from Hancock's "Hand-book of the Birds of Northumberland and Durham," and I concur with him in thinking this a variety, or local form, or race. Some birds, as I shall have to show in the case of the Crossbill, only assume their final dress after a number of years, and an almost equal number of changes; and this may be the

case with the Marsh Harrier of the East, but here at least it cannot assume this dress "after the third moult," otherwise it would be certain to come under the observation of ornithologists oftener than it does. This form is represented in the upper figure on plate 13.*

THE MATURE BIRD then, of this country at least, I will describe as being of an almost uniform dark brown, the feathers on the crown, nape, and chin, whitish yellow, with a brown streak down the centre of each feather. Sometimes they occur without the orange spots on the head. Bill bluish black; cere and legs bright yellow.

INMATURE BIRDS may be known by the nape, &c., being less streaked with brown, and the light portion of a deeper orange. The rest of the body is not of so uniform a brown, the feathers being margined with paler colour.

THE YOUNG at first are covered with white down.

VARIETIES having part of the flight feathers and other parts of the body white, are recorded by Selby, Latham, Montague, &c., but I have been unable to obtain one of these to figure.

Note.—This bird is generally silent, but during the breeding season both sexes utter a clear and rather loud call, resembling the syllable "keew." The female also call somewhat like "pee up," rather prolonged, but clear and shrill.

Flight.—The flight of the Marsh Harrier is low, skimming noiselessly along near the ground, and pouncing instantly upon its prey when observed. At intervals it alights upon an eminence to devour its

*Since the above was in type I have been informed that two specimens in this state of plumage are recorded in Stevenson's "Birds of Norfolk" as having been obtained in that county. This hawk seems to have been plentiful in Norfolk many years ago, yet he states that adult birds are extremely rare, thus, a very great majority of Marsh Harriers must have died a premature death.

prey or survey the ground, after which it resumes the same coursing flight.

Migration.—This species in some parts of Europe is migratory, but not, I believe, in Britain. Morris, at the commencement of his article on the Marsh Harrier, states that they remain in this country "all the year round," but finishes by saying that it is a "regular migratory species."

Food.—The food of this bird consists of coots, dabchicks, water hens, frogs, snakes, and such other small animals as frequent its haunts. It will also feed upon dead animals, and is even said to take fish as they skim the surface of water.

IN CONFINEMENT it may be treated to a similar diet with the addition of fresh meat.

Habitat.—Formerly this species was common on all the fenny districts of England, especially those of the eastern counties, but of late years it has become very scarce in common with most other birds of its class. It was also common in Wales, where Montague counted nine at once feeding on the carcase of a dead sheep. It is still met with at times, and even in some cases breeds in Britain, but is now considered a rare bird.

ABROAD the Marsh Harrier is found over most of the central and southern countries of Europe, but does not range far north. It is also met with in North Africa. Eastward it is common as far as India, but beyond that it is rare, though specimens have been met with as far as Japan.

Nest.—The nest is composed of sticks, sedges, and coarse grass. It is generally placed upon one of those large tussocks of sedge, so abundant in the swampy haunts of this species. The nest may still occasionally be met with in Ireland, Scotland, and some parts of England.

Eggs.—Four eggs are usually laid, sometimes five. They are white, with a faint tint of blue. The old bird begins to sit early in May.

NOTES ON TINEINA.

COLEOPHORA PYRRHULIPENNELLA, Tisch.

TAKE a good, strong, sweeping net, and go to the nearest heath where plenty of heather grows. Sweep the heath, and among beetles, old ling-flowers, and other things, you will probably see some long, slender, black, shiny cases. These contain the larvæ of *Coleophora pyrrhulipennella*, and should produce moths next June or July. The moths are of the usual shape of the genus with ochreous fore wings, with white lines along the costa and inner margin. These, as well as all Coleophorous larvæ, must be kept in something where they can obtain a good supply of air, such as a tree-pot with muslin tied over the top. If these larvæ are not found now, they may be looked for any time up to the end of April. But instead of finding this you may find a rough case formed of bits of the leaves of heather. If so, you probably have found the larva of

COLEOPHORA PINCICOLELLA, Stn.

This will be much more difficult to see, and the best plan will be to put all the sweepings in a bag, take them home, and place them in a large flower-pot with muslin tied over; the larvæ will then crawl up and stick to the muslin. The moths, which are ochreous grey, are due in July. Should any of our friends succeed in finding this latter species we shall be glad to hear from them.

THE WINTER MOTHS.

See Plates i. and ii.

As the winter moths may be taken from the present time till February or March, it seems an appropriate time to give our readers a hint or two for recognising the wingless, or nearly wingless females. There are three stout-bodied moths with wingless females: *P. pilosaria*, *N. zonaria* and *hispidaria*. In the first of these the female is quite apterous, having no trace of wings. The figure in Mr. Newman's work shows rudimentary wings in error. The other two have very

small wings. In Mr. Newman's figure of *Zonaria* these are shown, though the text states in both insects that "the female is entirely without wings." *Zonaria* may be readily distinguished from *Hispidaria* by the former having grey bands across the body; the latter, too, is rather more slender in shape. *Pilosaria* appears in February, and is generally distributed. *Zonaria* appears in April, and, I believe, has only been taken on the Cheshire coast. *Hispidaria* appears in February or March, and, though more generally distributed than its near relation, is not very common. There are eight moths with more slender bodies, viz., *Hybernia rupicapraria*, *leucophearia*, *aurantiaria*, *progemmaria* and *defoliaria*, *Anisopteryx æscularia*, *Cheimatobia brumata* and *boreata*. Their date of appearance is as follows:—October, *H. aurantiaria* and *defoliaria*, *C. brumata* and *boreata*. These continue to emerge through November and the latter pair even in December. In January *H. rupicapraria* appears. In February *H. leucophearia* and *progemmaria* appear, continuing out through February and into March, when the latest, *A. æscularia*, emerges. Two of these are entirely apterous: *H. defoliaria*, which may be instantly recognized by the double row of dark spots on a light ground. It is also larger than the female of *A. æscularia*, which may be distinguished from all others by having a conspicuous anal tuft. *H. progemmaria* has wings of considerable size, and which always stand out as if the specimen had been set for the cabinet. The markings of the male may also be traced in them. *H. aurantiaria* has short and very narrow wings, orange yellow in colour, with two distinctly darker lines across. The wings of *C. boreata* are rounded at the hind margin, like those of *Aurantiaria*, but they are less in size and quite different in colour. *H. rupicapraria* and *C. brumata* also have short, very narrow wings, rather straight at the hind margin, almost as if cut off. These two are perhaps

the most difficult to distinguish, but *brumata* is less in size. Besides, *brumata* is not often seen after we have entered on the new year while *rupicapraria* does not emerge till January at soonest. There remains now only *Leucophearia* to speak of. The female has rudimentary wings it is true, but they are mere rudiments, and the species may be thus recognized. Perhaps if the above information be put in tabular form it will be better understood.

| Date. | Species. | Wings of female. |
|--------------|-------------------------|--|
| October, &c. | <i>H. aurantiaria</i> , | Short, narrow, orange |
| " | <i>defoliaria</i> | apterous |
| " | <i>C. brumata</i> | very short, narrow, brown, hind margin rounded. |
| " | <i>boreata</i> | very short, narrow, pale brown, hind margin straight |
| January | <i>H. rupicapraria</i> | Very short, narrow, hind margin straight, a darker central band. |
| February | <i>H. leucophearia</i> | A mere trace of wings. |
| " | <i>progemmaria</i> | Wings of considerable size. |
| March | <i>A. æscularia</i> | Apterous, with an anal tuft. |

A NIGHT'S MOTH HUNTING IN NOVEMBER.

By J. W. CARTER.

THOSE who are altogether unacquainted with the natural phenomena of an English year, seem greatly surprised when they are told that moths are to be found abundantly in November and December; indeed nothing short of ocular proof will convince them that such is the case. They generally do not know the difference between moths and

butterflies, and, of course, usually associate both with the summer. Doubtless, however, most of your readers are acquainted with the fact; but, perhaps, a few notes and observations, on a night's outing at this dull season of the year, may not be altogether uninteresting to some of the younger readers of the *Young Naturalist*. On the 5th instant, at about 7 p.m., myself and two friends found ourselves at Shipley Glen, a lovely little spot some two or three miles from Bradford; and which is a favourite resort for thousands of Bradford people during the summer months, but visited in winter only by the lover of nature—moth hunting, pupæ digging, or observing the habits of our resident birds, being favourite occupations. During the months of May and June last, the larvæ of *Hybernidae* were observed in thousands, hanging by their silken webs from every tree, every green leaf of which they had devoured; thousands must have died of starvation, and others retired for pupation before they were full fed. From this great abundance of larva, we anticipated an equal number of imagines, nor were we in any way disappointed. As soon as we entered the wood and lighted our lamps, we could see as far as the light would reach, hundreds of moths resting on the otherwise bare branches. In point of numbers *H. aurantiaria* carried off the palm. This species is pretty constant to the type, the only deviations from it, which I have seen are specimens in which *the space between the second line and the row of dots on the hind margin is filled up with darker, thus forming a band*. Numerically *C. boreata* will stand next; out of the thousands of specimens of this species which I have seen at different times, I never saw the slightest departure from the normal form: and the same may be said of *C. brumata*, which was not so common as either of the two last mentioned. Although the larvæ of that beautiful and most variable moth *H. defoli-*

aria was more abundant in spring than any of the others mentioned, the imagines were not so plentiful as might have been expected, and many of them considerably dwarfed, some not larger than a good-sized *boreata*; these facts seem to verify the statement, made above, that a great number must have died of starvation, and others pupated long before they had arrived at maturity. Taking all the species which I enumerated together, I never saw such a vast assemblage of moths in my life, every branch, every frond of the common brake, and almost every blade of grass were tenanted by them; and when we consider that these were only the male portion, the number must have been enormous. The apterous females require looking for, we found them most abundant creeping about the trunks of trees. I remember last year, my friend Mr. Firth, and myself found about eighty females of *defoliaria*, in one night in this way. Nothing more of any importance was noticed except an occasional faded specimen of *O. dilutata* or *X. ferruginea*, which had not yet succumbed to

“Chill November's surly blast,”

or, an odd specimen of *C. vaccinii*, would be seen regaling himself on the trunk of an oak, ere he retires for his winter's slumber, to re-appear in early spring with other members of the genus *Hybernia*—*progemmaria* and *leucophearia*—when his present companions have ceased to exist, with the exception, perhaps, of a lingering *brumata*, which has braved the storms and blasts of winter. The only apparatus necessary is a lamp and a good supply of chip boxes, except the night be very close and warm, then they are apt to fly at your approach, and the net becomes an useful acquisition. To all those who have not yet had a night's outing at this year, I would say, Be off into the woods at once, and experience for yourselves the pleasures that are to be derived from “A night's moth hunting in November.”

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PROTECTION.

READERS must not imagine from the heading of this article that we are going to enter upon a discussion of the questions so much talked of now-a-days—free trade, fair trade, reciprocity or protection. We do not even propose to write at length on the protection afforded to various animals by their peculiarities of form, colour, marking, &c. It is too large a subject for the limited space at our command here. Those who wish to read more fully on the question must turn to the pages of Darwin, Wallace, and other writers who have made a speciality of it. We only propose to-day to refer briefly to a few illustrations that are likely to come under the notice of young entomologists, that they may understand what is meant by protection, mimicry, and other terms of that kind.

One of the commonest British moths is *P. bucephala*, the Buff-tip. When set out in the cabinet it loses its characteristic resemblance to a broken bit of birch twig, and no one who has not seen the insect alive could imagine how close the resemblance really is. When alive, *bucephala* folds its wings about its body so as to make it nearly round. The

thorax is light buff in colour, as is the circular patch at the tip of the wing (hence the name Buff-tip). The wings are streaked and marked with silvery grey, and the insect is exactly like a small piece of birch twig broken off at each end, the buff tip and thorax being like the fractured wood, while the markings on the wings mimic exactly the silvery bark of the birch.

Another very common species is *Cilix spinula*, the Goose-egg. This insect is white, with a dark grey oval patch on the centre of each wing. It sits with its wings sloping like a very steep house roof, and in this position is so like the dropping of a bird that even an experienced eye might readily pass it over. Very like the same thing is the larva of that rare moth *Acronycta alni* in its earlier stages. After its last moult it ceases to have this resemblance, and it an interesting problem to find out whether the ichneumons with which it is so infested deposit their eggs before or after this protective likeness has ceased.

Agriopsis aprilina sits on oak trunks, on the leaves of which tree the larvæ feed, and its green ground colour with black markings is so exactly like the

lichens that cover the trunk of an old tree that he has good eyesight who will not pass over more than he sees. Many other species imitate the grey lichens that occur on the trees on which they sit. *Acronycta rumicis* may be taken as an illustration of this class of resemblances, but there are very many species similarly marked. *Bryophila perla* and *glandifera* sit on walls, on the lichens growing on which the larvæ feed. Both these species are exactly like weathered limestone or like mortar, while the greenish shades on *glandifera* imitate the hue of the lichens. The larvæ of both these species are similarly coloured and marked.

The likeness of the Lappet moths (*Lasiocampa quercifolia* and *ilicifolia*) to a withered leaf has often been noticed. Possibly this likeness may have something to do with the extreme rarity of the latter species. Our space will not permit further illustrations here as we must refer to one or two resemblances among larvæ.

The general similarity of hue in larvæ to that of their food may not seem very remarkable, but some instances have been pointed out that are well worthy of notice. It has been observed, for instance, that the larva of the Emperor moth (*Saturnia carpini*) which feeds on heather, is exactly of the same shade of green, as the young leaves of heather, while the pink spots that adorn it are equally like the flower buds. The various shades of green assumed by larvæ feeding on plants of different hues

is worthy of notice. The larva of the Mallow moth, *Eubolea cervinata*, is precisely of the pale watery green of the stalks of the mallow, which it also resembles in thickness and in being slightly hairy. On the other hand, the larva of *Heliothis marginata* is generally of the same very dark green as the leaves of the rest-harrow. Many other cases might be cited, but we must speak for a moment of twig-like larvæ before we leave the subject. Many larvæ of *geometra* are exactly like a twig of the tree on which they live. That of *A. betularia*, for instance, is just like the smaller twigs of a birch tree, while *R. cratægata* is exactly like that of the white thorn. Even the little prominences, leaf buds, &c., on these twigs have their counterpart in the humps of the larva. These twig-like larvæ have also a peculiarity that adds greatly to the protection afforded by the resemblance. They have the habit of sitting extended at full length, holding by the anal claspers only, and, to add to the deception, the true legs generally are laid so close to the body as to be scarcely visible. Other loopers sit lengthwise on the underside of the midrib of a leaf which they then resemble in colour and thickness. But our space is more than exhausted though we have scarcely touched the subject. Our readers must observe for themselves, and perhaps the few hints we have given will enable them to see some of the modes by which these little creatures are protected from their enemies.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s. with plain plates, or 8s. with coloured plates. The latter can not be obtained through the booksellers, but any one can have their plates coloured on application to the editors.

Several correspondents are thanked for lists of *Sphingidæ* occurring in their respective localities. We shall be glad of others.

EXCHANGE.

DUPLICATES.—Ovæ of *Dispar*, pupa of *Laestris*, fine imagines of *Paphia*, *Tilia*, *Fasciuncula*, *Strigilis*, *Batis*, *Dersa*, *Anceps*, *Triangulum*, *Brunnea*, *C. nigrum*, *Gemina*, *Augur*, *Nebulosa*, *Herbida*, *Rurea*, *L. comma*, *Dentina*, *Notha*. DESIDERATA.—Ova, pupa or imagines, especially butterflies.—J. LAKINS, 21, Hertford Square, Butts, Coventry.

NOTES, CAPTURES, &c.

COLIAS EDUSA NEAR LONDON.—I saw two male *Edusa* flying along a hedgerow here yesterday, and lots of *V. atalanta* and *urticæ* were besporting themselves in the sunshine. The weather has been quite hot lately.—E. R. SHEPPARD, 9, Camden Villas, Sevenoaks, Kent.

SULPHUR COCKATOO.—Last summer a large Sulphur Cockatoo that had escaped out of a cage flew into a plantation close by and got his own living for over three weeks. I don't know what he got to eat. I used to see him very often walking about in the fields with the rooks. I believe he was eventually caught.

CERASTIS VACCINII.—Caught a specimen by tracling, 12th November,

MILDNESS OF THE WEATHER.—I heard a number of Skylarks this morning in full song, and saw them soaring up. I also heard a Blackbird. I have been told that a Blackbird's nest has been found lately in the neighbourhood of Birmingham with newly laid eggs in it. I saw a House Sparrow building a nest in some ivy on the side of a house. I saw a great flock of *Paridæ* in Sutton Park in the afternoon. Long-tailed Tits were the commonest, but the Great, Blue, and Cole Tits were in considerable numbers. 20th November.

H. ASPERSA HYBERNATED.—I found a very great number of the common snail, of all sizes, under some old stumps on a bank. They were all stuck together in a tight mass, I suppose to pass through the winter in that state.

H. DEFOLIARIA has been very common this year. In Sutton Park they were out mostly about the end of October. Their wingless females may still be found in numbers crawling up the trunks of oak-trees, but many of them seem quite lifeless, they hardly move a limb.

C. BOREATA has not been so plentiful; they were out mostly about the middle of October. The last specimen I caught was a male on the 13th November.

C. BRUMATA are out now in very great numbers, they have been so some time. Last year it was not until December that they appeared, the cold weather having delayed them.—W. H. BATH, Birmingham and Sutton Coldfield, 20th November.

THE PHILOSOPHY OF A FLOWER.

Abstract of a lecture delivered by Mr. C. P. Hobkirk, F.L.S., before the Huddersfield Literary and Scientific Society, November 14th, 1881.

The lecturer commenced by stating that the title might not convey the idea he had

intended that it should convey. He did not intend to put into his lecture any philosophical theses. He intended to treat the subject in as simple a manner as possible; and as philosophy meant a love of knowledge, the title might stand. He did not intend to use technicalities, but if he found himself obliged to do so he would endeavour to explain those he used. His idea of a typical lecture was that it should take a single subject and treat of that in such a manner as not only to impart knowledge but to create a desire for more: whether he should succeed in doing this remained to be seen.

Flowers have been used by all people for personal and home adornment from time immemorial, and in every part of the world. Everything in the painter's and sculptor's art, carpets, wall papers, &c., are indebted to the vegetable kingdom, and chiefly to flowers. Look even at our own times: every cottage window is decorated with flowers; even in the most smoky parts of towns you may see the box of mignonette, a plant that will grow under almost any atmosphere. What is the first thing a man does when he has got the means? It is to build himself a home, but that home is not considered complete until he has added one or more greenhouses for the cultivation of flowers. The flower is the ultimate aim and existence of the plant, and generally consists of four parts—two which may be called essential, and two which now are sometimes called ersential. The two essential parts are the stamens or pistil, and the two other parts the calyx and corolla.



This diagram represents a section of a flower, *a* being the calyx, *b* the corolla, *c* the stamen, and *d* the pistil. The use of the calyx is to protect the unexpanded flower before it bursts. The use of the corolla, which is generally brightly coloured, is to attract insects for the purpose of fertilizing the flower. The use of the stamens and pistil are of a sexual character. A stamen consists of two parts—the filament surmounted by a sort of knob called the anther, the latter containing a number of minute bodies called pollen grains. The pistil is more complicated. At the bottom is the ovary which contains a number of minute bodies called ovules; then there is a stalk or style sometimes several inches in length, and on the top of that is the stigma which secretes a sticky matter. Before a plant can produce fertile seed, some of those pollen grains must come from the anther and stick upon the stigma; and when this takes place the pollen grain begins to burst and send out a tube which penetrates the whole length of the style and finally enters one of those small egg-like bodies called ovules, into which the contents of the pollen grain is discharged through the pollen tube. In some plants the calyx and corolla are combined in one, and this is then called the perianth. (A number of large flowers were then dissected and passed round for examination.) Botany was perhaps one of the oldest sciences, for as far back as history can take us men studied, named, and arranged plants; but, strange to say, with all the students it was left to the end of the eighteenth century, to that father of modern botany—Linnæus—to discover the uses of the sexual organs of plants. In the rose, and in the vast tribe which it represents—*Rosacea*—the petals and stamens spring directly from the calyx, and, strange to say, there is not a single plant in that class which is in any way poisonous, but, on the contrary, many of them are useful. In the

buttercup and its class—*Ranunculacea*—the petals and stamens spring from a receptacle placed upon the top of the stem, and every plant in that class is more or less poisonous. The dandelion is a representative of a large class of plants having composite or compound flowers, because the flower head is composed not of one flower only, but of a number of minute flowers. He had brought with him a magnificent flower belonging to the same order, which had been furnished, along with others, by their president (Mr. S. Learoyd). Now everyone present would admit that that was a magnificent flower (a pure white chrysanthemum four inches in diameter), but they would perhaps be surprised when he told them that it was not a flower but a number of flowers, for if they took out one of the seeming petals they would find that each was a complete flower in itself.

All the flowers he had named are called poly-petalous, because all the petals are distinct; but there are others called mono-petalous in which the petals are united as in the primrose, &c. Linnæus conceived that every flower fertilized itself, but it has been found out by Darwin and others that scarcely one flower in a hundred fertilizes itself. Even in those flowers which have both stamens and pistils, in many cases the one is withered when the other comes to maturity, and in a great number of plants the stamens will be on one plant while the pistils will be on another perhaps miles away, and the pollen has to be carried by some means from the one to the other. This was thought at first to be done by the wind, but it has been found out that it is performed chiefly by insect agency. He also described Goethe's idea of a plant, that every part of a flower is simply a metamorphosed leaf, and shewed by diagrams on the black board that this was so, giving numerous instances; but such a subject would require a lecture to itself to do it full justice.

A number of interesting slides were then

exhibited under the microscope, among other things a specimen showing the pollen tube bursting from the pollen grain and penetrating the summit of the stigma.

BRITISH BIRDS, THEIR NESTS AND EGGS.

BY S. L. MOSLEY.

14. HEN HARRIER.

Circus cyaneus (Linn.)

Sammakko-Haukka (N. Lapland).

CYANEUS.—Blue coloured.

Size.—Male, length 17 in. to 19 in.; expanse of wings about 2 ft. 9 in. or 10 in. Female, length 20 in. to 22 in.; expanse, 2 ft. 9 in. or 10 in.

Plumage.—THE ADULT MALE has the bill nearly black; cere, eyes, and legs lemon yellow. The base of the bill is covered with black bristles. Head, throat, breast, and back blue grey. The first six primaries nearly black, white at the base, and the fourth slightly longer than the third. Upper tail coverts white. Tail blue, the outer feathers white with grey bars. Under parts below the breast, white.

THE ADULT FEMALE has the crown of the head, ear coverts, breast, and back dark brown, the feathers about the neck margined on each side with lighter brown. A light streak extends over, and another under the eye, with a dark line between the two. Feathers behind the neck white, with a brown line down the centre of each. Primaries dark brown, the outer webs greyish and the inner webs barred. Upper tail coverts white. Tail, the two centre feathers dark brown with six still darker bars, the rest ferruginous with dark brown bars. Under parts, below the breast, ferruginous white. The two sexes were formerly considered distinct species, the male being

known as the "blue hawk," and the female as the "ringtail." The two figures on the plate are from specimens in my own collection.

IMMATURE males resemble the females in colour, but begin to change the second year.

THE YOUNG are at first covered with white down. Some years ago I saw four which had been taken from a nest, and the old ones killed, in North-west Yorkshire.

VARIETIES.—I never saw a variety of this species.

Note.—The note is described by Morris as being "loud and clear, resembling in some degree that of the Kestrel."

Flight.—The flight of the Hen Harrier, like the rest of the genus, is low, sweeping over the surface of the ground in a kind of hunting fashion, hence probably the name Harriers. They are said occasionally to soar aloft like many others of this family.

Migration.—This species seems to be partially migratory, being of more frequent occurrence in the autumn.

Food.—The Hen Harrier feeds upon game, thrushes, larks, and all kinds of small birds, rabbits, young hares, and other small mammals. Dr. Saxby states that in hard weather it resorts to the sea coast in search of sandpipers, &c., and small fish, as he has proved by dissection. It also seems fond of eggs, snakes, lizards, and other reptiles, twenty lizards having been taken from a single bird. The meaning of the Lap name given above is "frog hawk," showing that the same habit obtains there.

IN CONFINEMENT they may be treated similar to the other birds of prey.

Habitat.—Formerly this was rather a common species in many parts of Britain, but now, alas! it is much rarer. It occurs occasionally all over England, Scotland, and Ireland. A few pairs, I believe, still breed in England, but their numbers are decreasing every year.

ABROAD it is found over all the flat districts of Europe, principally in the south, and in North Africa; also as a winter visitor to Asia Minor, Palestine, India, and China.

Nest.—The nest is placed upon or near the ground, generally upon a waste or moor, among furze bushes or heather. It is composed of sticks of small size, coarse grass, heather, hay, and wool.

Eggs.—Four or five eggs are laid, in some rare instances six. They should be looked for the first or second week in May. Their colour is pale bluish white; in some cases, but very seldom, slightly spotted with red. There must be some error in the statement in Bewick that the eggs are sometimes reddish with white spots, probably it should have been reversed, viz., eggs white, sometimes with reddish spots.

RANDOM NOTES ON REPTILES.

By J. OSBORNE.

TADPOLES AND FROGS.

I think it is in the "Vestiges of Creation" that a statement is made that if tadpoles are shut up in a vessel from which they cannot escape, but through which the water has free ingress and egress, and the vessel sunk at the bottom of a pond or slow stream, the tadpoles will not develop into frogs, but will grow into tadpoles of very large size. On what authority the statement is made I have no idea, but so far as my experience goes, it is not true. At the time we had the aquarium at home I have already spoken of, I introduced on one occasion a number of tadpoles. They grew well, and soon begun to develop their legs and the tail to appear less. The vulgar idea seems to be that the tail is absorbed into the body again, but I was satisfied that it gradually "scaled away." More than once I noticed small filmy pieces at the edges as if they

had "frayed off," and this, I believe, was owing to the substance of the tail gradually coming off externally. When the legs are perfect and the tail all gone, the young frog is then ready for a life on land. It has become an air-breathing animal. When they have reached this state they leave the water for dry land as soon as possible. I was scarcely aware that it was now necessary for them to get into another element: and though I saw them stretching up the glass sides, standing on their hind legs, or making long jumps in the water, I never thought that they had now ceased to be water-breathing animals. They were, therefore, left where they were, and when next I looked at them they were dead. For a time I felt puzzled, but at last it struck me they had been drowned, as was undoubtedly the case. I then provided a piece of rockwork, by which they could get out when ready, and they were soon safely on the little fernery in the middle, from which they were removed to another case containing ferns only. Here they did well, and each selected a little crevice in the rockwork for himself. At night, when I came in from an entomological expedition, I used to set off in it all the insects that were too worn or too common to set. The little frogs were soon out of their holes, and enormous leaps they took in their efforts to secure their prey. One in particular I used to notice when not more than an inch and a half long (without the hind legs) was able to spring up fully nine inches from the bottom. So accurate, too, was it in its movements, that it rarely missed its mark though the insect was buzzing about on the wing. Such moths as *T. pronuba* were almost too large for it, and it heeded to make two or three gulps before it got one of this size swallowed. The moth seemed to live some time, for sometimes the antennæ alone would project from its mouth and would wave about for several minutes, then froggy would give another gulp and

even the antennæ disappeared. I was much astonished how quickly these little frogs grew when they were well fed; and when they had fasted a few days they seemed very ravenous: all of them would jump at once at the same insect, and often bump together in the air, letting the moth escape for the moment. The large frog I have spoken of was always the keenest for food, and it grew so large that it begun to break the ferns down, and I had to carry it into the fields and set it away.

This concludes my notes on reptiles. I have not had much opportunity of observing others. I once caught a slowworm, but it escaped before I got it home; and once I caught a Ringed snake, but I have nothing special to say about it, though I kept it in a walled yard for several months, and it grew at last so tame that it would take food from my fingers. I believe all our reptiles are easily tamed, and when the idea of their repulsiveness is once got over they are very interesting pets. Not very long ago I was called into an adjoining garden by a gentleman who had found a horrible monster, which proved to be a specimen of the crested newt. He had taken it up with the kitchen tongs and put it in a large dish till I should come, and he evidently felt himself very courageous for having done so much. When I took it in my hands he seemed to expect I should fall dead at his feet; and, though nothing serious happened, he refers to it with a shudder even yet. I name this only to show how ignorance tends to alarm, and my friend was so afraid of "the horrid beast" that he dared not come near enough to admire it. I have often longed to possess a viper, especially one with young ones, that I might try to satisfy myself that the young take refuge in the mouth or throat of the parent. But there are no vipers hereabouts, and however harmless our other reptiles may be, the viper is unquestionably "venomous."

THE YOUNG NATURALIST.

E. G. MEEK,

NATURALIST,

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 109.

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VOL. 3.

THE "YOUNG NATURALIST" FIELD CLUB, No. 1.

OUR articles on Field Clubs have led to much correspondence with the younger portion of our readers, and had the suggestion been made six months earlier, we have no doubt several clubs would already have been formed; but the idea that there is no Natural History work to be done at time of year, makes young people hesitate about joining such societies till Spring. Nevertheless, we are able to say that No. 1 has been formed, and we lay before our readers the rules they have adopted, some of which seem exceedingly good.

GENERAL RULES.

- 1.—That this Club be called the "Huddersfield Young Naturalist Field Club."
- 2.—That the objects of the Club be to obtain a better knowledge of the Fauna and Flora of the neighbourhood, and for mutual assistance in forming collections.
- 3.—That the officers of the Club be a President, a Secretary, and one or more Curators.
- 4.—That meetings and excursions be held every alternate Saturday, at such times and places as shall be decided upon.
- 5.—That for the present no entrance fee or subscription be required from members.

- 6.—That the "Young Naturalist" be the organ of the Club.

EXCHANGE RULES.

- 7.—That a box be provided (by donations or otherwise), for the reception of duplicate specimens, which shall be in the possession of the curator, and shall be ready for the inspection of members at the meetings.
- 8.—Any member, seeing in the box any specimens he wants, may have them if he has, or is prepared to deposit in return what the curator shall consider an equivalent, the member paying 1d. for the transaction; those pennies to be used by the curator in exchanging with other clubs, for the benefit of the members; the curator keeping an account of all specimens passing through his hands.
- 9.—That each member provide the curator of his branch with a list, showing the species he wants; these lists to be revised as frequently as possible by the owners.

SPECIMEN FUND.

- 10.—That there be a specimen fund raised in shares, at 6d. per week, any member taking one or more shares, or not at his option.
- 11.—That every three months the fund be expended in having a parcel sent from some dealer, in sending out a person collecting, or in any manner the shareholders may decide.

Among the numerous letters we had on the subject, is one from Mr. W.

Riley, the Hon. Sec. of the Frizinghall branch of the "Union Jack Field Club." It is an old saying that there is nothing new under the sun, and it would appear from Mr. Riley's interesting communication, that the Editor of the "Union Jack" (Mr. G. A. Henty), had made in the Autumn of last year, very similar suggestions to those of own. These have been so well taken with that there are now over 3,000 members of these Clubs in the United Kingdom. Five lads in Frizinghall, near Bradford, started one of them, which has progressed, and now numbers twenty-two members, three honorary members, and two corresponding members. The age of their members ranges from eleven upwards, there being no limit. Mr. Riley naively remarks that gentlemen are of great use "they help to keep order, and in cases of dispute can prevent quarrelling." Mr. Riley's Club, however, appears to have had something else to do than quarrel, for they have had papers read as follows:—

"British Birds and Eggs.

„ Beetles (two.)

Cuckoos.

How to Skeletonise Leaves.

Botany.

Locust.

Winter Forms of Trees and their suggestions.

British Marine Algæ.

Butterflies (two) &c , &c.

No mean programme of work for any society in the first year of its existence. Mr. Riley thinks a plan of this sort might be adopted with advantage by

the Young Naturalists' Field Club. We are much obliged for his suggestions, and shall be glad to know that his society continues its career of usefulness, and that any of ours do as well. It is clear that there are numbers of young people ready to work at natural history, and that they only want a little help to set them on the right track.

We are glad to know number one has been formed, and shall be glad soon to receive a list of its members and officers, and to hear something of its doings. Who will form number two?

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due Weekly numbers or monthly parts, 6s. with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

W.H.B.—Please write on one side of the paper only.

WE should be obliged if persons sending insects to name, especially Microlepidoptera, would give, when they know it, the date of capture and locality.

WE have again to thank Mr. F. Kerry, of Harwich, for seven different varieties of the egg of the Reed Warbler, sent for figuring.

"BIRDS AND EGGS." We shall now soon be among the Thrushes and Warblers, and as we should like, as far as possible, to give figures from nature of the nests of all the smaller land birds, we should be obliged if parties having nests would communicate with us. We shall be glad

either to receive the nests on loan or to give a good return. There are many of the commoner species we yet require. The *downy* young of many of the game-birds and water-birds are also required for the same purpose.

"AT HOME."

LIVERPOOL.—C. S. Gregson will be at home every Sunday until March next. Microlepidopterists, coleopterists, and artists should come early to secure good light; general naturalists any time from nine a.m. to nine p.m.—Rose Bank, Fletcher Grove, Edge Lane, Liverpool.

HUDDERSFIELD.—S. L. Mosley every Saturday afternoon.

(We shall be glad of additions to this list)

NOTES, CAPTURES, &c.

CAPTURES AT IVY.—I have taken the following insects at ivy bloom between the 26th of October and 15th November. I found the best time to be directly it was dark.

A. suffusa, one male.

A. saucia, one or two.

A. segetum, several males.

O. Lota, several.

O. macilenta swarmed between the 26th October and 8th November. Most of the specimens very good.

C. vaccinii and *spadicca* in profusion from the 7th November.

D. rubiginosa, one very fine.

X. terruginea, a few, rather worn.

M. oxyacanthæ, one.

P. meticulosa, a good many.

X. rhisolitha, a good series in fine order.

X. petrificata, one.

P. gamma, one, good.

O. dilutata, a few.

C. Psittacata, a good series in fine condition.

—MISS HINCHLIFF, Worlington House, Instow, N. Devon.

DUCKS FROZEN IN ICE. A few winters ago near Birmingham some ducks used to rest at night by sitting together in the middle of a pool, probably thinking themselves secure by doing so. One morning they were found all frozen tightly together, and the ice had to be broken to get them out. They appeared none the worse for it.

FIGHT BETWEEN A STARLING AND A JACKDAW.—Last spring a tree starling built a nest in a hole in a fir-tree, and would fly out and drive away any bird that came near. A jackdaw settled on the same tree, when the starling flew at him screeching with her mouth open. The jackdaw flew away with the starling darting after him; but upon flying to a tree he saw what a small enemy was pursuing him, turned on her, the starling now flew away, but the jackdaw did not go after her far; she went at him again and drove him a safe distance from the nest.

DIARY. November 24th.—Jays are very plentiful at Sutton, but shy. They make a great noise when disturbed, and fly off in all directions. They may be seen mostly in small flocks of about a score.

November 26th.—*Helix Ericetorum* has not yet hibernated. I saw several on the banks this morning.

November 27th.—Saw several flocks of yellow-hammers and chaffinches. Females of *H. defoliaria* extremely plentiful, but I did not see any males. Saw a covey of Partidges flying over a wood at a great height. They afterwards settled on the common about a mile off.

November 28th.—*C. brumata* very abundant. Saw great numbers on shop windows and gas lamps at night at Sutton.

November 30th.—Saw a flock of lapwings migrating southwards.

P. PILOSARIA.—Took a male specimen on the trunk of an oak-tree in Lower Nut Hurst Sutton Park, 27th November.

Note.—I was not aware that *P. pilosaria* made its appearance before February.

SHREWS.—When I was last staying in Shropshire I noticed a number of dead shrews by the side of a pool. They did not seem to have been hurt in any way. I have heard from several sources that numbers are found dead every autumn without any apparent cause of death. I would be much obliged if any body would inform me the reason of this.

L. ARGIOLUS.—Can any of the readers of the "Young Naturalist" living in the south of England tell me whether *L. argiolus* has been plentiful this year or not. It has been very scarce at Sutton. At least I have not seen many specimens. Last year it was in great numbers.—W. H. BATH, Birmingham and Sutton Coldfield.

(*P. pilosaria* has no doubt appeared so early in consequence of the extreme mildness of the season.—Eds.)

ORNITHOLOGICAL NOTES FROM BIRMINGHAM.—There was a blackbird's nest containing eggs newly laid, found by a gentleman in Carpenter Road, Edgbaston, a few days ago. A blackbird's nest in the middle of November is rather an unusual occurrence.

A specimen of the hoopoe (*Upupa epops*) was shot at Oscott, near Sutton Coldfield (a few miles from here), on the 21st of November, by Mr. H. J. James.

I have noticed sparrows (house sparrows) building in several localities round about Birmingham during the mild weather of this month.—P. T. DEAKIN, Edgbaston.

(We have had several notices of the hoopoe at Oscott, and presume they are all of the same bird.—Eds.)

On November 24th we saw an oak-tree that had sprouted during the warm weather and was nearly in full leaf.—N. PRESCOTT DECIE, Bockleton Court, Tenbury, Worcestershire.

SENSIBILITY IN INSECTS.

J. R. S. CLIFFORD,

From the "Naturalist's Circular."

Many individuals are inclined to think that one of the principal disadvantages attendant upon the study of entomology, as it is usually pursued, is the measure of cruelty (real or apparent) which seems unavoidably connected with it. The geologist may strike his favourite rocks and fossils as hard as he pleases, without any danger of producing even an infinitesimal degree of suffering; and the botanist, as he pulls up plant after plant by the roots, however much he may love the offspring of Flora, will rarely feel inclined to say with the poet,—

"'Tis my faith that every flower
Enjoys the air it breathes."

But when we turn to even such an inferior rank of animals as those which are comprehended in the class *Insecta*, the matter looks differently. There are none who will venture to assert that insects are positively void of all sensibility; and it therefore becomes a question of some importance to every entomologist to consider whether he can make any plausible conjectures as to the nature and the intensity of the feeling experienced by insects. A rather animated discussion of this point—"Do insects feel pain?"—has been carried on recently in a natural history periodical; and though, judging by present appearances, it seems probable that the disputants themselves will leave off just as they began, many lookers on will benefit by the "ventilation," as the phrase goes, of this interesting theme. Without entering the arena of controversy, I venture to jot down a few ideas upon the subject, gained chiefly by observation.

I think it must be granted by all thoughtful men that, in speaking of insects, and indeed of all living creatures upon this globe, saving man, we can only use the words "pleasure" and "pain" in a subordinate sense. We are too apt to forget the intimate

connection which subsists between the body of man and his soul which animates it; but this being remembered, we see at once that pleasure and pain, as we know them, cannot be experienced by beings without a rational nature. This nature it is which judges of the quality of the sensations conveyed to the brain by the nerves; and the truth of our great dramatist's remark is unquestioned, that even—

“The pain of death is most in apprehension.”

It is no proof, because we observe in any of the lower animals motions or cries, which would with us indicate suffering, that they are there symptomatic of the same emotions.

The *Mammalia*, and more especially certain species, are in structure and in habit more analogous to man than the lower divisions of the animal kingdom. As we go from class to class we find not a degradation, but a descent. We arrive at the *Insecta*; and though we have, as in the cases of the ant and the bee, certain remarkable instances of apparent intelligence, the habits of the majority prove to us their inferiority in the ranks of existences.

It may be true, as asserted by Bowerbank and others, that insects have a circulatory system; but we do not yet know whether that circulation carries sensation. Certainly no central brain exists; and the structure of the body (in segments) and the usual mode of breathing appear to indicate that no very close bond unites the different parts of the animal. Yet a mysterious something takes intelligence from one part to another; thus, if you touch the anal extremity of a buff-tip *larva* even gently, it at once turns its head fiercely in the direction of the disturber.

The well-meaning, but often injudicious, vindicators of the usual practices of entomologists have based some of their arguments on this subject upon premises manifestly unsound. The assertion that the great brevity of insect life shows that its course cannot be marked by much pain or pleasure will scarcely find general acceptance. The

measure of time is undefined—its length or brevity is according to the experience of each individual; and to an insect a day may appear as decades of years. We know also that even this period in insects is longer (as we measure it) than many suppose. Take the case of the *Lepidoptera*. There we might reckon the average length of life, from the hatching the egg to the death of the imago, as being seven or eight months.

Some cases of insensibility in insects are probably also mere fallacies. It is said that moths may be pinned in the daytime when at rest, and that they will not stir until their time of flight. I cannot but think this can only happen when the moth is partially torpid with cold. I have tried the experiment, though not frequently, as I dislike its apparent cruelty; but whenever I have passed a pin through a living moth I have found that it struggled to escape. Nor does it seem to prove anything that a wasp will sip honey when the abdomen is snipped off, or a dragon-fly seize its prey under like circumstances. A sudden injury may have a stunning effect for a certain time. Cases are very numerous where persons have been stabbed, even fatally, and have felt no pain, and not even known that they were wounded.

But the greatest mystery of all in relation to insects is this,—what is the nature of the guiding or motive power which directs their actions; there is an indication of the exercise of will which can scarcely be classed as instinct. Hold your finger in front of a small beetle as he is marching along a leaf; he sees the obstacle, and turns to the right or left. Blind instinct would lead him, you would think, straight up against the barrier. Again, insects may sometimes be tamed, if one may be allowed the expression. When at large the *larva* of *A. caja* rolls into a ball at the slightest disturbance. Feed this up in captivity, beginning when it is young, and its alarm at the approach of an observer subsides, or is greatly diminished. Were we

to obtain some clue to the nature of the sensations experienced by insects, we might expect to get also some light upon this point.

With my present knowledge, however, to return to the question of the endurance or non-endurance of pain by insects, I must believe that, as we understand it, it does not occur amongst them. Notwithstanding that, we should avoid, in every possible way, any such destruction of insect life as may lay us open, however unjustly, to the charge of cruelty.

THE WHITE DEAD NETTLE :

(*Lamium Album.*)

By J. P. SOUTTER, Bishop Auckland.

THIS is one of the very latest of the flowers of Summer to linger into the lap of Winter.

"When chill November's surly blast,
Makes fields and forests bare,"

this handy and robust wilding may be found in cosy banks and sheltered hedges, exposing its snowy blossoms to the passing blinks of the watery wintery sun: indeed, in mild seasons, it and its near relative (*Lamium purpureum*), an abundant weed in gardens, may be said to be never out of bloom, but like the daisy, have a perennial blossoming. The White Dead Nettle may be taken as the type of the natural Order *Labiatae*, which derives its name from the peculiar lip-shaped form of the corolla, which is found more or less obviously developed in all the members of this Order, although it is not exclusively confined to it. The Labiates are characterised by square stems, often swollen or thickened at the insertion of the leaves, which are produced in pairs, on opposite sides of the stem; and these pairs often cross each other at right angles; that is, the third pair is directly above the first, the fourth above the second and so on. The flowers are borne in peculiar clusters in the axils of the leaves, they are often so crowded as to

seem to form a ring or whorl around the stem, but careful examination will show that they all spring from a single short much-branched stalk, in the fork of each leaf. The calyx is composed of five united sepals with usually evident ribs or ridges at the point of union, and five prominent teeth, it is persistent, and remains as a cup containing the four triangular, prismatic, nutlike fruits. The corolla is always tubular, and generally lip-shaped. The four stamens are in two pairs, two long and two short, they are inserted on the corolla and fall with it. The style is long, rising from between the four carpels, and terminating in a forked stigma. Many of the plants of this natural order contain a pungent, volatile essential oil, which makes them highly esteemed as condiments and medicines, such as the various mints, sages, horehounds, &c. Others are valued and cultivated for their aromatic odours, as Lavender, Rosemary, Balm, Thyme, &c. Like the *Cruciferae*, none of the *Labiatae* are poisonous, nor indeed has any of them ever been suspected of being hurtful or noxious; and, as we have seen, some of them have even attained a high repute as adjuncts to cookery and medicine. Yet there is not a single one that can truly be ranked as a food-plant, or which forms a staple article of diet. The flowers of the White Dead Nettle are very highly specialised, and fitted for the visits of insects, the most indifferent observer cannot avoid noticing the beautiful adaptation of means to the end in view. Take first the shape of the corolla. We have a long tube with a store of nectar at the base, which is protected from the rain by the overhanging penthouse of the arched upper lip. The tube is sufficiently deep and narrow to prevent any insects from reaching it except those who have a long proboscis like the humble bees. And the more effectually to secure the honied treasure from minute invaders, who might rob and carry off the

spoil, without any compensating advantage to the plant, the tube is closed low down by a projecting ring of hairs. Then observe the lower lip how it is flattened and broadened out, forming an admirable threshold or doorstep on which the bee may alight. On each side there are two prominent protuberances to serve as footholds, and thus furnish leverage to enable it to press against the upper lip, shielded from injury by its helmet-like hood, and just in the place and position to strike the upper part of the bee's body when it enters the tube of the corolla, so that when mature they cannot fail to dust with pollen the insect's body on a particular spot at each visit. The style, with its forked stigma lies between them so as to touch the same part of the insect's body. But it does not arrive at maturity in any individual flower until after the stamens have shed their pollen and shrivelled out of the way, thus cross-fertilisation is certainly ensured. So common is this plant that any one can easily obtain a fresh specimen, and examine for himself its beautifully simple yet elaborate and effective structure. The generic name of *Lamium* is derived from the Greek, and refers to the throat-like shape of the corolla, and the specific name *Album* to its white colour. The popular name of Dead Nettle is an allusion to the nettle-like appearance of the leaves and general habit of the plant, but it entirely lacks the acid, poisonous, stinging properties of the common nettle. The White Archangel is another name by which it is known in certain districts. There are several plants being the appellation of Archangel, foremost of these is *Angelica*, *Archangelica*, which is the Archangel, an umbelliferous plant sometimes grown in gardens, or cultivated for its medicinal properties, but not found wild this country. Then we have the White Archangel *Lamium Album*; the Red *L. purpureum*; the yellow, *L. galeobdolon*; all labiate plants. The origin of this popular name is obscure.

The Archangel is found in flower on the archangel Michael's day, May 8th, hence it might be said to be under his care. Its properties are said to have been revealed in a vision. It is said to be a powerful preventive of pestilential diseases; a protective against witches and evil spirits; and a remedy for the disease in cattle known as "elfshot" in the northern counties. But in the case of the dead nettle it is surely a misnomer. No medical properties are now attributed to it, and it is not by any means an attractive plant except to a botanist and bees. Even the children pass it by in gathering their nosegays, and they are the most omnivorous of all animals. It has a faint, dull, heavy odour, more disagreeable when bruised, although nothing like so foetid as its near ally, the hedge woundwort (*Stachys sylvatica*) which is simply intolerable. Cattle uniformly reject it, although Linnæus states that the young tender shoots are used as vegetables in Sweden in the same way as common nettles are with us. It is curious that a hardy plant so abundant and generally distributed in England, should be so scarce in Scotland: in the northern counties it is unknown, it is rare and local in the midlands, and it is only in the extreme southern counties, those bordering the banks of the Tweed, that it is at all common. But its place is taken by a close congener, *Galeopsis versicolor*, a weed of cultivated fields, which increases in frequency northwards. It has similar flowers but even more showy and attractive, being beautifully variegated with white, yellow, and purple. It is abundantly armed with long, slender, hardened hairs or prickles, which, although deficient in the virulent juice of the stinging nettle, often causes great inconvenience to the workers in the harvest field, because from their extreme tenuity they break, and becoming embedded in the flesh, defy extraction, hence they are more dreaded than even the stronger armed thistle.

THE YOUNG NATURALIST.

E. G. MEEK,

NATURALIST,

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VOL. 3.

ASSISTANT NATURALISTS.

DURING the past few months there has been published from time to time, in the pages of *Science Gossip*, a list of gentlemen who have special knowledge of some branch of Natural History, and who are willing, by correspondence or otherwise, to help beginners. We have no doubt very valuable results have followed the publication of these lists, and we do not see why we should be slow to avail ourselves of a like advantage if it can be had. The names we have published of those who are glad to see Entomologists "At Home" to show their collections, name specimens, or give other information, has we know been of considerable use, but there are doubtless many who are willing to help beginners, but who cannot make it convenient to announce a time at which they will be at liberty at their own houses. There are also numbers of beginners who do not live near any of those gentlemen who so kindly invite visitors to call upon them, or who cannot be at liberty at the hours announced. We have always been glad to name specimens sent by post, or give such information as lay in our power, and we have been pleased

to have much correspondence with some of our young readers, and hope we have been able to assist them. But a larger list of names would be of more service, and would often save considerable time. It has frequently happened that specimens have been sent us to name, in branches with which we were not familiar. We have had to send them elsewhere, taking the risk of an extra transmission through the post—never too safe a mode for fragile specimens—besides the extra expense and delay. This would be avoided if we could publish a list of names of gentlemen, with particulars of the branch or branches of Natural History which they studied, who would take the trouble to name specimens or in any other way assist beginners through the post. As for instance:—

JOHN BROWN, Belle Vue Villa, Burnchester. *Macro-Lepidoptera* and *Coleoptera*.

THOMAS JONES, West Hartley, near Morningham. Botany: especially Flowering plants and Ferns.

ISAAC ROBINSON, Alton Road, Powden. Land and Fresh Water Shells. Will also name British Marine

Shells, but cannot give information as to localities, &c.

&c. &c.

Were we to send a circular to each of our subscribers we have no doubt we would receive many affirmative replies. Will our readers accept the above as a circular, and reply accordingly.

Should any of our friends favour us with their names, we will print them from time to time in our pages; and it now remains to say a few words to those of our readers who may need to avail themselves of their services. Long ago, Mr. Stainton gave some instructions to his young readers how to address Entomologists. It is *etiquette* among Naturalists to address one another, even for the first time as *Dear Sir*. When specimens are sent to be named, they should be very carefully packed, and a stamped addressed label for their return, enclosed in the parcel. If enquiries only are made, you should enclose a stamped addressed envelope for the reply. As to the kind of enquiries to be made, we would say, never be afraid to ask for information about anything you want to know, or that puzzles you. But we would also say, never ask for information until you have tried to find it out for yourself. Never send a specimen to name until you have done your best to name it from the books in your possession, But at the same time, never mind how conspicuous the specimen be in its markings, or how simple the matter seems to be that puzzles you, if you have really tried and failed, do not hesitate

to ask. You will find this, that the more trouble it takes you to acquire information, the less likely will you be to forget it; and that the insect you made out by much poring over "Stainton's Manuel," is never forgotten afterwards. Still, every bit of knowledge helps you so much to other knowledge; every specimen you have got named helps you so much to the names of others, that you must always get your difficulties solved as early as possible. We therefore offer the above suggestions in the hope they will be made use of to the advantage of all concerned.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s. with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

"A. T.," Liverpool.—Yes, we will be glad of your notes on the doings of the Whitby Field Naturalists' Club.

"AT HOME."

LIVERPOOL.—C. S. Gregson will be at home every Sunday until March next. Microlepidopterists, coleopterists, and artists should come early to secure good light; general naturalists any time from nine a.m. to nine p.m.—Rose Bank, Fletcher Grove Edge Lane, Liverpool.

HUDDERSFIELD.—S. L. Mosley every Saturday afternoon,

(We shall be glad of additions to this list.)

EXCHANGE.

The Huddersfield Club have the following insects in duplicate, and would be glad to exchange with other clubs:—*Machaon, Rhamni, Adippe, Io, Atalanta, Cardui, B. quercus, Carpini, Rurea, Tenebrosa, Plecta, Herbida*, and many others.—F. ELLIS, Sec., *pro tem*, 23, Swallow Street, Huddersfield.

Wanted, to buy or exchange, all kinds of nests of Hymenoptera, galls, mined leaves of micros, Ornithoptera, Trichoptera and cases, and anything interesting for fitting up a large typical collection of insects of all orders, British and foreign.—S. L. MOSLEY, Huddersfield.

NOTES, CAPTURES, &c.

HUDDERSFIELD "YOUNG NATURALIST" FIELD CLUB.—We had a short excursion on Saturday afternoon to Crossland Moor, but owing to the daylight being very short darkness soon put a stop to our operations. We found a good many of some species of *Coleophora*, on the bent rush (*Juncus squarrosus*). We also found the larva of *Agrotis porphyrea*. Lots of small diptera were hibernating under the frozen lumps of cow's dung. We had intended trying pupæ digging, but the frost rendered the ground too hard. We hope soon to be able to report better success. F. ELLIS, Sec., *pro tem*.

CAPTURE OF A SEAL NEAR HARWICH.—A fine specimen of the common grey seal was shot in the Handford Waters. It weighed 140 lbs.—F. KERRY, Harwich.

NOTE ON LIZARDS.—During the spring of the present year I purchased two Common Lizards and two Sand Lizards for the purpose of rearing in a terrarium. The former of these died at the end of a fortnight. I suppose on account of the weather being so cold, they could scarcely move a limb when alive. The Sand Lizards thrived splendidly, and nothing was so amusing as to see them feed,

on account of their activity, for it was very seldom with a single dart, they missed their prey. Butterflies and moths they seemed to like best, as for worms, they would not touch them. If I gave them a butterfly too much injured for setting they would dart at it with astonishing celerity; first one would manage to get hold of it, then the other, and in this way the poor insect lingered a long time; but as soon as one of them got hold of its head (which they were continually trying to do, knowing this the most vital part), it was killed almost immediately, and in a few mouthfuls the butterfly was lost to sight. Sometimes the insect lingered about half-an-hour, the lizards not being able to get at its head. I once gave them a buff-tip moth, but on account of the thick feathery-like body they were only able to eat a small portion of it. They never went into the water provided for them, and when thrown in they seemed to be paralyzed for the moment but soon managed to get out. They would often go to the side of the vessel and drink the water, but never with more than one foot in. Each animal burrowed a hole in the soil, into which they went at night to wait till the rising of the sun the following day, when their activity was again renewed.

NOTES ON TINEINA.**GELECHIA AFFINIS, (Haw.)**

Examine some old wall that is covered with moss for the very small larva of *G. affinis*. According to Stainton it is "pinkish, paler on each side of the dorsal line; head black; second segment with two black blotches; spots minute, blackish." Having found a sufficient quantity, take them home, procure a moderate sized flower pot, half fill it with earth, upon which place some cakes of the moss, then press it down and place your larvæ upon it; cover the whole with a piece of glass, having previously ground the edges of the pot so that no

crevice is left for the escape of the larvæ. When the moss becomes dry give it a little water to keep it growing. The moths are due in June.

EXAPATE GELATELLA, (Linn.)

Having found the above, go to some wood and beat about the undergrowth. You may dislodge a moth about eight or nine lines in expanse, brownish grey, with a whitish streak from the base containing two darker spots and a dark shade near the tip. This will be *Exapate gelatella*. It also comes to light, and may sometimes be found inside windows.

ERRATA.—In last Notes the name *Pincicolella* should be *Tuncicolella*.

ON SETTING WASPS FOR THE CABINET.

NEWLY hatched wasps are very likely to turn black after a little while, so that if we have only such specimens it is better to keep them alive for some days before doing anything with them.

For this purpose (setting) take the wasp between the left thumb and fore finger and squeeze the abdomen gently, removing the viscera as they protrude with a pair of forceps and a bit of rag. Then wipe out the inside of the abdomen with a little cotton wool, and when it is quite dry, insert a tuft of this to prevent the abdomen from shrinking. With care all this may be done without cutting, or even without displacing any of the rings. Next draw the legs out gently, and particularly attend to the tibio-tarsal joints, straightening them, not by pulling, but by pressing, so that they may readily take any required position without fear of breaking them. Now pass a fine but strong pin through the thorax, and set the insect on a cork board. The legs will keep their position in drying, but the antennæ will need support, and perhaps the head also. The chief trouble is with the wings, on the neat adjustment of which so much of

the beauty of the specimen depends. The best way to manage them is to fix a long pin obliquely into the cork board, on either side parallel to the body of the insect, making an inclined plane on which the wings may rest when they are expanded. Now open the fore wing very carefully with one blade of the forceps, and draw it over the hind wing up this plane. After one or two trials the row of little hooks which are found along the front of the hind wing of the wasp will hook as they naturally do in flight, and the wings thus fastened will look much better and retain their position more securely than when they are adjusted by pins. They are to be held in this position by another long lighter pin lying over the shorter one and nipping the wings between them. This must be repeated on the under side, and the limbs must be arranged when they have been disturbed, and then the specimen only needs drying to be complete. Sometimes by merely blowing them the wings may be properly expanded, and if luckily the hooks can be made to catch at the same time a great deal of trouble will be saved thereby.—“British Social Wasps,” by Dr. E. L. Ormerod.

NATURAL HISTORY DIARY:

By J. W. CARTER.

November 4th.—My brother and I took one specimen of *H. pennaria* and *C. vacciniæ* abundantly in Bingley Wood. (E.P.P.B.)

November 11th.—Noticed a large flock of Chaffinches feeding upon cabbage seeds in a garden in the village. They were all male birds. I have seen several flocks since but have not seen one female amongst them. (E.P.P.B.)

November 12th.—A friend of mine saw a fine old male Snowbunting on the highway near Harecrofts feeding upon undigested grain in horse droppings. A small flock has since been seen flying about some fields near

Manywells. I have not seen, neither have I heard from any of my ornithological friends, of any Fieldfares being observed in this district during the present month. (E.P.P.B.)

FIELDFARES AND REDWINGS.—Although I have been much about the country, I have not, up to the end of this month, seen a single bird of either of these species. (S.L.M.)

November 12th.—Mr. Firth took a very dark—almost black—unicolourous variety of *H. defoliaria* at Shipley Glen. I have a similar one from the same place, which I took two or three years ago, but it is not near so common as the analogous variety of *H. progenmaria*,

November 23rd.—On this date I skinned a skylark: it contained particles of gravel and seeds of various kinds, many of them were probably convolvulus, a very troublesome weed in cornfields. (S.L.M.)

Robins and Hedgesparrows have been singing during fine weather all the month. Yellowhammers and other small birds have been fairly common, but not numerous in stubble fields. (S.L.M.)

The month of November has been one of unprecedented mildness. The Hybernidæ have appeared in good numbers, and their emergence seems to have been simultaneous; they have presented a most lively appearance, flying about in all directions, which is contrary to their usual habits of sitting quietly on the leafless branches. *C. vaccinii* was quite common to the end of the month. Primroses and other spring flowers have been observed in flower in various parts of Yorkshire.

SHELL COLLECTING.

ONE fine day in September my brother and I took a stroll without any very special object, but eventually settled down to have a hunt for shells. We found *Helix fasciolata* very abundant at some distance from the sea. It is the commonest shell we have

here—where it occurs, but it is very local—its numbers considerably exceeding *Helix nemoralis*. A little further up the lane we found *Helix ericetorum*, but only got three specimens, though we looked closely for the species which was a desideratum both with my brother and I. In an enclosure, walled on three sides to keep the water in, but open on the fourth to admit cattle to drink, we found among the floating confervæ large numbers of *Cyclas cornea*. We had expected to find this among the mud, but they all seemed to be among this weed. They were of all sizes of growth. In another little pond for cattle we found besides quantities of *Linnæa limosa* the extremely minute *Planorbis crista*. This little shell is no bigger, or scarcely so large as a mustard seed, yet is beautifully ridged or crested on the whorls. They were in great abundance on the confervæ, but required close looking for, and we found the best way was to take home a large piece of the weed and get the shells after it was dry. In returning we found under stones the large and common *Helix aspersa* and the small though equally common *Pupa cylindracea*, as well as one or two immature shells we were unable to name. This was my first attempt at collecting land and fresh water shells, and though we found nothing of any rarity, I was pleased to get so many species in so short a time, and especially to find *Planorbis crista*, which I certainly should never have taken for a shell had not better eyes than mine called my attention to it. If any beginner wants specimens of it, of *Helix fasciolata*, *Helix hispida*, or *Pupa cylindracea*, I shall be glad to supply them as far as my stock goes.—JOHN E. ROBSON, 15, Northgate, Hartlepool.

ON THE HABITS OF THE TINENIA.

By S. L. MOSLEY.

THE British TINEINA comprise fourteen different families, very varied in their habits

and economy. On the continent of Europe, twenty-two families are recognised, beyond Europe these insects are little known. The British families are as follows:—

Family I.—EPIGRAPHIDÆ, Gn. (EXAPATIDÆ, Stn.) The members of this family generally fly in winter, or early spring; many of the females being without or only partly having wings. The larvæ feed between united leaves.

Family II.—PSYCHIDÆ, Bruand. The larvæ of this family inhabit cases. Some of the females are destitute of both wings and proper legs, and never leave the case in which the larva was reared.

Family III.—TINEIDÆ, Stn. Most of the insects of this family are on the wing during the summer months. The larvæ are very varied in their habits—some living in cases, others bore into fungi, some into rotten wood, while others bore into the stems or shoots of plants or mine leaves. Some of the species are very abundant in houses, destroying chair coverings, carpets, cloth, fur, and feathers; others are a great pest in graineries.

Family IV.—HYPONOMEUTIDÆ, Stn. The larvæ of this family reside either singly or gregariously in a web upon the food plant, or bore into the young shoots. Those which reside in webs generally spin a tough silken cocoon. Some of the species are very common on hawthorn and other trees.

Family V.—PLUTELLIDÆ, Stn. The imagines of this family are on the wing at the end of summer and beginning of autumn; most of them hibernate and re-appear at spring. The larvæ are very lively, feeding on the leaves of various trees, and spin a cocoon sometimes of a beautiful open network structure, or like a boat with the keel uppermost.

Family VI.—GELECHIDÆ, Stn. Most of the perfect insects in this family appear on the wing during the summer, but some

hibernate and re-appear again in the spring. The larva mainly feed in rolled leaves, leaves or petals of flowers drawn together, or in seed heads. Some bore into the stems of plants, while some mine between the cuticles of leaves, make silken galleries upon most on old walls, or bore into rotten wood. One species (*E. fenestrella*) is very destructive to cloth, &c., in houses.

Family VII.—GLYPHIPTERYGIDÆ, Stn. Many of the insects comprising this family are gaily coloured and love to sport in the hot sunshine. The larvæ may be found in the seed heads of plants, or mining between the enticles of leaves. In the genera *Antispela* and *Tinagma* the larvæ are entirely without feet: first mining leaves and then cutting out a flat oval case.

Family VIII.—ARGYRESTHIDÆ, Stn. The larvæ of this family feed either in the leaves or young shoots or the fruits of plants. They have sixteen feet. The family is not of large extent, only 28 species occurring in Britain.

Family IX.—GRACILARIIDÆ, Stn. The perfect insects of this family rest with the head elevated. The larvæ have fourteen legs, living mostly in the rolled leaves of plants; some live in a kind of cone, and others in the leaves.

Family X.—COLEOPHORIDÆ, Stn. The larvæ of this family live in a case which they carry about, affixing the case to a leaf or other substance, and mining into its interior, the leaf feeding species forming conspicuous blotches. The cases are very varied in shape and colour, and serve greatly to distinguish the species.

Family XI.—ELACHISTIDÆ, Stn. The perfect insects appear generally from May to August, and the larvæ in the spring. The latter feed in or upon leaves, in berries, or in stems. One species (*A. aratella*) makes podlike galls on *Polygonum aviculare*. The larvæ of the extensive genus *Elachista* mine the leaves of grasses or allied plants.

Family XII.—LITHOCOLLETIDÆ, Stn. The insects comprising this family are all very small, but very beautiful. They are double brooded, appearing in May and August. The larvæ have only fourteen legs and mine the leaves of various trees, sometimes on the upper side of the leaf, but generally on the underside, changing to pupæ in the mine, and pass the winter in that state. In this state they are easily collected in fallen leaves.

Family XIII.—LYONETIDÆ. Larvæ mine the leaves of plants, or under the bark. Some mine when young, afterwards feeding externally.

Family XIV.—NEPTICULIDÆ, Stn. Some of the species of this family are among the smallest known Lepidopterous insects. Many are adorned with gold or silver. The larvæ have no true legs. They make long serpentine mines in the leaves of plants.

NOTES ON A DIPTEROUS PARASITE OF PLUSIA V. AUREUM.

By C. H. WALKER, Liverpool.

ABOUT the beginning of May last, I received from Mr. Miller, of Gateshead-on-Tyne, a nearly full-fed larva of this moth, which he informed me was infested with a dipteron. If I remember rightly, he stated that at least 60 per cent. of the larva he took were attacked, a circumstance that considerably interfered with the breeding of this beautiful insect. The larva, when it reached me was of a rich apple-green colour, with an indistinct medio-dorsal vessel, succeeded on each side by three delicate white lateral lines. In walking, it bent its body like a Geometer. On a casual glance at the larva, it appeared to be of a totally different species, due to a dorsal row of nine black, circular spots, whose positions were as follows:—Four black spots situated respectively on the fourth, fifth, sixth, and

seventh segments, on the immediate left of the medio-dorsal vessel; two others on the eighth segment, one in the centre, and the other below it, on the left; and finally, one spot on the ninth, tenth, and eleventh segments respectively, the first and last being on the right, and the second on the left of the same vessel. Under the lens, each spot appeared as a puncture, the surrounding skin being slightly discoloured. It fed voraciously on *Urtica dioica*, until the 17th May, when it perceptibly changed. It began to swell out, lost its vivid green colour, which was replaced by a pale greenish white tint, while the skin became singularly transparent. It then refused all nourishment, and selected a corner of the box, where on May 18th, it spun a slight web, and resigned itself to its inevitable fate. Up to the 20th instant, it darkened in colour, becoming a dirty grey, and on the 21st it gave the first indications of the actual presence of the parasite. It began to contract at the interstices of the of the segments, each segment being considerably distended, and the whole caterpillar presented the appearance of being tied by thread in eight different places. It seems strange that the parent fly should have deposited *two* eggs in or on one segment, and that only *eight* flies should make their appearance, there being certainly nine cocoons, one remaining unhatched, which upon being opened disclosed the dead fly. This is the only example that has ever come under my notice, of a number of larvæ of a Dipteron living gregariously in the body of their victim, changing to pupæ within the empty skin of the same, and using the latter as a protective cocoon. The case is exactly the reverse in a small dipterous parasite of *Bombyx quercus*. The grubs, to the number of forty, or thereabouts, live within the caterpillar, but on the approach of their final stage, they leave the *quercus* a lifeless wreck, and become pupæ unenclosed in any cocoon.

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No. 111.

DECEMBER 24TH, 1881.

VOL. 3.

DARWINISM.

WHAT is the meaning of the term "Darwinism" has often been asked us by our young readers ; but it not being a question that can be disposed of in a few brief words in "Answers to Correspondents," we have as yet made no attempt to reply. In a dictionary perhaps it might be answered by saying that Darwinism is a theory of the origin of species put forward by Mr. Charles Darwin. That answer, however, could give no information as to the theory itself, and we expect enquiring naturalists want to know about the theory, rather than a bald reply like the above. We will endeavour to give our readers an idea of Mr. Darwin's theory if they will excuse shortcomings, for it is not an easy subject to write upon so as to be understood by beginners ; in fact, it is not an easy subject at all, and very many good naturalists appear to have failed to grasp it. Mr. Darwin has written a whole library of books in its elucidation, and we must be pardoned if we fail to do more than touch upon it in the brief space at our command here.

It is no wonder that the origin of species has always engrossed the attention of enquiring minds. Some are

prepared to accept the account of the creation as given in Genesis as sufficient for everything and everyone, while others who may not necessarily have any theological difficulties to surmount, knowing that LAW reigns supreme throughout the universe, are desirous to know the law that has governed the introduction of new species upon this earth. There was a time when it might have been held that all living beings had been created at once, but the discovery of fossil remains of various extinct animals and plants was not easily reconciled with such a doctrine. A theory was promulgated that after the various extinct animals had lived, a state of chaos and darkness came over the earth, during which period all living things died, and after which the creation of existing beings was begun. Geology was not long in disposing of this theory, and it is now known that no such blank as this supposes ever occurred, but that there has been one continuous chain of life from the earliest dawn of animal or vegetable existence down to the present day. The question then arises, how have the various plants and animals that we find in the world to-day come into existence ? Were they called into being

on the day of creation as was once believed? Or have they been created from time to time by special fiat, as need or opportunity for their existence afforded? Or has there been some law governing their existence, that affecting all equally, caused one species to die out under certain circumstances, and another to appear in its place? If it be a matter that has been governed by a law, what is the law? Such is the problem Mr. Darwin set himself to solve. And while the first enunciation of his theory was received with marked disapproval from many, it has gradually made its own way, and is now believed by the large majority of those who have given serious consideration to the question. What Mr. Darwin's theory is we will now endeavour to explain.

It may be safely said that no two beings were ever exactly alike, no two plants were ever precisely the same. Differences more or less noticeable always exist, even among those species that are not liable to important variations. It was long held that this tendency to variation led to no results, and that however prone a species might be to vary, it always reverted back to the original type. It was well known that in domestication both plants and animals did vary very greatly, and that by a careful cultivation of, or breeding from these varied forms, most wonderful results might be obtained, as in our domestic animals, dogs, rabbits, poultry, pigeons, &c., the various breeds or races of which are believed to have sprung in most cases from a single wild species.

Pigeons from the Rock Dove, domestic poultry from the Indian jungle fowl, &c., &c. It was also held that if any of these races, varied in domestication, were allowed again to run wild, that they would revert in a short time to the normal form of the species from which they had originated. This was considered conclusive proof that variation led to no results whatever in the way of producing permanent varieties or new species. It appeared reasonable that if in a state of nature accidental variations from the type were rarely or never repeated in a subsequent generation, and certainly disappeared very speedily, that there would be no change in any number of generations. If forms, changed under domestication, reverted to their original type when restored to a state of nature, it also seemed reasonable to assume that no permanent change could be produced.

In our next paper we will show how Mr. Darwin arrived at opposite conclusions from these facts, and how his theory appears to account for most or all the phenomena of species.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s. with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

"AT HOME."

LIVERPOOL.—C. S. Gregson will be at home every Sunday until March next. Microlepidopterists, coleopterists, and artists should come early to secure good light; general naturalists any time from nine a.m. to nine p.m.—Rose Bank, Fletcher Grove Edge Lane, Liverpool.

HUDDERSFIELD.—S. L. Mosley every Saturday afternoon,

(We shall be glad of additions to this list)

NOTES, CAPTURES, &c.**SPIDER CROSSING A RUNNING STREAM.—**

There are many remarkable feats related of spiders by different writers, but I simply wish to record an instance of the persevering and ingenious efforts made by a large garden spider in crossing a stream about six feet wide. The stream in question was a rippling brook, running by the side of a stone wall, with the side next to the wall plentifully overhung with briars, furze, and broom bushes. The other side was destitute of bushes, and was ploughed down almost close to the water's edge. Being one day in the month of September, 1861, on a fishing excursion to this brook, and finding very little sport, I sat down on a large knot of grass, and began to devour a sandwich which I found lodged in the corner of my coat pocket. Whilst so engaged, I observed a spider creeping up a tall stalk of grass close to the side of the water. On reaching the top, it rested itself a minute or two, the stalk swaying to and fro with the weight of the insect. It immediately descended, and then crept up another stalk. It thus went on for a considerable time, creeping up one stalk and then another, always selecting the highest, and seeming to rest about the same length of time on the very top of each stalk. I wondered what could be the object of this apparently strange conduct. Leaving the grass, the spider crept to the top of a large

stone, which projected about a couple of feet into the stream. Here it sat for a while, crouching as if it had taken up its seat for the night. However, it again began to move, and this time descended the stone to the edge of the water, leaving its silken thread attached to the place where it had been sitting. Coiling itself up into a round ball, like a marble, it floated down the middle of the stream for a distance of about twenty yards, and then catching a briar which reached out from the other side, crept along the briar on the opposite bank, and concealed itself under a broad leaf of the briar bush. Here I left it. I could not, however, help reflecting on the great ingenuity it had displayed in surmounting what to it must have been a very great obstacle, and, marking the spot, I resolved to have another look at my persevering friend as I returned home. I visited the place about two hours and a half afterwards, and found to my surprise that the spider had not removed far from the spot where I had left it, but had snugly taken up its abode under another and larger leaf on the same bush. It had doubled over the leaf, made itself a "house," and had spun a large circular web in front of its dwelling. I had not previously known that spiders ever crossed streams; but in this case we have proof that at least certain species of spiders occasionally cross streams of considerable extent.—J. AITCHISON, Belford. From the *Newcastle Weekly Chronicle*, December 17th, 1881.

ASSISTANT NATURALISTS.

Mr. Soutter writes—"I see by the Y.N. that the idea of assistant naturalists which was present in my mind has formed expression in its pages. I cordially agree with the project. Please enrol my name as a willing assistant in all branches of Botany *except microscopic*. I hope the plan will arouse increased interest in field botany. I ho-

mologate your remarks about trying to find out first. That is how I had to do, and I never forgot what I learned myself. Nevertheless, assistance is invaluable with difficult species.

THE YOUNG NATURALISTS FIELD CLUBS.

No. 2.

THE BIRMINGHAM AND MIDLAND COUNTIES YOUNG NATURALISTS FIELD CLUB.—

W. H. Bath, President.

H. Warwick, (Acting) Hon. Sec.

F. Mundy, Curator.

Several have already joined this club, we shall be very glad to receive more. Those who wish to join may apply for rules to H. Warwick, Trinity Road, Aston Park, Birmingham.—H. WARWICK, (acting) Hon. Sec.

FIELD CLUBS.

The Whitby Field Naturalists' Club was commenced from a club in connection with the "Union Jack" with about eight members, but at an invitation from the Y.M.C.A. we joined that society, although separate as to power, rules, &c. The Y.M.C.A. also placed at our disposal two large rooms; one for the club meetings, and the other for a museum, as well as others for Taxidermy and mounting objects, which now contain some thousands of specimens of geology, botany, zoology, conchology, entomology, &c. At this stage, some of the members refused to own the *Union Jack* as the organ of the club for various reasons, and from that day the club was called the Whitby Field Naturalists' Club. Essays and Lectures are given at the club meetings, weekly in winter and fortnightly in summer. The club began in the autumn of last year, and now has between twenty and thirty members, mostly gentlemen. The first annual exhibition of this club was held in October. Every member is a curator of some branch of

natural history, except when it is not his wish to be so.—JOHN A. TATE, 61, Merlin Street, Liverpool.

NOTES ON TINEINA.

LITHOCOLLETIS.

This genus of minute, yet beautiful insects, nearly all pass the winter in the pupa state, and may so be collected when the lepidopterist has little else to do. The larvæ make puckered blotches on the under and upper sides of leaves. They change to pupæ in the mine, and in this state may be gathered when the leaves have fallen. Go under some tree and search among the fallen leaves, and when you find one with a blister-like blotch upon it, hold it up to the light and see if it contains a pupa. Oak yields many species chiefly on the underside of the leaf. Birch, beech, thorn, and apple may also be examined, as well as hornbeam. Nut, alder, and willow, are among the trees less frequented by this genus, while a few feed upon low-growing plants, like *Vaccinium vitis-idaea*.

Some collectors have been very successful in forcing this genus, that is, applying artificial heat, and so causing the moths to appear sooner than they otherwise would. The advantage of this is that the insect can be set out and placed in the cabinet before the busy season for collecting comes on. An apparatus for forcing is described by Mr. Elisha in the *Entomologist*, vol. xii., p. 238.

BREEDING VARIETIES.

By JOHN E. ROBSON.

Great interest is attached to varieties of Lepidoptera, especially to abnormal forms, and collectors generally are desirous to know how to be successful in rearing them. Many suggestions have been made. One advises frequent changing of food, another that the food be the same throughout, while a third recommends that the larvæ be half

starved. Mr. Gregson attributes his successes in getting good varieties of *A. grossulariata* to the constant introduction of larvæ from other places among the colony he keeps in his garden. On the other hand, I know of a collector who for several years bred a very fine form of *L. dispar* without any crossing at all. Though I have occasionally reared an abnormal form of various species, I have never been successful but once, in breeding varieties when I tried to do so, and an account of the process may be interesting. I had been reading "The Naturalist on the Amazon" and was much struck by the account given of certain butterflies which varied so much when frequenting damp woods, from those occurring in drier and more open places, that they had been thought distinct, till Mr. Bates found the intermediate forms in localities of intermediate character. It occurred to me that I might try to imitate the damp close woods, of the banks of the Amazon, and might thus succeed in getting good varieties. I procured thirty very young larvæ of *A. caja*, which I selected because they were very hardy and very subject to variation. I took a large glass jar, such as is used by confectioners, and half filled it with sand. This sand I made quite wet, or perhaps, very damp would be a better term. I covered the jar with paper slightly perforated and tied it tightly down. This, with the larvæ in it, I placed in the sun during the day, and when the sun was not shining I kept it on the hearth where the heat of the fire would fall upon it, but not near enough to scorch. For food I gave them chiefly groundsell, but occasionally a little lettuce. The treatment was evidently too severe, for out of my thirty larvæ only six pupated. When they emerged they were all well marked varieties. One was a very peculiar one, and is figured in Mosley's illustrations, plate 6, fig. 4. Five of them were considerably darker than the normal form, but the sixth was the lightest

specimen I have yet obtained. Encouraged by this success, I tried the same experiment again for two or three years, but utterly failed. Whether I kept them too damp, too warm, or gave them too little air, I don't know, but I never got another imago. The experiment, therefore, though apparently successful, really proves nothing, and I publish it here with the idea that some one else may try the same, or some modification of it.

It has often been wondered that with so variable a species as the Tiger, no well-marked form has ever established itself, but the very tendency to vary will prevent any particular form from becoming established. I am strongly inclined to believe that if any one would breed from his darkest or lightest specimens, for a few years, he would be successful in producing extreme forms. I have noticed, however (and I do not remember if the fact has been published before), that among the insects that die without emerging, there are always a number of good varieties, as may be seen by peeling the pupa case off the wings.

BRITISH MOTHS:

By JOHN E. ROBSON,

(Assisted by Contributors to the Y.N.)

Though it is not intended that the species shall succeed each other in scientific order in the following papers, it is nevertheless desirable to give a brief account of the various groups into which the large number of insects known as MOTHS, or in science HETEROCERA, are arranged. It is not to be wondered that among such a vast assemblage of species, and where there is such great diversity of form and habit, as we find among the moths, that there has been considerable difference of opinion as to the number of groups into which they ought to be divided, and also as to which group certain species or genera belong. Nor can it be expected that strict definitions can be

given, that will enable the beginner at once to determine to which group the specimen under examination belongs. Even a group like the SPHINGINA, that can be defined with tolerable strictness; and seems a perfectly natural one, in the opinion of some authors is not sufficiently distinct from the BOMBICINA to be separated from them. But these differences of opinion will be best referred to under each group. The arrangement proposed to be followed in these papers is that of Dr. Staudinger's; but when he differs from English authors, the differences will be named. It will be remembered that in the first paper on butterflies it was pointed out that by the form of the antennæ Lepidoptera were divided as follows:—

RHOPALOCERA.—Having clubbed antennæ.

HETEROCERA.—Having antennæ of various forms, but never clubbed.

The word HETEROCERA is derived from two Greek words—*Heteros*, other, and *ceros*, a horn. It means, therefore, having other than clubbed horns, or, having horns of varied form.

The first group of HETEROCERA is called

SPHINGINA.

The SPHINGINA or Hawk Moths are easily distinguished from the other groups by the shape of the antennæ, which differ from those of all the others by being thickest in the middle, tapering from the base, and again to the tip. In the ZYGENIDÆ this nearly approaches the form of the antennæ of the Skippers (HESPERIDÆ) among the butterflies. This and other affinities have caused all writers to place the Skippers last among the butterflies and the Sphinges first among the moths. The true Sphinges or Hawk Moths are generally of large size, the Death's Head and others expanding about five inches. The fore wings are long and narrow; the hind wings rather small, and often more gaily coloured. The bodies

stout and the abdomen generally pointed. The antennæ of moderate length, and in some species hooked at the tip. Three British species included in this family by Mr. Doubleday and Dr. Staudinger are separated by Mr. Stainton and called SESIIDÆ. They are the Humming Bird Hawk and the two Bee Hawks (*M. stellatarum fuciformis* and *bombylififormis*). The larvæ have always sixteen legs; are cylindrical, stout, and rather firm. Many of them are covered with small warts, and with one exception (*C. porcellus*) they have all a horn projecting backwards on the anal segment. Some of them are very beautifully marked and coloured. The family is called SPHINGIDÆ.

The second family are insects of comparatively small size, few of them expanding over one inch. The wings, which in form resemble those of the *Sphingidæ*, are generally void of scales, except along the costa and hind margin, they are therefore called "Clear Wings." The bodies are long and slender, mostly black in colour, the segments rather distinct and often banded with red or yellow. There is also a distinct anal tuft in most of the species. The larvæ have sixteen legs like the last family, but they feed internally in various trees, roots, &c., and are whitish in colour and without an anal horn. The family is called SESIIDÆ.

The third family are insects of moderate size, expanding from an inch to an inch and a half. The general shape of the wings resembles those of the preceding families, rather long and narrow; fore wings, green, or greenish black with red spots or blotches; the hind wings are smaller and smoky, or red with black border. The green ones are called "Foresters," the others "Burnets." The bodies are stoutish, more so in the Burnets, the abdomen of which is very soft. They are sluggish in their habits, and only fly in the hot sun. The larvæ also have sixteen legs, are rather thick and very soft,

and are equally sluggish with the imagines. They are consequently very local, and will swarm at one place, while a dozen yards away there are none. These insects are very difficult to kill by ordinary means, and will crawl about for days in the cyanide bottle. The family is called ZYGENIDÆ.

(To be continued.)

NOTE ON ENNOMOS AUTUMNARIA (ALNIARIA.)

By C. S. GREGSON.

"There is none so blind as he who will not see."

ON page 342, *Young Naturalist*, Vol. II., Mr. Tugwell says he quite endorses my caution, published in No. 98 of Y.N., and continues "but for the genuineness of the 36 ova I received from Deal, and from which I have bred this season 32 imagines, I can vouch for them in fullest confidence as being the offspring of a female moth, taken at light, at Deal, in the Autumn of 1879. Mr. Gregson's proverbial *courtesy and modesty* will hardly permit him to doubt my jealous desire, equally with his own, for striving to uphold the purity of our English collections, W. H. Tugwell, &c."

Well, now that he has used my caution (?) is he prepared to say he can still hold to the opinions expressed above by himself. It is because I know a little more of the trickery which has been and is still being carried on by obscure people, that I cautioned our young friends; I never supposed Mr. Tugwell would require a caution; but I fancy even he will by this time have observed how his accounts and his friends' historical records fail to dovetail. First, neither of them could differentiate species, one expanding 2½ in. and the other rarely reaching more than 1½ in. in alar expanse, and proportionally broad, and not at all like

each other in markings, texture, &c. Then the "larva breeding," either Mr. T. was deceiving his friend, or his friends was dodging Mr. T., or it was a jumbled lot of ignorance or want of caution to say the least of it; but from what is known from the writing of one of them, there is no doubt Mr. Tugwell's specimens are bred from foreign eggs, supplied to him by his friend.

When I wrote my warning to our young friends I had other delinquents in view, Mr. Tugwell rushed in where these "angels dare not tread," and the result is an innocent—but incautious man—appears to have been deceived. Well, he is not the first that has been deceived, nor will he be the last; and the tricksters think they have escaped, but they have not—there is nothing new in their having placed a few pupa out to be captured by the innocent! Many years ago I received a note from an acquaintance (the closest fist-d collector I ever knew), saying he had taken *Cal. Hera* from a lamp in Cheshire, and asking me to come and take another. I went at the time appointed, we discussed the matter fully, and walked past miles of lamps, when we espied one upon almost the last lamp. My companion called out "stop until I get a pin," but there was no stop in me in those days. Up I went, and what was my surprise when I found a pin already in the insect; and what was his surprise to see me up so quickly and hear me call out "Gosh, dang it, Jemmy, it's pinned on:" and, sure enough, it was pinned between the lamp and the frame. Little tricks have always been tried on, and always will be. All that is wanted to secure the "purity of our collections" is caution. But our young friends may always say it is better to be deceived than to deceive. It is for them I write. Old dogs must look after their own scent, and if they lose it pick it up again, or they will be out of the hunt.

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The YOUNG NATURALIST :

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No. 112.

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VOL. 3.

DARWINISM.

SECOND PAPER.

IT was pointed out in our last paper that the tendency of varieties produced in a state of nature to disappear, and of those produced during domestication to revert to the original type when they were allowed to run wild, had been considered a strong reason for supposing that species were really permanent. We will consider first whether the proposition that varieties produced in a state of nature have a tendency to disappear be really true. Mr. Darwin calls his book "The origin of species by means of natural selection, or the preservation of favoured races in the struggle for life." Its argument is to the effect that whenever a change is produced that is an advantage to its possessor, there will be a tendency to transmit that form to successive generations. Take the case of a race of animals such as antelopes, that are preyed on by the carnivorous mammalia inhabiting the same regions. If a herd of antelopes be pursued, the swiftest will certainly escape, the slowest fall victims to the enemy. The survivors of the herd are so by "Natural Selection." They were fitted to escape by speed, and those possessing that

quality to the highest degree did escape. It is evident that the progeny of these swiftest animals are more likely to be swift than would have been the progeny of the slower members of the herd. The tendency, therefore, will be to transmit the quality in excess, because the slower members have been weeded out, and only the swifter remain to perpetuate their race. In another generation the same thing will again obtain. The members of the herd will still vary in speed and power of endurance; again the slower will be captured and devoured, and again the swifter will remain to hand down their improved qualities to yet another generation. In the course of time—ages it may be—these successive changes will have produced a perceptible difference. It may be that extra length of leg gave the extra speed, in which case we may expect to find that this "Natural Selection" all in one direction for a great length of time has really produced a race of animals with longer legs. But while this has been going on, let us suppose a variety to have been produced, which, from its colour being more in harmony with the hue of the surrounding objects, was less likely to be observed from a little dis-

tance. This animal, though not possessing speed or power of endurance in excess, yet escaped destruction by reason of its colour helping to conceal it from its pursuers. It would be likely to transmit this quality to its progeny in some degree, and those which were best adapted for concealment, or most difficult to observe would escape the destruction that would come upon those differently coloured or marked. Again, let this process go on for many successive generations, each one preserving in some degree the characters that were advantageous. At the end of the time what will be the result? On the one hand we would have animals that had been "selected," over a long period, for speed and powers of endurance. On the other we would have animals that had been "selected for colour; speed or power of endurance not being a factor at all. We know what man can do in a very few generations from careful selection, and it is only fair to assume that Nature can select equally well, and with equal results. It must, however, be borne in mind that Nature never moves by jumps, and that the natural process is necessarily a much slower one, than under domestication. A stock breeder pairs his animals to produce certain results, which he calculates on before hand. He selects those whose qualities are nearest to what he desires to obtain. Hence, in a comparatively short time he accomplishes his object. Nature necessarily moves more slowly. The animal, whose colour is better adapted for concealment, is unconscious

of its advantage, and probably pairs with the ordinary form. The change, therefore, is but slight, and would soon be lost, but that a similar variety may occur and bring the change back again. If it be an advantage, it will at best have a tendency to be preserved and perpetuated. If a variety be a disadvantage, it is certain to disappear very speedily. Enormously long periods of time are needed to produce great change, but if these periods be admitted the rest follows almost as a matter of course. We thus see how two species might, in course of time, spring from one. The one would be noted for speed and power of endurance; the other for being coloured or marked so like the surrounding country as to escape detection. One would change in its organs of locomotion, and would probably become slighter in make and longer in leg. The other would need neither of these changes, and from its better concealment would need to move less, would become more bulky and less nimble.

In our next paper we will speak of animals under domestication, reverting to their original form when set at liberty.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

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Weekly numbers or monthly parts, 6s. with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

J. T. Doubleday, Gateshead, is thanked for dipterons from *A. psi* and ichneumon from *O. antiqua*. You may always know a dipterous pupa by it being alike at both ends. See Y.N., vol. i., p. 60.

"AT HOME."

LIVERPOOL.—C. S. Gregson will be at home every Sunday until March next. Microlepidopterists, coleopterists, and artists should come early to secure good light; general naturalists any time from nine a.m. to nine p.m.—Rose Bank, Fletcher Grove Edge Lane, Liverpool.

HUDDERSFIELD.—S. L. Mosley every Saturday afternoon,

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(We shall be glad of additions to these lists)

EXCHANGE.

DUPLICATES.—*Impura*, *Chenopodii*, *Testacea*, *Testata*, *Gamma*, *Sylvanus*, *Adonis*, *Corydon*, *Alexis*, *Zanthographa*, *Tragopogonis*, *Pinastris*.

DESIDERATA.—*Edusa*, *Cardui*, *Geryon*, *Stalices* various *Cuspidates*, *Derasa*, *Batis*, and many others.—E. E. BROWNE, 30, Upper Park Street, East Greenwich.

NOTES, CAPTURES, &c.

HOUSE MARTIN IN NOVEMBER.—On Thursday last, the 24th November, a house martin was seen at Dovercourt. It was flying S.S.W. and was evidently migrating, as it continued flying in that direction as far as the eye could follow it, frequently turning and snapping at some insect as it crossed its

path. I may mention that this is the direction all the swallows and martins take when leaving this neighbourhood. A single house martin was also seen on the 29th November. It was flying in the same direction as the one seen on the 24th.

FECUNDITY OF THE COMMON MOUSE (*Mus musculus*).—On the 2nd inst., whilst a wheat stack was being threshed, the workmen came upon a nest containing twenty-eight young mice, all of them the same size, and blind, so that they must have been placed there by their mother or mothers.—

THRUSHES EGGS IN DECEMBER.—On the 11th inst. a Song Thrush's nest containing two eggs was found, showing how mild this winter is.—F. KERRY, Harwich.

MILDNESS OF THE SEASON.—A Chiffchaff (*Sylvia rufa*) was seen at Astwood Bank, near a pool, on the 10th December. Is not this rather unusual?

A nest of the Hedge Sparrow (*Accentor modularis*) containing four newly laid eggs (on which one of the birds was sitting) was found in the hedge of a garden at Hampton, in Arden, on the 16th December.

I have seen no female chaffinches (*Fringilla cælebs*) since the end of October, when I shot one, although they were more plentiful than the males till that date. Do the females migrate at all?

I caught two *Lymnea stagnalis* and one *L. limosa* in a pond at Selly Oak, near here, on the 18th December.—GEO. F. WHEELDON, 6, Newhall Street, Birmingham.

P. POPULI AT DERBY.—On December 3rd I captured a male of this species in a shop window, and on the 5th I had another brought me, both taken in the middle of the town, attracted by the light I suppose.—G. PULLEN, Free Library and Museum, Derby.

STORMY PETRELS AT CARNFORTH.—During the storms of the last week in November there were flying about here a great many

stormy petrels. I had five brought to me which were taken in the bay.—H. MURRAY, Carnforth.

TOADS.—One evening in the summer, as it was getting dusk, I picked up a full-grown toad, and immediately I found my hands wet, which shone with a luminous light for a few seconds. I have often found my hands wet in the day time when I have handled toads, but I never saw the water luminous before. I suppose the daylight would prevent it being visible.

PAPILIO MACHAON.—Dr. Hiepe, a friend of mine, has lately been over to Germany. He says that *P. machaon* is very common there, he caught five specimens in one morning.—W. H. BATH, Birmingham and Sutton Coldfield.

ON PREPARING ALGÆ FOR THE HERBARIUM.

FROM "LANDSBOROUGH'S British Seaweeds."

PLACE on the table a basin of fresh water, to cleanse the weeds from sand or any impurity. Let only a small portion of the mass at a time be put into the basin, as many species begin to decompose when placed in fresh water. If the specimens are of large size, they may, after cleansing, be floated on a shallow tin tray filled with fresh water, but if they are only of a moderate size, a white soup-plate will answer the purpose. Let the plate be nearly filled with lukewarm water; let a good supply of paper be at hand; and, as much of the beauty of the specimen depends on the quality of the paper, it should be fine and at the same time stout, almost as good as drawing-paper. The paper should be cut so as to be quite smooth at the edges, and as this is best effected by the bookbinder's knife, it is well to have it done when the paper is purchased.

Having got the paper neatly cut into square and oblong portions, of different

sizes, take a piece ruled to the size of the specimen, and place it under the weed floating in the water; then putting the left hand under the paper, bring it near the surface, and gently move the seaweed till it assume on the paper a natural and graceful form. The fingers of the right hand may be employed in helping to arrange the branches of the plant, or some sharp pointed instrument may be used for this purpose—a penknife, the quill of a porcupine, or, what is still better as being less sharp, the point of a silver fruit-knife. A pair of nice little scissors should be at hand to remove any superabundant branches. When the specimen is properly arranged, let the paper on which it is spread be very cautiously removed from the water, for if the position of the plant is changed the work may require to be done over again. When the specimen is removed from the water it may be placed for a little while in a sloping position, to allow the water to run off, and during this time other specimens may be treated in the same way. The drying and pressing processes then begin. Before any part of the paper is completely dry, place the specimens on several folds of blotting-paper, quarto size, and cover them with a fold of muslin, and over the muslin lay several folds of blotting paper, repeating this operation till all the specimens that have been laid down are covered with a fold of muslin and several folds of blotting-paper. If a screw press be at hand, let the whole be placed in it and *gently* pressed; strong pressure at first would bruise the plant, especially if it be gelatinous. After some hours of slight pressure the whole may be removed, and either treated with a fresh supply of muslin and paper, or those in which they were may be dried before the specimens are again placed in them. The advantage of being covered with a fold of muslin will then appear; for, in general, none of them will be found adhering to the muslin; whereas, had they been

covered only with blotting-paper the half of the specimens would have been spoilt by adhering to it. The whole may then be replaced in the press, and considerably stronger pressure applied to them, and under this they may be allowed to remain for a day and a night. In shifting the second time the muslin coverings may be removed. When permitted to remain till the plants are quite dry there is danger of their leaving chequered impressions on the specimens. They may then be replaced in the press, and very strong pressure applied. They should be shifted once a day for a week, and the paper dried; but at the end of that time may be deposited in the herbarium, when they will be found adhering so closely to the paper as to have all the appearance of a beautiful painting. When there is not a press the want is easily supplied. All that is necessary is two boards the size of the blotting-paper, and three weights of stone or cast iron, the blotting-paper containing the specimens may be placed betwixt the boards, one weight may be placed above them at first, two at the second shifting, and all three afterwards, and let the last be a very heavy one. When the specimens are taken out of the blotting-paper before they are placed in the herbarium, the scientific name, the locality, and the date, should be neatly written at the bottom.

BRITISH MOTHS:

By JOHN E. ROBSON,

(Assisted by Contributors to the Y.N.)

The second group of Heterocera is called BOMBYCINA.

Mr. Doubleday joins this group to the SPHINGINA and calls the two NOCTURNI. He calls the butterflies DIURNI, which is an appropriate name enough, from their Diurnal habits; but NOCTURNI does not seem so appropriate for these two groups, as many of them are not Nocturnal at all, but as truly Diurnal as the butterflies. The Bur-

nets and Foresters, for instance, in the last group, and several species in this group, only fly in the brightest sunshine.

There is more than the usual difference of opinion as to the families and genera placed in this group by various authors. Some included in it by one writer are by another placed among the NOCTUINA, PYRALIDINA, and even TINEINA. These differences shall be pointed under each heading.

In Dr. Staudinger's catalogue the BOMBYCINA are divided into fourteen families, as follows:—

NYCTEOLIDÆ.
LITHOSIDÆ.
ARCTIIDÆ.
HEPIALIDÆ.
COSSIDÆ.
COCHLIPODÆ.
PSYCHIDÆ.
LIPARIDÆ.
BOMBYCIDÆ.
ENDROMIDÆ.
SATURNIDÆ.
DREPANULIDÆ.
NOTODONTIDÆ.
CYMATOPHORIDÆ.

The NYCTEOLIDÆ include only four species, all of which are placed among the TORTRICINA by Mr. Doubleday. Mr. Stainton gives them the same relative position, but he places three of them after the CRAMBIDÆ (which he includes in the group PYRALIDINA), and the fourth he gives first among the TORTRICINA. It seems doubtful if we even yet understand their true affinities. The imagines are green, or greenish, and rather glossy; the wings are ample, and the bodies proportionately stout. The larvæ have sixteen legs, and spin a boat-like cocoon, as do those of the genus *Nola* in the next group.

The LITHOSIDÆ according to Dr. Staudinger include the families NOLIDÆ and LITHOSIDÆ of Stainton and Doubleday. The NOLIDÆ are placed among the PYRALIDINA

by the former, but among the BOMBYCINA by Mr. Doubleday. They are small white insects with darker markings. They expand less than one inch, and when at rest assume very much the appearance of a *Deltoïd*, the wings forming a long narrow triangle. The larvæ have fourteen legs, are short, rather thick, and sparingly clothed with longish hairs. They spin a boat-shaped cocoon in which to change. The LITHOSIDÆ are white, cream-coloured, or yellow, only one being rosy. They are nearly devoid of markings. Most of them have long, narrow forewings, which in repose are folded round the body like the wings of a *Crambus*. The larvæ are hairy, have sixteen legs, and feed on lichens on trees, walls, &c. They spin a cocoon in which they change to a pupa.

The ARCTIIDÆ of Staudinger is the same as Mr. Stainton's CHELONIDÆ. Mr. Doubleday places two of the species (*E. grammica* and *cribrum*) with the last family; three others (*D. pulchella*, *C. jacobæa*, and *C. dominula*) he separates as EUCHELIDÆ; and the remainder he also calls CHELONIDÆ. The family includes some of our best known insects both as larvæ and imagines, such as the tigers, ermines, &c. The characteristics of the family are, imago of moderate size, or rather large; generally gaily coloured, especially on the hind wings; the abdomen also often gaily coloured. The larvæ have sixteen legs, are very hairy, and many of them will eat almost any food plant. They spin a slight cocoon, generally among leaves, &c., but some of them which pass the winter as pupæ will bury themselves underground.

The HEPIALIDÆ is a family about which there has been no diversity of opinion, either as to the species to be included in it, or the group in which it should be placed. It has but one genus, the members of which are known as "Swifts." They may be recognized by their narrow, rather pointed forewings; by the base of the hind wings

not being close to the base of the fore wings; by their rather long bodies, and especially by their antennæ being remarkably short. The larvæ are naked, dirty-white in colour, and feed below the surface on the roots of various plants, constructing a long gallery. The pupæ are rather long, and have short spines on the segments, which enable them to move up this gallery when ready to emerge. Mr. Stainton places this family first among the BOMBYCINA, and Mr. Doubleday only precedes it by the following family. The habits and characteristics of the larvæ of this and the next family so closely resemble those of the SESIDÆ, which in these arrangements are the last of the SPHINGINA, that it seems more natural to place them in the position in which these English writers do, rather than after the ARCTIIDÆ.

The COSSIDÆ is the same as the family called ZEUZERIDÆ by Messrs. Stainton and Doubleday. It includes but three British species, the Goat Moth, the Wood Leopard and the Reed Moth. Their general characteristics are very similiar to the last, the wings being separated at the base, and except in the Goat Moth, the abdomen being long and slender (in the female of the Reed Moth it is of extraordinary length), the antennæ are short, but longer than those of the last family, and those of the male are pectinated for half their length. The larvæ too are internal feeders, and the pupæ have the segments spiny, so that they may work themselves along their burrows.

(To be continued.)

SAWFLIES AND GALLFLIES.

THE Sawflies, scientifically called the *Tenthredinidæ*, are the first family in the Order HYMENOPTERA; and have been very little studied by the entomologists of this country, the only who has made this his speciality being Dr. Cameron, of Glasgow. Beginners

are placed under very great disadvantage in there being no work in the English language to which they can refer for the names of their captures. There are a great many excellent life histories translated into the *Zoologist* and *Entomologist*, by Mr. May, from the Dutch of Vollenhoven; but descriptions without figures, however good, are next to useless to the beginner. Those known to Stephens, are described in the seventh volume of his "Illustrations," but this work is bad to get, and useless when you have got it, as in all probability the species you want to name will not be found there. Foreign works are, of course, equally useless to most beginners, except as far as the plates are concerned. There is, however, one good thing to start with, and that is a catalogue of the British species (1878), prepared by Dr. Cameron, for the Glasgow Nat. His. Soc., from whom it may be had for one shilling. In it 46 genera are enumerated, containing 325 species. It is a good thing to have a recent list of the insects you wish to collect.

In the larva state, most of the larger Sawflies greatly resemble the lepidoptera, but generally the head is rounder, larger in proportion to the thickness of the body, the eyes more distinct, and the legs on the hinder segments are only abortive, and insufficient for clasping the food. They feed on the leaves of various trees and plants, clasping the edge of the leaf with their pro-legs, and the tail curling under, which habit serves at once to distinguish them from the lepidoptera. Several species are very common—too common in fact—such as the Gooseberry grub (*Nematus ribesii*.) These flies may be seen the first warm days of spring, sporting about gardens, and the larva may be found later on upon the gooseberry bushes. The "Black Jack" (*Athalia Spinarum*), of the turnip is another Sawfly grub, but seems to come more by fits and starts. Some which infest fruit

trees are somewhat like small slugs. Others, of the smaller species, mine leaves. One (*Cephus pygmæus*), penetrates the corn straw, and sometimes does considerable mischief to crops. Some form galls, like the red bean-shaped ones, so common on willow, which are produced by *Nematus gallicola*. Thus, like the lepidoptera, and indeed all other families or orders, they are greatly diversified in their habits. During the summer lepidopterists generally find a lot of Sawfly larvæ. If they will just pick them up when they see them, and send them to us, stating the plant upon which they were found, we will endeavour to use them in some way for the general benefit of our readers.

Another important family in the same order is the

CYNIPIDÆ.

In this group, too, there is no complete work on the British species, the literature being scattered through magazines, transactions, &c. In this group, too, we want workers, and then the book will come; as soon as the demand is made somebody will be found willing to meet it by writing a monograph of the group, and, let us hope, also by publishing figures. The oak-feeding species that produce all kinds of oak galls are fully described in the *Entomologist*, vols. vii. to xi.

The CYNIPIDÆ or *gall flies* lay their eggs in buds, upon leaves, &c., and a woody excrement is produced in which the larva lives and which grows as the larva grows. The round marble-like galls found on oak trees, and produced by *Cynips kollari*, are well known, as also are the button-like spangles on the underside of oak leaves (*Neuroterus*). All the species are small, and must be bred from the galls in order to sufficiently determine the species. Some of our young entomologists ought to begin to study some of these insects, and not continually tread over the well-beaten track of lepidoptera.

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The YOUNG NATURALIST :

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VOL. 3.

COLLECTORS AND COLLECTORS.

No. 2.

THE last specimen of a collector, described in these pages, was not a good sample. The portrait was not drawn altogether from imagination, but traits of character from two or three of our acquaintance, were strung together, making a very disagreeable whole. Yet people are so ready to believe ill of another that no less than three individuals, two of whom were previously unknown to us even by name, have been suggested as the original of the sketch, and one of them has been so foolish as to write and ask if we meant him. It is unnecessary to say that his letter was abusive, but we could only feel amused, and we hope if there were any others disposed to put the cap on they will do so with a determination that it shall not fit them for the future. To-day we will present a character of a different kind, and we beg to say that we know a good many more than one or two to whom much of it will apply.

The Collector we would speak of now is a GENTLEMAN. We do not mean that he is what is called gentle blood. We do not mean that he is of indepen-

dent means. He may be only a poor working man. He may even belong to the softer sex, if we may include the ladies under that term. We have heard of a speaker at a meeting who addressed all his hearers as "Brethren," because, says he, "the Brethren embrace the Sisters." So we may be allowed to include the ladies under a general term that we wish to have reference, not to sex, but to tone of mind and character. This collector, then, is a GENTLEMAN. He would not tell a lie. He would not tell the truth in such a way as to convey a wrong impression. If he give you any information you may depend upon it being strictly accurate. His love of truth is so great that he has been imposed upon by unscrupulous persons more than once; for being strictly truthful by nature, he does not doubt others. As a collector he works hard. Not in spasmodic fits and starts, but with regular unchanging assiduity. When he finds anything good, he takes as many specimens as he conveniently can, always avoiding any risk of extermination. If his prize be very local, he will leave it for a year or two after his first captures, so that it may increase and multiply, then he will go regularly, perhaps, and

take a few specimens each year, that he may have the species for his friends. If he goes on an excursion to a distant place, he will probably do more when there than any of the collectors on the spot can do, for he has studied collecting, and knows all the best methods, and the most suitable places. He does not pretend to know everything. His sugar may sometimes be neglected, his light prove unattractive; but if you can get out with him you are more likely to have a successful excursion, than with most of people. He does not disdain larva hunting. He can go down on his knees among the herbage, and find larvæ in abundance, and when he has found them *he knows what they are*. He can tell you a great deal about the habits of insects, for he has collected with his eyes open, and he does not readily forget. Tell him that you have failed to obtain a particular species, and he will put you on the right track. He will tell you the hour at which it flies, the place where it is most abundant, or at all events the sort of locality in which it should be looked for. He will tell you the food of the larva and describe it to you, tell you where it grows, and on which portion the larva feeds, if you still fail, the fault will be yours. From mixing with so many people who take no interest in Entomology, he is rather reticent, and is not prone to offer information. He has been so often annoyed at the manner in which his great liberality has been abused; that even to one calling himself an Entomologist he does not at first open out the full

treasury of his stores, either of knowledge or of specimens. But when once you have won his confidence nothing is withheld. He does not publish much. It would be well if he published more. When he goes to a new locality he will publish what he has done, but the vast storehouse of information he has in his mind he does not seem to value enough to print from. He learned it all himself, and you may do the same. It is not worth publishing, he thinks, what is as open to every one as it was to him. There he makes a great mistake. His collections are a treat to look at, all his specimens are beautifully set, and all in the same way--he has never thought it a trouble to relax a specimen so as to get it to his liking. His rows are full, but he has been careful to get his specimens from localities far apart when possible. He will tell you which is the Scotch form, which from the North of England, and which from the South. He will point out the differences, in a clear and lucid manner. He will even sometimes venture to express an opinion not in harmony with that of recognized authority, and he will tell you why he thinks so. You will be astonished at his rows of rarities, but he took most of them himself. "Yes, I took those eighteen years ago, I have never been there since;" or "Yes, I got those last Autumn, at so and so, I have some duplicates left, if you would like some." Then his duplicate boxes will come out, and you can help yourself. He is giving you a lot of specimens, worth several pounds perhaps, and he

wants no return. Their money value is not in his mind. It was a pleasure to him to take them, to have the pleasure of giving them to you. Not that he will treat every one so—now-a-days, for as we have said he has been sadly annoyed many a time at the manner his generosity has been imposed upon. When he took one species that had only occurred singly before, he gave to every applicant, only to find that some of his specimens had been sold at high prices by those to whom he had given them. He is not without his faults perhaps, but his good qualities are those we desire to see you imitate. He always acts on the motto we wish to see you act upon. "Freely ye have received, freely give."

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s. with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

Several correspondents are again thanked for lists of Hawk Moths occurring in their districts. We shall still be glad of others. Will Mr. George Harker kindly say whether he finds *Fuciformis* freely at Crosby, and in what stage. This species is not in the other lists we have from that district.

"AT HOME."

LIVERPOOL.—C. S. Gregson will be at home every Sunday until March next. Microlepidopterists, coleopterists, and artists should come early to secure good light; general naturalists any time from nine a.m. to nine p.m.—Rose Bank, Fletcher Grove Edge Lane, Liverpool.

HUDDERSFIELD.—S. L. Mosley every Saturday afternoon,

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(We shall be glad of additions to these lists)

NOTES, CAPTURES, &c.

SKYLARK LAYING IN CONFINEMENT.—I brought up a skylark from the nest two years ago. Last year it laid three eggs and this year it has laid twelve. Some of these are very curious, being entirely without spots.—GEORGE HARKER, Liverpool.

RARE BIRDS AT HARTLEPOOL.—On 16th October last I shot a specimen of the Woodchat Shrike near the workhouse here. It was named for me by Mr. Mackey, bird stuffer. On the 27th December I shot a specimen of the Cirl Bunting on the North Sands, behind the cemetery.—J. J. CAMBRIDGE, Alliance Street, Hartlepool.

If the Woodchat Shrike be rightly named it is an interesting record, as it has not previously occurred in the county of Durham. In Hancock's Birds of Northumberland and Durham a specimen is mentioned as having been shot near Bamborough, Northumberland, on 29th April, 1859, the only recorded occurrence of the species in the two north-eastern counties.—EDS. Y.N.

IN RE AUTUMNARIA.

ON page 63 of Y.N. Mr. Gregson has thought fit to attack my name and reputation in a most gratuitously abusive manner. His false calumnies are but *spleenic envy*, and only merit my supreme contempt, barely worthy of denial even.

I may remind Mr. Gregson that his ungentlemanly accusations are in no sense arguments. He does not give the slightest proof of his assertions, and before he attacks the good faith and honesty of a brother entomologist, in common decency he must give his reasons. Mr. Gregson's *ipse dixit* is not evidence. It is easy to say that *Autumnaria* was planted at Deal, but if so, who did it? If Mr. G. can give any proof of this I would be one of his warmest supporters in trying to bring the guilty party to a state of social "Coventry." Any man who would do so mean a trick deserves that. I still believe most confidently that Mr. Harbour's captures of *Autumnaria* at Deal are genuine British moths. My reasons I have fully stated in the December Entomologist, so need not be repeated here. And, individually, I am quite content to let my brother entomologists draw their own conclusions as to my *bona fide* in the matter; my honest reputation is too firmly established to be shaken by the *hollow thunder* of the self-crowned Liverpool Jove! mighty as he (alone) may think it.

Mr. Gregson's figures, too, will bear correction. British specimens of *Autumnaria* rarely exceed two inches. Mr. Bond has several in his rich collection, but none over 2 inches, and the smallest about $1\frac{1}{2}$ inch. Foreign specimens may be larger and more orange. *Angularia* I have in my cabinet fully $1\frac{3}{4}$ inch: so that the size alone may be at least deceptive. Not that there is any difficulty in fine and fresh specimens.—W. H. TUGWELL, Greenwich.

BRITISH MOTHS:

By JOHN E. ROBSON,

(Assisted by Contributors to the Y.N.)

THE COCHLIOPODÆ contains but two European species, both of which occur in Britain. They are small, the larger one only expanding an inch. They have rather ample wings, yellowish brown and shining. The great peculiarity is in the larvæ, which appear to be entirely without legs.

THE PSYCHIDÆ include a small number of singular species of very doubtful location. While Mr. Stainton agrees with Dr. Staudinger, by placing them among the BOMBYCINA, Mr. Doubleday included them among the TINEINA. The imagines vary in size from less than half an inch to one inch in expanse. The males have ample wings, generally black or smoky, and but thinly scaled; the antennæ pectinated or plumose. The females are without wings, and some of them have neither legs nor antennæ, being nothing but living egg bags. The larva constructs a case after the manner of some of the TINEINA, in which it lives and changes to a pupa.

THE LIPARIDÆ are insects of moderate size, with rather ample wings; the antennæ of the males are pectinated; the female is sometimes wingless or nearly so, and sometimes has a very thick abdomen. The larvæ all have 16 legs, generally with tufts of hair, the hairs often of uniform length; some of them are very beautiful, and most of them feed on trees or shrubs. The pupæ are hairy, generally having tufts of soft hair on the back; the cocoon is of a loose texture.

THE BOMBYCIDÆ are the typical insects of the group. Most of them are of rather large size, some of them expanding more than three inches. They are mostly of various shades of brown in colour. The antennæ of the males are pectinated. The larvæ are all hairy, but not tufted. The pupa are smooth, and enclosed in a cocoon,

which varies considerably in texture, some species spinning a mere loose web, and others a firm hard cocoon.

The ENDROMIDÆ contain but one European species, *Endromis Versicolora* the Kentish Glory. By Mr. Doubleday it is included in the last family. It is a large rather showy day-flying insect, with a smooth larva, which spins a slight cocoon.

The SATURNIDÆ contain but one British species, *S. pavonia*, the Emperor Moth, one of our most beautiful insects. Several other species occur on the continent. The Emperor Moth has an eyed spot on each wing, the male being smaller, but more beautifully coloured. The antennæ of both sexes are pectinated. The larva is very beautiful, with tufts of short hairs arranged in rows round the body. The pupa is enclosed in a firm pear-shaped cocoon, open at the smaller end, but with a cap inside to prevent anything obtaining entrance. This is also included with the Bombycina, by Mr. Doubleday.

The DREPANULIDÆ, called by Mr. Stainton PLATYPTERIGIDÆ, are placed by Mr. Doubleday, in a separate group, between the GEOMETRÆ, and the next family. The wings of the imagines are often hooked at the tip, hence some of them are called "hook tips." There are only six species found in Britain, and but one more on the Continent. The larvæ are not hairy, and are without prolegs on the anal segments. The pupa is in a rather tough cocoon.

The NOTODONTIDÆ are also placed by Mr. Doubleday as a separate group, following the last named, and preceding the NOCTUÆ. He divides them into three families. They are of very variable form in all their stages. Most of the imagines, when in repose, sit with their wings in roof form, and many of them have a little tuft of scales, projecting over the inner margin, which appears like a little prominence above the outline of the wing. Hence the name

"Prominents" The larvæ of many of them are of very curious forms. The "Puss Moth" and "Kittens" (*Cerura*), have no anal claspers, but this segment is lengthened into two tails, from which a flesh-coloured filament is projected when they are alarmed. The "Lobster" (*S. fagi*), has the first pair of prolegs enormously lengthened like the nippers of a lobster. The last species in in the arrangements of Messrs. Doubleday and Stainton (*D. ceruleocephala*) is considered by Dr. Staudinger to be a *Noctua*.

The CYMATOPHORIDÆ of Dr. Staudinger's list are placed first among the NOCTUÆ, by both the other authors to whom we refer, Mr. Stainton calling them NOCTUO-BOMBYCIDÆ, and Mr. Doubleday BOMBYCIFORME. The imagines are of moderate size, often with transverse lines, and in most of the species grey or greenish in colour. The larva are rather slender and smooth, often with little prominences on the back. Some of them raise the anal segments in repose as do many of the last family, others feed between leaves united by silk.

It will be observed that there are many differences of opinion, among authorities, respecting the members of this group. Our young readers must study for themselves, and arrive at their own conclusions.

THE TORTRICINÆ.

The TORTRICINÆ is perhaps the most natural group among all the Lepidoptera, for well-marked characteristics both in larva and imago run through the whole. Almost every collector can recognize a TORTRIX at sight, but when he has said it is a TORTRIX he has generally exhausted his knowledge on the subject. A great number of the species are common, many of them abundant, and any collector setting to work *in earnest* now might make sure of having a creditable collection by next year at this time. There are several works upon or containing this group, though perhaps not illustrated to the

extent a beginner would like. Woods "Index Entomologicus" and Morriss' "British Moths" contain figures of all the species known then, but they are expensive works. Wilkinson's "British Tortrices" (12/6) contains good life histories, but figures of genera only. The best book the beginner can get is Stainton's "Manual" (10/6), which not only contains the Tortrices, but all the other British Lepidoptera. The few woodcuts, in many cases, will lead to the determination of a species. We shall always be glad to name specimens sent to us for that purpose. The different families are as follows:—

Family I.—TORTRICIDÆ, Gn. The members of this family have ample fore-wings, and fly during summer. The larvæ feed in rolled leaves. It contains eleven genera in Britain, comprising over fifty species. The Green Tortrix (*viridana*), common in oak woods, may be taken as a sample; and the little orange *Bergmanniana*, found about rose bushes, will represent another section. Many of the species are yellowish brown, with oblique darker markings. The species of the genus *Peronia* are very inconstant, some varying very greatly.

Family II.—PENTHINIDÆ, Gn. The larvæ of this family are mostly feeding during May and June, and the moths are on the wing during the latter month and July. In habits they resemble the last. Most of the species are black and white or yellowish. *A. cynosbana*, so common about hawthorn hedges, is a sample. It contains three genera and seventeen species.

Family III.—SPILONOTIDÆ, Gn. A very small family, the insects mostly being a mixture of black and white, or brown and white, but the wings are longer than in the last two families. *P. Tripunctana*, which may be known by its yellow palpi, is common in gardens where roses grow.

Family IV.—SERICORIDÆ, Gn. This family is not of large extent in Britain. One of the

commonest species is *A. udmanniana*. The larva may be found rolled up in the leaves at the end of bramble stems during April and May. The moth may be known by its having a large chocolate patch near the anal angle of the fore wing.

Family V.—SCIAPHILIDÆ, Gn. A small family of insects of different arrangements of grey, some of them very common, and the larvæ not being at all particular in their choice of food.

Family VI.—GRAPHOLITHIDÆ, Gn. This is by far the largest family of the group, containing over twenty genera. In the genus *Anchylopera* two species may be found common on moors—*Myrtillana* and *Lundana*—which are very much alike, having pointed wings and a chocolate patch at the base of the inner margin. In the genus *Halonota* one species (*Brunnichiana*) may be found in early spring in the larva state at the bottom of the stem of coltsfoot flowers. The genus *Retinia* are pretty insects, red being the prevailing tint. The larvæ feed in the shoots of young fir-trees.

Family VII.—PYRALOIDÆ, Gn. Of very small extent, comprising only four or five British species.

Family VIII.—COCHYLIDÆ, Gn. Of moderate extent. Some are very sombre in colour, others very gay, yellow being the prevailing tint among the bright colours. Some of the larvæ feed upon flower heads, while others penetrate the roots and stems of plants. *X. zoegana* is perhaps the most beautiful species, but is rare.

Family IX.—APHELIDÆ, Gn. A family of only two genera, each containing a single species. One (*Pratana*) flies during July and August, and the other (*Hyemana*) in early spring. Both are very inconspicuous species.

We hope these brief notes may be sufficient to induce some to study this group of Micros, and at some future time we may give a description of the species.

BRITISH ANTS:

BY MR. G. CARTER BIGNELL, M.E.S.

"THERE is no harm in making a mistake, but great harm in making none. Show me a man who makes no mistakes, and I will show you a man who has done nothing."—*Liebig*.

In writing a description of the British Ants for the "*Young Naturalist*," I shall try to avoid mistakes. There is one thing certain. I shall not be enabled to give its readers more information, than can be found in the various works already published on the history of these insects. I have, however, been led to write this paper, as the books to which I refer, are not always to be obtained by young beginners, and as I think with the editors, that if the readers of the "*Young Naturalist*" had an opportunity of knowing something about those little creatures, that love of nature would increase, and they would be induced to observe and study them, and hence they would better appreciate the appropriateness and beauty of that passage in Holy Writ, when holding them up to us as a pattern, the wise king says "Go to the ant, thou sluggard; consider her ways, and be wise, which having no guide, overseer, or ruler, provideth her meat in the summer and gathereth her food in the harvest."

With these few remarks I shall commence by saying that the latter part of this quotation does not apply to the British Ants; for none of these store grain for winter consumption, as implied. During that part of the year they are dormant. A solitary one may be sometimes seen out, walking over the formicarium of *Formica rufa* in a lethargic state, for the purpose of giving alarm, &c. Solomon, however, was so far correct that some kinds do store grain. Mr. Mogg-ridge, for instance, observed two species so engaged in the south of France; Dr. F. B. White saw another species in Italy; and Mr. C. Horne, in India, saw some employed in the same occupation. Doubtless many more will be discovered to be equally provi-

dent, when naturalists turn their attention more earnestly to these little creatures.

The Ants belong to the *Fossorial* group of Hymenoptera, section *Heterogyna*; and are divided as follows by Mr. E. Saunders, in his paper read before the members of the Entomological Society of London on the 3rd November, 1880. (I may here mention that most of the descriptions of the insects in this history will be taken from that paper. I have Mr. Saunders's permission for this. And I hereby thank him for his uniform kindness in naming specimens for me, when I have been in doubt. This gentleman is a Fellow of the Linnean Society and a Member of the Entomological Society, whereby he has access to the copious libraries of these institutions and the British Museum collections. We may, therefore, be well assured, that the paper to which I refer was carefully prepared, and is in every respect authoritative.)

| | | |
|------------------------|---|--|
| Genus <i>Formica</i> , | 7 | species. |
| " <i>Lasius</i> , | 5 | " (since the reading of Mr. Saunders's paper I have discovered another, which makes it six.) |

| | | |
|---------------------|---|---|
| <i>Tapinonia</i> | 2 | " |
| <i>Ponera</i> | 2 | " |
| <i>Myrmica</i> | 5 | " |
| <i>Stenammas</i> | 1 | " |
| <i>Asemorhoptum</i> | 1 | " |
| <i>Tetramorium</i> | 1 | " |
| <i>Leptothorax</i> | 3 | " |
| <i>Solenopsis</i> | 1 | " |
| <i>Monomorium</i> | 1 | " |
| <i>Myrmecina</i> | 1 | " |

To this must be added two others, viz.:—*Pheidole megacephala* (the house-ant of Madeira), which has been discovered in too many houses in London to be pleasant to the owners); and *Tapinoma gracilescens* (another from Madeira), that has too well established itself to be considered a stranger amongst us. The latter has been taken in London, Sydenham, and at St. Leonards-on-Sea.

(Continued on page 95.)

E. G. MEEK,

NATURALIST,

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VOL. 3.

IN RE AUTUMNARIA.

ENNOMOS autumnaria, better known to British entomologists as *E. alniaria*, was, until recently, one of the rarest of British insects. So rare was it that Stainton's manual mentions only three, and Newman in his *British Moths* says "It is said that three specimens of this conspicuous French insect have been blown across the channel." The fact that light possesses a great attraction for all the family, and that one of these three specimens was taken at the North Foreland Lighthouse, and that other specimens have been taken on the coast ranging from Gosport to Margate, makes it possible enough that the species, either attracted by the lights on our shores, or blown from the French coast was glad to reach England in safety. But it should be borne in mind that the southern parts of the island are, at all events, within the range of the species according to Dr. Staudinger, and, therefore, that the places where it has been taken are just the places where it ought to have occurred if native. There is, therefore, nothing remarkable in the species being turned up in some numbers, as it has been, and as many another

species has been before it. But it unfortunately happens that at the very time the insect is being taken at Deal and elsewhere, large numbers are being bred from foreign ova that have been imported, and the suspicion immediately arises in the minds of some that the captures are not genuine, or if the species has really been taken, the specimens have been "planted" for that purpose. It is not very creditable to men following a scientific pursuit to suppose such a thing possible. But the high price paid for supposed British specimens of a rarity, has induced dishonest men before to-day, to palm off foreign insects as British. On this subject we shall have something more to say on another occasion, our present business is with *Autumnaria*. On page 335 of our last volume, before the records of the numerous captures appeared, Mr. Gregson warned young naturalists not to part with their "gems" in exchange for this insect, stating that he knew a considerable number had been imported. This letter led to a controversy which has now assumed rather unpleasant proportions, and rather than continue to occupy our space with articles such as have appeared, we have

thought it best, at the risk of being considered presumptuous, to investigate the matter and lay the result before our readers. Mr. Gregson has always assured us that his remarks were directed to certain individuals in his own neighbourhood, and not to the southern captures at all. Unfortunately, however, the name of the entomologist who took the specimen, to which reference will be made shortly, was Harbour, and Mr. Gregson made use in his letter of the expression "I harbour the opinion," &c. Mr. Harbour, or Mr. Tugwell for him, put the cap on, and hence the mutual recrimination which we so much deplore. Now to the history of the matter. We would say that we have read all the correspondence—no short one,—seen the specimens, and made every enquiry that seemed necessary to direct us to a correct conclusion.

In 1878 Mr. Tugwell, who has been known for over a quarter of a century as one of our best working entomologists, and who has turned up many rarities in some numbers in years gone by, was collecting *Nola centonalis* at Deal, where he made the acquaintance of Mr. Harbour. Mr. Harbour is a working man, not much known outside his own neighbourhood, but whom we would from his correspondence judge to be a rather positive and very persevering man. He makes no pretence of being what would be called a good entomologist so far as the differentiation of closely allied species goes, and he took the opportunity of Mr. Tugwell being at Deal to get him to look over his collection and

correct any errors he might have made. Among his specimens of *E. angularia* Mr. Tugwell detected a female *Autumnaria*, which is before us as we write. It is exactly as Mr. Tugwell describes it in the December number of the *Entomologist*: "worn, tips of wing broken, but still unmistakably *Autumnaria*." One of Harbour's males seen by Mr. Tugwell at the same time is also before us. Now that we know all about it we wonder that Mr. T. did not feel equally sure about it, for though it only expands $1\frac{1}{2}$ inches, it has all the peculiarities of *Autumnaria* well defined, nevertheless, it was passed over as probably only a strongly marked *Angularia*. In 1880, Mr. Tugwell again at Deal, in looking through Harbour's breeding cages saw some "Thorn" larvæ he did not know. *Tiliaria* were emerging in the cage, and Harbour said these were larvæ of *Angularia*. No doubt remembering the well-marked specimen he had seen two years before, Mr. Tugwell expressed a desire to rear this species, which he had not done before. Mr. Harbour, therefore, three months later, sent him thirty-six eggs, which were entered as *Angularia* in his note book. These were deposited by a female reared from the larvæ seen in Mr. Harbour's cage. No suspicion of them being anything else was in the mind of anyone. They hatched in April and May, 1881, and when Mr. Tugwell went to Deal again in the following June he thought they were full fed. They were left with other common larvæ in care of Mr. Tugwell's son, who

as he takes no interest in such things, was not considered careful enough to trust with the rarer species Mr. T. then had feeding. On his return at the end of July Mr. Tugwell found one specimen had emerged, though some of the larvæ continued to feed for a fortnight longer. Of course, the specimen explained the mystery, for it was *Autumnaria*. Mr. Harbour was immediately informed, and he set to work to seek the insect, and guided by the knowledge of where he had taken his supposed *Angularia* in former years, he has after diligent search managed to secure no less than twenty-eight specimens. Some of these we have seen. One very fine male is before us now, good in all respects. Another, equally fine, though very different in hue, has both the wing tips badly broken. Still neither of them are in that condition we would expect to find in bred insects. We are quite sure that but for the known importation of foreign eggs, no doubt would ever have been thrown on the authenticity of these or Mr. Tugwell's bred specimens. But after having read the correspondence on both sides between Messrs. Tugwell, Harbour, and others, we are quite sure that Harbour's first captures date earlier than the importation of foreign eggs. Mr. Tugwell's failure to recognize the species, either as imago or larva, is made a strong point of by Mr. Gregson, but *Mr. Tugwell did recognize the species*, and picked out the large female named above as far back as 1878. He did not recognize the male at the same time, and perhaps he fell into the same

mistake as Mr. Gregson with respect to size, and never thought of it being *Autumnaria*, because it was only an inch and a half in expanse. There is the error. We have in our European collection a female that only expands an inch and a half, and Mr. Bond informs us he has a British female, taken in Hampshire by Mr. Heath in 1879, that is the same size. So that the test of size fails. We would observe, however, that there appears to be more variation in the size of females than males, for we have one (French) female that expands $2\frac{1}{2}$ inches, while all the males we have seen, or have dimensions of, only vary from $1\frac{3}{4}$ to 2 inches. Next, Mr. Tugwell did not recognize the larvæ, but he was told they were *Angularia*, which he did not know. He only had verbal descriptions to refer to, which at best are very misleading. Let any one who thinks he ought to have made them out compare Newman's description of the larva of *Angularia* with Stainton's of *Alniaria (autumnaria)*. Besides, they were not full fed. Mr. Harbour at one time had thought Mr. Tugwell had deceived him, and knew the larvæ in the breeding cage to be *Autumnaria*. Whilst under that impression he made some foolish remarks on the subject that we do not care to repeat. But no one who knows Mr. Tugwell would believe him capable of such a trick. Besides, his conduct proves it was not so, for he did not ask to have the larvæ then feeding, but only, if eggs were got from them might he have some. That Mr. Harbour sent him all was not Mr. Tugwell's fault,

and the correspondence we have read is quite conclusive on the point. In conclusion we would say, that having had the fullest opportunities of judging on the matter by hearing and seeing all sides, we have not the slightest doubt that Mr. Tugwell's insects are the offspring of a female taken at large in 1879 by Mr. Harbour, and also that Mr. Harbour's subsequent captures are genuine also. May we point out a typographical error on page 229 of the *Entomologist* that might mislead: the date in the second line, "October, 1879," should read "October, 1880."

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

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With a view to help botanical students, the editors have arranged to supply a few sets of not less than thirty typical specimens of British plants, properly dried and preserved, illustrating the most important natural orders, at the nominal price of 2/6 per set, post free.

EXCHANGE.

The Huddersfield Y.N. Field Club have the following species for exchange:—*basilinea*, *rubricosa*, *trapezina*, *Dahlia*, *rumicis*, *magaritata*, *S. populi*, *trigonodactylus*, *Io*, *urticæ*, *Atalanta*.—F. ELLIS, Hon. Sec., 32, Swallow Street, Huddersfield.

"AT HOME."

LIVERPOOL.—C. S. Gregson will be at home every Sunday until March next. Microlepidopterists, coleopterists, and artists should come early to secure good light; general naturalists any time from nine a.m. to nine p.m.—Rose Bank, Fletcher Grove Edge Lane, Liverpool.

Huddersfield.—S. L. Mosley every Saturday afternoon.

ASSISTANT NATURALISTS.

J. P. SOUTTER, Clyde Terrace, Bishop Auckland. All branches of Botany except microscopic.

JOHN A. TATE, 61, Merlin Street, Liverpool. Inhabitants of the Aquarium, Terrarium, and Vivarium.

(We shall be glad of additions to these lists.)

NOTES, CAPTURES, &c.

LARVA OF *P. RAPÆ* IN DECEMBER.—I had a larva of *P. rapæ* brought to me yesterday which was found on a cabbage. It is evidently not yet full grown, as it has eaten since being brought into the house.—T. T. DOUBLEDAY, Team Villas, Gateshead-on-Tyne, 29th December, 1881.

GREAT NORTHERN DIVER (*Columbus gracialis*).—A Great Northern Diver in winter plumage was shot on the River Orwell on the 2nd January. It weighed 15 lbs. 14 oz. F. KERRY, Harwich.

NOTES AND OBSERVATIONS.

By W. H. BATH.

3rd December.—Treated at night, but did not take any moths; the sky cleared at night and the moon shone out brightly. Saw several common white slugs (*L. agrestis*) crawling up the trees where I had treated. They are very fond of treacle, and one will consume as much as twenty moths. There were great numbers of spiders on the hedges,

some feeding on gnats and winter moths. Japponica in flower.

4th December.-WATER SHREWS (*C. fodiens*)

—As I was passing by Windy Pool this morning I heard a splashing noise, and on looking I saw a Water Shrew jumping and frisking about in the water like a porpoise. There were several others swimming round the islands, and popping in and out of their holes.

I observed some shoots growing at the bottom of an oak-tree in full leaf. Owing to the mildness of the weather several lilac-trees have large buds. Daisies in flower in profusion. Groundsel in flower everywhere. Chickweed in flower in abundance. Purple nettle (*L. purpureum*) in flower. White nettle (*L. album*) in flower. Garden flowers are out in profusion. I saw a garden the other day at Erdington that could not have looked much better in May; roses, pansies, wall-flowers and whole beds of daisies were flowering.

WHITBY FIELD CLUB.

As "subjects" for papers are sometimes not easily found by young essayists, we append a list of the papers, read during the past summer, at the Whitby Field Club Meetings, kindly supplied us by Mr. Tate:—

| | |
|-----------------------------------|-------------------|
| Pond Life - - - | Mr. W. H. Dotchon |
| Life on the Globe - - | " T. Newbitt |
| Taxidermy - - - | " A. Mallinder |
| The Aquarium and Terrarium - - - | " J. A. Tate |
| A Naturalist's Walk in July - - - | " H. B. Thornton |
| Zoology - - - | " A. Mallinder |
| Entomology of the Month - - - | " W. H. Tate |
| Haunts of the Naturalist - - - | " W. H. Dotchin |
| A Ramble on the Scour - - - | " J. A. Tate |
| A day's Fishing on Coast - - - | " W. J. Jackson |
| A Tramp over the Moors - - - | " W. H. Dotchin |

Natural History of

the Month - - - " H. B. Thornton

Uses of Insects - - - " F. J. Meed

The papers were read every alternate Wednesday, from May to October.

FIELD CLUBS.

If all our young folks are as enthusiastic as the members of the Frizingall Club there will be wonderful doings next year. We have before us now a number of the "Frizinghall Naturalist," a monthly illustrated magazine of natural history. The contents are written and lithographed; and as there are but eight small pages, the amount of information contained is not much, especially when nearly three pages are "poetry," and there are several illustrations, including a half-page view of Gibraltar. But it is the earnestness displayed that attracts our admiration. Here are a few lads entering into the study of natural history with an amount of relish and enthusiasm that we have not seen before. Long may it last, and may there be many like them.

WINGLESS INSECTS.—LICE.

In almost all orders of insects there are a few species which are destitute of wings, or have them only partially developed, as we have recently shown in the case of the Winter Moths, belonging to the Lepidoptera, but these are exceptions. Yet there are whole groups of insects which are entirely wingless, and which may be treated as sub-orders, perhaps some of them as distinct orders, though frequently they are associated with one or other of the orders we spoke of in Vol. I., and for this reason we did not speak of them then as separate divisions, but as we are often asked to what order does such and such an insect belong, we will now give a summary of the various wingless groups. The first of which we will speak of is the

ANOPLURA (LICE.)

Those which have associated the lice with any other insects have placed them with *Hemiptera*, which they resemble in not having a perfect metamorphosis. The true lice are divided into two divisions called *Mallophaga*, which feed on the hair and feathers of animals, and *Hæmatopina*, which suck the blood.

The family *Mallophaga*, which live on feathers or hair, have mandibles for biting. This family is divided into two sections, the one called *Liotheidæ*, which infest birds of different kinds, and *Trichodectidæ* which infest mammals. Scarcely any species of bird or mammal is entirely free from the attack of parasites of this order, and in some cases they absolutely swarm upon individuals, a fact which must have been observed by all bird stuffers, pigeon and dog keepers. Almost every species has some parasite peculiar to itself, or peculiar to the genus to which it belongs.

The family HÆMATOPINA subsist by sucking the blood of their host, and for this purpose are provided with a mouth tube. in which respect they differ from the last family. To this section belongs the lice, both of the body and head of the human species, that which infests the white man is white, that which infests the negro is black. The claws are furnished with a kind of nipping jaw, by which it firmly holds on the hair of the animal it infests, and in this way it is very difficult to clear a dog or other animal that has once become infested with them. The best plan seems to be rubbing the hair with a "precipitate," sold by most chemists, and which should be a preparation of Bi-carbonate of Mercury in the form of an ointment.

We would call the attention of bird stuffers to this subject. They frequently find parasites on the specimens they prepare. If they will take the trouble to put a few specimens into a quill, plug up the

ends with cotton and transmit them to us. We may, when sufficient material is accumulated, go further into the subject, and will duly acknowledge all such help in the proper place.

ON THE CLASSIFICATION OF COLEOPTERA.

By JOHN W. ELLIS, L.R.C.P., &c.

I have penned the following remarks on the classification of Beetles with the hope that they may be of use to young coleopterists in helping them, if not to name their additions, at any rate, to enable them to arrange them in some sort of order preparatory to their naming them. I fully endorse the editor's remarks as to the desirability of young entomologists not troubling their friends with their unnamed specimens till they have tried their best to name them themselves, as from my own experience I can assure them that by naming a single species they will learn more about that species and its relations than by a year's collection and arrangement of ready-set and ready-named specimens.

The order Coleoptera, or Beetles, is distinguished from all others by the insects contained in it undergoing a complete metamorphosis, by the perfect insect being possessed of a mouth furnished with two pairs of jaws, and having the anterior wings forming a pair of horny sheaths for the posterior pair, which alone are used in flight. For a description of the various anatomical details I must refer beginners to one of the books on beetles, such as "Cox," "Rye," or the little one by the Rev. T. G. Wood, as a description of these parts—especially of the mouth—is almost unintelligible without the aid of good diagrams.

Beetles are differently classified by various writers, but I think the old plan of dividing them into thirteen *sub-orders* is by far the simplest for the beginner, especially as it

does not materially alter the arrangement if later styles of classification be followed, in which *sub-orders* are omitted and a large number of *families* created. These sub-orders are—1, Geodephaga; 2, Hydra-dephaga; 3, Palpicornes; 4, Brachelytra; 5, Necrophaga; 6, Lamellicornes; 7, Sternoxi; 8, Malacoderma; 9, Heteromera; 10, Rhyncophora; 11, Longicornes; 12, Eupoda; and 13, Pseudotrimeria.

Sub-order I. GEODEPHAGA comprises the ground beetles, which are characterized by having their legs formed for walking or running—*never for swimming*. The joints of all the tarsi (feet) are five in number, of which two or three of the anterior pair are generally dilated in the males. The insects composing this group are nearly all carnivorous, as the tiger beetles (*Cicendelæ*), *Carabi*, &c. Some, however, are vegetarians, as *Zabrus gibbus*, a noted corn feeder. They are chiefly nocturnal in their habits, hiding during the day-time beneath stones and rubbish, in moss, beneath bark, &c. The diurnal species are almost always bright coloured as the tiger beetles *Elaphir*, *Notiophili*, *Amara*, &c.

Sub-order II. HYDRADEPHAGA have their hind legs fringed with hairs on the inner side to fit them for swimming. The tarsi are jointed; the antennæ filiform, except in the genus *Gyrinus*—the whirlwig beetle—which has the antennæ, club shaped at the extremity. These insects are all carnivorous in their habits, in which they differ from the water beetles of the following group. They occur all the year round in ponds and ditches, often in great profusion in very small pools of water in exposed situations.

Sub-order III. PALPICORNES.—A very small group of beetles characterized by having their palpi (antennules, or jointed organs connected with the jaws and mouth) much longer than the antennæ. The latter are

clubbed at the extremity; the tarsi five-jointed; and the legs often spiny. Most of this group live in water, where they are very sluggish in their habits, and where they feed on vegetable substances. The favourite beetle for aquaria, *Hydrous piceus*, is a good example of this group. Some of its members, however, are terrestrial in their habits, such as *Cercyon* and *Sphæridium*, which live in dung:

Sub-order IV. BRACHELYTRA.—This is the most extensive group of beetles inhabiting temperate climates, and is one which is very easily distinguished by the elytra or wing covers being much shorter than the body, *rarely being half the length of the latter*. The antennæ are generally filiform, and the tarsi are four or five-jointed. The beetles comprised in this sub-order are generally known to collectors as "Staphs" (an abbreviation of *Staphylini*), and to non-entomologists as rove-beetles, devil's coach-horses, and cock-tail beetles. They occur everywhere, in flowers, beneath stones, in dung, and in putrid animal or vegetable substances.

Sub-order V. NECROPHAGA or CLAVICORNES are so called because all the members of this extensive sub-order have the antennæ clavate, *i.e.*, furnished with a knob at the extremity; some, in addition, have the antennæ "elbowed" as in the weevils (see *Rhyncophora*). The tarsi are variable, and the elytra are often *slightly shorter* than the abdomen. The insects of this group—among which are the burying beetles (*Necrophori*) and their allies—are found in similar situations to the *Brachelytra*, by no means confining themselves to dead animals, as the name of the sub-order would lead one to suppose. Those species with elbowed antennæ are often separated as a distinct group—*Helocera*,—among which are the Histers or mimic beetles, so called from their habit of feigning death when alarmed.

E. G. MEEK,

NATURALIST,

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 115.

JANUARY 21st, 1882.

VOL. 3.

DARWINISM.

THIRD PAPER.

WE have found it so impossible to condense what we have to say, on variation under domestication and reversion to the original form, into one paper, that we have been reluctantly compelled to make two of it, and to-day will speak of variation under domestication only.

If what has already been said has been made clear enough, our young readers will be enabled now to understand why much greater change can be obtained under domestication, and in a much shorter time than in a state of nature. In the first place all the natural restrictions are removed. If the argument in previous papers be correct, the normal form of an animal is exactly that most fitted for its place in nature. Such being the case, any departure from that form in any direction will produce an animal less fitted to hold its own in the great struggle for existence. Thus extensive variation is kept down in nature, and no changed form can become permanent that is not in harmony with existing conditions. As these conditions change but slowly, so the change in the form must be very slow also; any mark-

ed divergence would either cause the animal to die out or be killed off quicker than its congeners, the original form alone surviving. In domestication no such cause is in operation. An animal whose safety is assured and whose food is provided for it may vary in any direction without suffering from the change. Yet even in domestication change would be exceedingly slow if man did not interfere and further it for his own ends. Let us illustrate our argument by a reference to wild and domestic rabbits. In nature how rarely we see a rabbit of any other colour than grey. Occasionally we may see a black one in a dealer's shop, but in all the many thousands that are weekly sent to market how very seldom any other variety is seen. The reason for rabbits being grey is obvious, it is the hue most in harmony with their surroundings. "A white rabbit," says Wallace, "would be more surely the prey of the hawk or buzzard." This very fact prevents the continuance of a light-coloured variety—they are not in harmony with their surroundings, and are killed off because they are easier seen. This restriction not obtaining under domestication, a white variety would be as likely to

survive as any other, and here man's selection interferes; he prefers the white form, breeds from it, and in a generation or two has made it permanent. The domestic rabbit is used for food, and the largest individuals are selected to breed from; thus the size increases while they have no need to be swift of foot for they are safe. Other points take the attention of the fancier. At large, a rabbit pricks up its ears to catch the sound of an approaching foe; in domestication this is not needed, and the muscles by which it erects its ears fall into disuse and the ears drop over the sides of its head. This change is marked, and "lop-eared" rabbits are valued higher than others. Now these pendulous ears are no advantage to the rabbit at all, but they are encouraged by the "fancier," and thus increase in size and assume various "lops," each of which has its admirers. It is thus shown that almost at the will of man the rabbit changes in colour, increases in size, and a particular organ becomes so altered that even the muscles are disused. Had we taken pigeons for an illustration still more wonderful changes could have been shown.

Nor is it only in the animal kingdom these variations occur. It is exactly the same in the vegetable kingdom. Compare any of the plants used for food with the same in a wild state. Take the cabbage as an example. From *Brassica oleracea*, the wild cabbage, such strangely different forms have been produced as the cauliflower, the Brussels sprout, and the ordinary cabbage. Think

for a moment of our fruit and foliage trees, and you will see they are plastic in the hands of man, as clay under the manipulation of the potter. Compare the wild gooseberry with the garden sorts. The fruit is increased in size, varied in colour, improved in flavour; the leaf has remained unchanged. Of the currant the same thing may be said, but if we take the flowering currant that is cultivated not for its fruit but its flower, we find there variety of colour. The beech tree is grown neither for its fruit nor flower, and the hue of the leaves seem to change at will, and we have copper beeches, purple beeches, and so on. Look for a moment at other trees grown for foliage. How the holly, the elder, &c., are changed and varied. In garden flowers still more wonderful changes are produced. Flowers become double or single, their colours change, their size increases, their scent becomes more intense or more delicate at the will of the grower. All this is done merely by careful selection of those forms that *vary in the desired direction*. It is not all accomplished at once, nor by one man. The natural restrictions being withdrawn, and the grower being ever on the watch for new forms, every trifling change is taken advantage of, and the accumulated variation of years, guided by the intelligent mind of man, produces quickly, for his own gratification or advantage, changes that could only have obtained in nature in immense spaces of time, and then only on condition that the surroundings were in harmony with it.

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W.H.D., Birmingham.—No. 2. is *Capsella Bursa-pastoris*, the Common Shepherd's Purse. It is an exceedingly variable plant. Yours is young and immature. No. 1. we cannot name from the undeveloped scrap sent. Send a mature specimen.

F. KERRY, Harwich.—Is thanked for a very pretty pied variety of the Reed Bunting, killed by him at Harwich, and sent for figuring.

G. C. BIGNALL, Stonehouse.—Is thanked for a sooty variety of the Common House Mouse (*Mus domestica*.) He remarks that all the mice in the house where it was caught were of the same peculiar colour.

"AT HOME."

LIVERPOOL.—C. S. Gregson will be at home every Sunday until March next. Microlepidopterists, coleopterists, and artists should come early to secure good light; general naturalists any time from nine a.m. to nine p.m.—Rose Bank, Fletcher Grove Edge Lane, Liverpool.

HUDDERSFIELD.—S. L. Mosley every Saturday afternoon.

EXCHANGE.

DUPLICATES.—A goodly number of *Exapatte gelatella*, both sexes, females carded.

DESIDERATA.—Lepidoptera and Coleoptera.—JOHN S. WHITE, 15, Medlock Road, Droylsden, near Manchester, 17th December, 1881.

WINGLESS INSECTS—MITES.

The mites, though not insects in the strict sense of the term, because they possess eight legs, are only the first step out of the insect world; and these and others, such as spiders, are so very little removed, that it is perhaps best to treat of them all as insects. Indeed, so little removed are the mites from the true insects that, although in the mature state they have eight legs, in the younger stages they have only six. They form the transition group from the true insects to the spiders.

In Science these insects are called ACARINA, and are very varied in their habits, which are fully described in a thick volume, by the late Andrew Murrey, and published by Chapman & Hall, at the moderate price of three shillings. We refer to this subject here because we wish to open out various paths to the young beginner, as there are already too many travelling the same road, while many interesting sideways and by-paths are almost totally neglected. We give the following general summary of this order, gleaned from the above-mentioned work;—

1. TROMBIDIINÆ, containing the *Tetranychus*, of which the "red spider" of gardener's is an example, and the *Trombidiidæ*, which comprise the harvest mites, generally red or brown, found under stones, &c.
2. BDELLIDÆ, called snouted harvest mites, generally brightly coloured, but having their mouth protruded into a snout.
3. HYDRACHNIDÆ, or water mites, distinguished by being aquatic in their habits. Many of them are very brightly coloured.
4. GAMASIDÆ. Examples of this family may be found under the body of almost any "dor beetle" or humble bee.
5. IXODIDÆ, or ticks, may be known by their leathery abdomen, and by having a sort

shield on the back. They fasten upon warm-blooded animals and suck their blood.

6. HALACARIDÆ. This family is marine.

7. ORIPATIDÆ. These "have a chitinous skin, like beetles."

8. ACARIDÆ. This family is divided into several divisions as follows:—

Hypoderidæ. Living under the skin of certain birds.

Hypopidæ. A peculiar class of mites, parasitic generally on flies, and sometimes in large numbers.

Tyroglyphidæ: A well-known example of this sub-family are the cheese mites. "The general characters of this section are a soft, smooth, fleshy, whitish body, without any system of striæ, or lines disposed round the body, but with a slight furrow, depression or line of separation on the back, between the second and third pair of legs, marking off the thorax from the abdomen."

Sarcoptidæ. These mites are parasitic on animals. They are divided into two sections, one living upon the skin, and the other burrowing under it, producing the disease known as itch.

Phytoptidæ. This class lives upon vegetables substances, producing very curious contortions in the growth of leaves upon the plants which they attack, curling up the edges as they do upon the sloe, or making gall-like pimples like those upon the maple. The curious clusters of small branches in birch trees are produced by these insects.

IN RE AUTUMNARIA.

We are reluctantly compelled to re-open this discussion having received the following from Mr. Gregson. We had hoped our article of last week would have settled the matter, but our readers will see that this communication is too important to be excluded. We reserve our further remarks for the present, but we would earnestly urge upon the controversialists to avoid

personal allusions. We all know that both parties are honest and true, interested only in the advancement of science and in the purity of our collections. Can they not discuss the matter as a scientific subject should be discussed—calmly and without personal feeling, except it be of admiration for good work accomplished.

NOTE ON ENNOMOS AUTUMNARIA.

"One honest John Tompkins, a hedger and ditcher,
Although he was poor did not want to be richer;
For all such vain wishes from him were prevented
By a fortunate habit of being contented.

If anyone wronged him or treated him ill,
Why John was contented and sociable still,
For he said that revenging the injury done
Was making two fools where there need but be one."
—OLD SONG.

"You wronged yourself to write in such a case."
—SHAKESPEARE.

I do not intend my little warning to your young readers to make two fools of two old naturalists. I, however, have been called upon to give some proof that I know what I am writing about; and as Mr. Tugwell has promised to become one of "my warmest supporters" if I can give him any proof, I shall give him proof that the eggs were not British by making an exact quotation from a letter written by his Deal friend, but decline his support with thanks. Many of your readers have already accepted my "ipse dixit," and feel sure I had some dry powder (as is my wont) behind it. Well, then, I shall quote from a letter signed "believe me yours, R. Harbour," written in September, 1881, which followed one written a few days before to the same gentleman, in which this person complains of Mr. Tugwell's treatment. The oftener I read the letter the more astounding it appears. I shall, however, only copy as little of the thing as I can. "One good turn deserves another, and as he deceived me and told an untruth, what would he think if I was to write to the *Entomologist* and say that the eggs I sent him were from FOREIGN PARENTS and NOT taken from a lamp (which is

true)," &c., &c., "believe me, yours truly, R. Harbour." I have desiginedly passed over Mr. Tugwell's remarks about myself. If he desires more proofs they are at his service. I cannot be drawn off the scent. The question is, are Mr. Tugwell's specimens which he bred from eggs supplied by this person Harbour, British? Harbour says they are not. Does Mr. Tugwell still say they are. Does Mr. T. still "vouch in fullest confidence" that they are the offspring of a female moth taken at light—at Deal—in the autumn of 1879." If he does, why does he? What proof had he at first? Mr. Harbour's "ipse dixit!" But he wont take an "ipse dixit" he must have had proof or logically he is guilty of what alone I blamed him for, rushing in where some lower angels dare not tread, or a want of caution. And I hardly think there is any need for fellow naturalists to quarrel about that, but will say (again) with Brutus "Good reasons must per force give way to better." Touching size, I have seen and measured dozens of these so-called British *Autumnaria*, bred in Liverpool and elsewhere, expanding from $2\frac{1}{4}$ to $2\frac{1}{2}$ inches, principally fed on birch trees, in bags. Every boy knows half-starved insects are small, whatever the species. So far as I am concerned, I shall treat these specimens from Deal as unfit for my British collection.—C. S. GREGSON, Rose Bank, Fletcher Grove, Edge Lane, 8th January, 1882.

ON THE CLASSIFICATION OF COLEOPTERA.

BY JOHN W. ELLIS, L.R.C.P., &c.

(Continued from page 87.)

Sub-order VI. LAMELLICORNES have the antennæ terminated by a club which is composed of flat plates joined together by

one side so as to open like leaves of a book. This group comprises the giants of the beetle world, the *Dynastes* and Goliaths of tropical climates; the stag beetle, the dung beetles (*Aphodius* and *Geotrufes*), and the chafers of temperate climates.

Sub-order VII. STERMOXI, are characterized by having on the underside of the first piece of the thorax (pro-sternum), a sharp spine or "mucro," which fits in a cavity in the meso-sternum, between the middle pair of legs, by means of which the insect is enabled to leap vertically upwards when laid on its back—whence the popular name "skip-jacks," given to this group. This sub-order is only poorly represented in England by the Elaters of the New Forest, Agriotes (wire-worms), &c.; but in tropical countries they abound, comprising among them some of the most beautiful of insects as well as some of the most wonderful, as the *fireflies* of many countries.

Sub-order VIII. MALACODERMI. A group of beetles some of which are characterized by having their elytra soft and leathery, the antennæ generally filiform, and the tarsi generally five-jointed. Some few, however, as the death-watches (*anobii*), &c., have the bodies very hard, but the antennæ terminated in a club, composed of three long flat joints, and the thorax is so developed as to almost hide the head when the insect is viewed from above. The typical representatives of this sub-order are the soldier-beetles (*Telephori*), and the glow-worm (the female of which is destitute of wings and elytra.)

Sub-order IX. HETEROMERA, a heterogenous lot of insects, agreeing in have the *anterior tarsi five-jointed*, whilst the *middle and posterior are four-jointed*. The eyes are often kidney-shaped — sometimes completely divided. These insects are very variable in appearance and habits. The church-

yard beetle (*Blaps*), and the meal-worm beetle (*Tenebrio*), being among the dusky nocturnal species, whilst the Cardinal beetles (*Pyrochroæ*) are among the brightest and sun-loving. The Oil beetles (*Meloe*) also belong to this group.

Sub-order X. RHYNCOPIERA—or Weevils—are all characterized by the head being developed anteriorly into a snout or "rostrum." The antennæ are generally "elbowed," that is, the first joint is very much elongated, whilst the second is inserted obliquely at the end of it so as to form an angle or elbow: in all the other species the terminal joints of the antennæ form a club. The tarsi are four-jointed, the third joint being bilobed, the fourth springing from the notch in the third. This is a very extensive group, its members being all vegetable feeders, and consequently to be found in the neighbourhood of plants.

Sub-order XI. LONGICORNES are easily distinguished from all other beetles by the length of the antennæ, in the Scotch Timberman (*A. ædilis*) for example, they are four or five times the length of the body in the male. The tarsi are like those of the Sub-order X. This group is poorly represented in England, most of the species being rare; as the larva feed on trees the perfect insects are generally found in woods and on the flowers of the *Umbellifera*, to which they seem very partial.

Sub-order XII. EUPODA. A group, consisting of more or less convex insects—often capable of leaping—which have the feet like those of the two preceding Sub-orders, the antennæ filiform or slightly thickened towards the tip. The head is often hidden by the thorax. The Chrysomelas belong to this group, as also does the "potato-bug" (*Doryphora decemlineata*), which created such a scare recently.

Sub-order XIII. PSEUDO-TRIMERA. A small group comprising the lady-birds (*coccinella*) and allied species, characterized by having the tarsi *apparently* only three-jointed and having the antennæ distinctly clubbed, whence they are often classified among the *Clavicornia*.

For the convenience of young Coleopterists, I have constructed the following table of Sub-orders:—

A. Antennæ filiform.

a. Tarsi, 5-jointed.

- 1 Legs formed for running -
Geodephaga.
- 2 Do. swimming -
Hydradephaga.
- 3 Elytra very short - Brachelytra
- 4 Pro-sternum furnished with
a spine - - - Sternoxii.
- 5 Bodies generally soft and
Elytra leathery - Malacodermi

b. Tarsi 4-jointed.

- 1 Antennæ very long - Longicornes.
- 2 „ often slightly thick-
ened at apex - - Eupoda.

c. Anterior tarsi, 5 posterior pairs

- 4-jointed - - Heteromera.

B. Antennæ clubbed.

a. Club composed of flat plates

Lamellicornes.

b. Club compact.

- 1 Palpi longer than antennæ
Palpicornes.
- 2 Tarsi apparently 3-jointed -
Pseudo-trimera
- 3 Head prolonged into a snout
Rhyncophora.
- 4 Head not forming a snout -
Necrophaga.

Exceptions to the above rules are:—in *Gyrinus* (*Hydradephaga*), the antennæ are clubbed. Many *Brachelytra* have the tarsi only four-jointed. Some of the *Malacodermi* have the tarsi four-jointed and the antennæ clubbed.

BRITISH ANTS—By G. C. BIGNELL.

(Continued from page 79.)

I shall assume that the reader is able to recognise an ant when he sees one. The only insects likely to be mistaken for ants would be some of the apterous ichneumons of the genus *Pezomachus*, or the *Mutillidæ*; but these are always found singly. The late F. Smith placed the latter with the ants, and they are generally known by the name of "Solitary Ants." This classification, however, seems unwarranted, for the insects mentioned have neither the habits nor the structure of the ants. For instance, they are not known to possess a second form of female (worker); they are solitary, and are parasitic on bees. *Mutilla Europæa* has been found in the nests of *Bombus muscorum*, and I have seen *Myrmosa melanocephala* entering the nest of *Osmia ænea*. The wingless *Pezomachi* are parasitic, often on spider's eggs, and may be easily distinguished by the numerous joints of the antennæ and projecting ovipositor (or aculeus.)

The first three species are stingless; the remainder are provided with stings (aculei), i.e. the females, and workers; the males are not provided with that weapon (Bees included).

The pupæ of the first four species are generally contained in silken cocoons,* the others are naked. All the species possess three forms, viz., males, females, and workers. The males and females have wings; the worker, which is an undeveloped female, is always apterous. The female after impregnation breaks off her wings and settles down to the business of continuing her race.

* *Formicæ fusca* often, and sometimes others, departs from this rule, but this is an unsolved problem. On the 11th September, 1879, the writer found a colony of *fusca* under a slate-stone in Cann quarry, near Plymouth. Some pupæ were naked, and others were in silken cocoons. Why some of the same family under one stone should weave a cocoon and others should not is to me inexplicable.

It is rather a difficult task for the female to break off her wings. M. P. Huber carefully watched a female perform the operation. He states that "she extended her wings with some effort, bringing them before her head, crossing them in every direction, throwing them from side to side, and producing so many singular contortions, that her four wings fell off at the same moment in my presence." He watched several females with the same result. In old colonies they are removed by the workers, who are constantly in attendance on the queens. It may here be mentioned that there are generally several queens in a numerous colony. I took out seven and left several others in a rather small colony of *Formica rufa* on the 19th of November last. These were about thirty inches below the top of the nest, and eighteen inches below the surface of the ground. I found a queen in each chamber surrounded with workers to keep her warm.

M. P. Huber has found "incipient colonies in which were only a few workers engaged with their mother in the care of a small number of larvæ." M. Perrot once discovered "a small nest, occupied by a solitary female, who was attending upon four pupæ only." Such are the foundation and first establishment of these populous nations of ants with which we everywhere meet. The female lays about 5000 eggs or more, in the course of the season, in regularly formed colonies. This seems to be the principal office of the female. Sir John Lubbock observes that the larvæ "are often sorted according to age. It is sometimes very curious in my nests," he says, "to see the larvæ arranged in groups according to size, so that they remind one of a school divided into five or six classes. When full grown they turn into pupæ, sometimes naked, sometimes covered with a silken cocoon,

(Continued on page 111.)

Typographical error, page 79, line 27, *Tapinonia* read *Tapinoma*.

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VOL. 3.

GREASE.

ONE of the most annoying things the entomologist has to deal with is grease. How often it happens that we see an otherwise beautiful series spoiled by specimens that are either saturated with grease or bear evident marks of it having been removed by some means or other. Sometimes an insect becomes so greasy that it runs down the pin and spreads over the paper lining of the drawer, making an unsightly blotch that can only be got rid of by taking out the old paper and relining it. There are several methods by which grease may be removed more or less effectually. Mr. Stainton's instructions given twenty years ago cannot perhaps be improved upon. "Place it (the greasy specimen) on a piece of cork previously *fastened* at the bottom of a shallow tin or jam-pot; pour in camphine or Benzine collas until the insect is covered, and let it remain for twelve hours. Then take out the insect, place it upon blotting-paper for a few minutes in order that the superfluous moisture may be absorbed; transfer it to the setting boards, and cover it thickly with pipe clay scraped to powder or with magnesia. In a day or two the powder

may be blown off, and any adhering particles removed with a camel-hair pencil, and the insect will be as fresh-looking as at first."—*Ent. Weekly Int.*, April 28, 1860. We cannot say we have ever cured an insect by this means that was as fresh-looking after the process as it was before it became greasy. The hairs on the abdomen are apt to clot together and cannot well be separated, and the specimen has a draggled, seedy look that is not improving. Nevertheless, it is a great deal better than when greasy, and the cure may be adopted with advantage with all insects sufficiently rare to be difficult to replace. But with common species we would advise our young readers to obtain fresh specimens rather than have them in the state we describe. Prevention, however, is better than cure. It is better to prevent grease than to cure it, besides being much easier. The moths that are most subject to grease are those whose larvæ feed internally or below the surface of the ground. If you want an insect that is safe to grease, let us recommend to you the male of *H. humuli*, the larvæ of which feed underground on various roots. *G. flavago*, too, the larvæ of which live in the stems

of burdock, thistles, &c., almost invariably turns greasy, as do all the *Nonagria*,—but we could not enumerate all for want of space. Some internal feeders may be less subject to it than others—the *Miana*, for instance—but to make up for that there are some external feeders, such as *S populi* and others of the large hawks, that very often grease. With large insects like these it is very easy when fresh to remove the internal viscera. With a pair of fine-pointed scissors open the abdomen on the underside as far as the thorax, take out all the inside, and with a piece of cotton wadding on a crochet hook, clean out the thorax. Take a piece of clean wadding about the size of the portions removed, soak it in Benzine, and then fill up the thorax and abdomen with it. An insect so treated will never grease. It may, perhaps, be rather delicate manipulation to do this with small species, but we know of one collector who even treats his pugs after this fashion. Practice will do much, and if you begin with your larger insects you will be able to prepare smaller ones by and bye. Insects are advertised now from which all grease has been removed. We believe the abdomens of these specimens are boiled in Benzine and then replaced, but we have never tried the process. There is, however, one thing more to be said. Insects do not grease when exposed to the air, and only do so when they are placed in our air-tight cabinet drawers or store boxes. If an insect likely to grease be kept for a considerable time in a box that is not

air-tight, it may never grease at all. At all events, the longer they are exposed to atmospheric influences, the longer are they before they become greasy in our drawers. Some future observer may tell us how long it is necessary to give the air access to each particular species to prevent it greasing, but all that can be said now is—the longer the better.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

G.T.M.—*Villica* in this country passes the winter as a young larva and feeds up in the spring, just as *Caja* does. It may be double brooded in France. The parasites in your *C-album* pupa are no doubt feeding, if you are right that they are not pupæ. Take care of them when they emerge. We know of no hymenopterous parasites from *C-album* yet.

T.J.M., Liverpool.—The Cockroach is always white when it has just cast its skin. If killed and preserved then it will retain that colour, but soon darkens when alive.

EXCHANGE.

COLEOPTERA. The beautiful *Chrysomela graminis* for typical specimens of Geodephaga.—S. L. MOSLEY, Beaumont Park, Huddersfield.

"AT HOME."

LIVERPOOL.—C. S. Gregson will be at home every Sunday until March next. Microlepidopterists, coleopterists, and artists should come early to secure good light; general naturalists any time from nine a.m. to nine p.m.—Rose Bank, Fletcher Grove Edge Lane, Liverpool.

Huddersfield.—S. L. Mosley every Saturday afternoon.

ASSISTANT NATURALISTS.

J. P. SOUTTER, Clyde Terrace, Bishop Auckland. All branches of Botany except microscopic.

JOHN A. TATE, 61, Merlin Street, Liverpool. Inhabitants of the Aquarium, Terrarium, and Vivarium.

DR. ELLIS, 101, Everton Road, Liverpool. Coleoptera.

(We shall be glad of additions to these lists)

FIELD CLUBS.

The members of Huddersfield Young Naturalists' Field Club have decided to send a collector to the Cheshire Sandhills for a few days in April. He will collect plants and insects of all orders. Any one wishing to share in the undertaking may do so on payment of 2s. 6d. The members of the club are paying this by weekly instalments, but others must pay in one sum. At present it will be sufficient if those desirous to join send their names and addresses. The subscription to be paid nearer the time. Address: F. ELLIS, Hon. Sec., 32, Swallow Street, Huddersfield.

NOTES, CAPTURES, &c.

EARLY APPEARANCE OF *H. RUPICAPRARIA*.—During the second week in January *H. rupicapraria* began to appear in my breeding boxes, and by the middle of the month they were out freely, males and females.

The larva were taken last June, whilst beating for the larva of *Grossulariata*, on the hedges at the foot of the Eglwysig Rocks (Eglwysig pronounced "Glusig"), at Llan-gollen; and were not cared for in any way either by being fed or being protected from the weather, but had in the larva state to eat black currant leaves with the currant moth larva, or starve, or make up as the case might be. I hardly think they ate the black currant—probably only such as were full fed did make up.—C. S. GREGSON.

NOTES AND OBSERVATIONS.

By W. H. BATH.

11th December. Saw a Heron (*A. Cinera*), by Brace Bridge Pool, Sutton, it flew away at our approach. There were a number of feet marks on the sand. Herons frequent Spade Mill pool a little, I have seen their feet marks there. Last summer some boys caught a Heron by Black Root Pool, while fishing the Heron was caught by their bait. They were afraid to go near it themselves, until they obtained assistance. Mr. Parker said that he caught a Heron alive once, when fishing in the River Avon. The Heron was attracted by the bait which it swallowed, it became entangled in the line, and the hook caught in one of its wings. A very deep wound was made, caused by its struggles in trying to escape. Mr. Parker kept it for several months, and fed it upon stale fish and small scraps of meat. It was especially fond of sprats, they were just a nice size for it. At first the wound was very bad, it was full of maggots, but he bathed it every night, and in time it got well. The Heron became quite tame and docile, it would come regularly every night, and hold up its wing to have it bathed. Unfortunately, however, it came to a bad end, it throttled itself while playing with a piece of string, which formed into a noose round its neck. Mr. Parker said that it was

a very fine bird, and was very sorry to lose it.

Paridæ are extremely abundant all over the woods, saw several very large flocks in Holly Bush.

Saw a few Field-Fares on the common, they seems mostly to frequent the part of the common where there are a number of Hawthorn bushes, with an abundance of berries on. Field-Fares are very fond of Mountain Ash berries when they are ripe. One year they came into our garden in great numbers and completely broke off some of the branches with their weight.

Gorse (*U. Europæus*) in flower. Heath (*C. Vulgaris*, *E. Cinerea*, and *E. Tetralix*) in flower. The common meadow grass (*P. annua*) in flower everywhere. Holly berries are very plentiful this year.

CAPTURES IN THE NEIGHBOURHOOD OF BOCKLETON,

Situated five miles south of Tenbury, in the county of Worcester, in 1881.

IMAGINES.

- V. C. Album, numerous.
- V. Urticæ, numerous.
- V. Io, numerous.
- P. Atalanta, 3.
- P. Egeria, 5.
- P. Megæra, 3.
- E. Janira, numerous.
- E. Tithonus, 8.
- C. Pamphilus, very numerous.
- L. Icarus, very numerous.
- A. Cardamines, 8.
- P. Napi, 5 (bred).
- P. Rapæ, 33 (bred).
- P. Brassicæ, 16 (bred).
- H. Sylvanus, numerous.
- H. Tages, 2 (common).
- H. Linea, 3.
- S. Convolvuli, 1 (at rest on drawing-room window).
- H. Humuli, 4.

Z, Lonicæræ, 1.

V. Caja, 8 (bred).—(Miss) R. PRESCOTT DECIE.

(To be continued.)

BRITISH MOTHS :

By JOHN E. ROBSON,

(Assisted by Contributors to the Y.N.)

NOCTUINA.

As with all other points of the kind, there has been great difference of opinion as to the position the NOCTUINA should occupy among the various groups. Mr. Doubleday's arrangement is perhaps that most used in this country, but the order adopted in Stainton's Manual is that of the more recent catalogue of Dr. Staudinger. If the groups be placed in parallel columns according to these authors their differences will be easier seen. As Doubleday divides them into many more groups than the Manual a number is prefixed to the first list, and the corresponding figure in the second column shows under which group they are included in the first arrangement.

| STAINTON. | DOUBLEDAY. |
|------------------|---------------------|
| 1.—Sphingina. | 1-2.—Nocturni. |
| 2.—Bombycina. | 4.—Geometræ. |
| 3.—Noctuina. | 2.—Drepanulæ. |
| 4.—Geometrina. | 2.—Pseudo-Bombyces. |
| 5.—Pyrалidina. | 3.—Noctuæ. |
| 6.—Tortricina. | 5.—Deltoides. |
| 7.—Tineina. | 4.—Aventiæ. |
| 8.—Pterophorina. | 5.—Pyrалides. |
| 9.—Alucitina. | 5.—Crambites. |
| | 6.—Tortrices. |
| | 7.—Tineæ. |
| | 8-9.—Pterophori. |

This, of course, does not show the single genera or species that one author sometimes places under a different group to the other. Reference is made to these cases as they occur. It will be observed that Mr. Doubleday placed the GEOMETRÆ between two portions of Mr. Stainton's BOMBYCINA, and followed the PSEUDO-BOMBYCES with the

NOCTUÆ. The fact that Dr. Staudinger, as has been already said, removes the family of NOCTUÆ that stands first according to British authors and places it among his BOMBYCES, shews how ill-defined is the line of demarcation between the two groups. On the other hand the affinities, both in the perfect insect and the larva, between the QUADRIFIDÆ group of NOCTUINA and the GEOMETRINA, makes one naturally follow the other. For these reasons, and because Dr. Staudinger's catalogue is taken as our chief guide, the NOCTUINA are placed here. Dr. Staudinger, however, does not attempt to divide them into families, and the sequence in which the species follow is so very far from Guenée's arrangement, which is adopted both in Doubleday's catalogue and Stainton's Manual, that it will be better to adopt it here also.

Guenée divides the NOCTUÆ into two groups called TRIFIDÆ and QUADRIFIDÆ, from the median vein of the hind wing generally having three branches in one group and four in the other. They are also characterised as follows:—The TRIFIDÆ generally have the fore wings rather narrow in proportion to the length, and less triangular than in most of the macro-lepidoptera; the hind wings are broader and more triangular, and folded beneath the fore wings in repose. The larvæ have sixteen legs, and do not loop in walking except when very young. The pupæ are nearly always under ground. The QUADRIFIDÆ generally have the fore wing broader and more triangular than the last; the hind wings are not folded in repose, or very slightly so. The larvæ have seldom more than twelve or fourteen legs, and consequently loop in walking; many of them are also longer in proportion to their thickness. The pupa is generally enclosed in a cocoon.

The TRIFIDÆ are divided into three sections, BOMBYCIFORMES, GENUINÆ, and MINORES.

BOMBYCIFORMES, as the name implies, are much like the BOMBYCINA; many of them have hairy larvæ, all with sixteen legs. It contains three families, as follows;

I. NOCTUA-BOMBYCIDÆ, already given as the last family of the BOMBYCINA.

II. BRYOPHILIDÆ, comprising only two or three British species; they are of small size, and mottled grey in colour. The larvæ feed on lichens on walls, forming little nests in the crevices.

III. BOMBYCOIDÆ, comprising fourteen British species. They are best characterised by the larvæ, which might readily be taken for BOMBYCINA, being hairy, often with distinct tufts, and some of them very gaily coloured.

GENUINÆ is by far the largest section, including more than two-thirds of the British species of Noctuæ. Nine families are represented in Britain.

I. LEUCANIDÆ, including a number of ochreous-coloured insects with longitudinal markings. The larvæ either feed in stems, when they are unicolorous, or conceal themselves among the herbage, sometimes in the stems, but not feeding there. Those feeding in stems change to pupa where they have fed, The others form a subterranean cocoon.

(To be continued).

IN RE AUTUMNARIA.

"Fiat justitia ruat Cælum."

In Law, it is held good practice, that when part of a letter is to be used as evidence, the *whole document* must be laid before the court, in order that a correct and unbiassed judgment may be formed on it. And the quotation, purporting to be part of a letter from Mr Harbour, forms so material a part of the indictment in support of Mr. Gregson's charge, that I call on him to submit *that letter* to the Editors of the Y.N. The whole of the correspondence in this matter has been sent for their inspection,

and this very important item must be substantiated by its production too; I strongly object to read it through Mr. Gregson's spectacles.

As to the measurement of the Liverpool specimens of *Autumnaria*, Mr. G. is fully aware that they are from Foreign eggs, consequently Foreign insects. My remarks as to size refer to *British*, vide Mr. Bond's and Mr. Samuel Steven's cabinets. I do not believe there is a British specimen over two inches in expanse, not as Mr. G. puts it "starved specimens," but caught insects! Mr. G. will hardly doubt Mr. Bond's or Mr. J. Steven's being carefully formed *British* collections. — W. H. TUGWELL, Greenwich.

SPIDERS.

HAVING briefly noticed lice, mites, and other portions of the insect world, let us now turn our attention to another section, not generally taken an interest in by the Entomologist, we mean the spiders. Though technically they are not insects, yet they may be taken under the same category. The same means avail for capture in a great measure, and spiders may be sought in woods and other places where insects generally abound. There are a great many different species of spiders in Britain, some very beautiful like *Eperia diademata* and *E. scalaris*, which are sometimes met with of large size; others are very minute, scarcely as large as a pin's head, yet both large and small are interesting to the true lover of nature. Some, as every one must know, spin silken webs of beautiful geometric shapes, while others throw them into a more irregular mass. Some, like the common Zebra spider, do not spin webs for the capture of their prey, but devise various tricks, or capture it by mere chase, hence these are called "hunting spiders."

One of the most curious of the British species is the Diving water-spider, which

may sometimes be found in stagnant ditches. It forms a dome of silk under the water, and then carries down into it globule after globule of air until it is filled. It this it passes most of its time, but it is also capable of living upon dry land.

But the most interesting of all the spiders are the trap-door spiders, though none of these are found in Britain. In Southern Europe they are common, but very difficult to find. The spider makes various shaped tunnels in the earth, according to the species, and upon the entrance fits a kind of trap door, which fits so accurately, and is so very similar to the surrounding objects, that it is next to impossible to detect its whereabouts when the door is closed. Should the door be attempted to be opened when the spider is within, it will cling to it and resist its opening with all its force.

Another class of spiders, found chiefly in tropical America, are the gigantic *Mygalidæ*. These are so large that they have been known to attack and devour small birds. Their body is covered with hair, presenting a very shaggy appearance. One species (*Mygale avicularia*) sometimes comes to this country in logwood. One species of this group is native of this country, but it is only small, as all our representatives of exotic forms are. Its name is *Atypus sulzeri*. It has been found in the neighbourhood of London, but is by no means common. It excavates a subterranean gallery, the entrance of which is protected by a silken tube.

Very few people have studied spiders in this country, but one gentleman, the Rev. O. P. Cambridge, has made them his special study, yet the work of one isolated individual must of necessity be limited. If some of our young entomologists would devote their attention to this class there is no doubt that many new species might be added to the British list, and, perhaps, habits brought to light which at present are totally unknown. It is a matter of regret that there is no cheap

work that will serve the beginner as a starting point, for it must be admitted that without guide of any sort the study of any group is extremely difficult. There is a recent work by the above-named gentleman which is published at twenty-five shillings, but one at a few shillings which could be purchased by any schoolboy would no doubt do its share of good.

WINTER MOTHS—VARIATIONS.

IN preparing the plates to illustrate our paper on Winter Moths, which we gave on page 29, we found it very difficult to get all the varieties of the several species with which the young collector is likely to meet, upon two plates, so we determined to issue a third, devoting it entirely to the very variable *H. defoliaria*. There are, of course, many other varieties besides those we have figured, but they are either not sufficiently striking, or are so rare that they are not likely to be met with.

P. pilosaria, for instance, varies in almost all districts, some specimens are very distinctly mottled, while others are almost uniform olive grey (the colour of the darker portions of the wings). These two forms are not very striking, and any person collecting them will readily see they are referable to the same insect. But at Bradford another form, quite distinct from either of these by being *uniform sooty black*, has been taken by several collectors there. The other insects on plate 1 are not liable to vary much, but we have seen varieties of all though some of them are rare. *C. brumata* sometimes occurs with a dark band across the centre of the wings like that in the female. The other day we had the opportunity of comparing a long series of *Boreata* taken near York with others taken near Bradford, and we found the former several shades darker than the latter.

On plate 2 we have represented two forms of *H. leucophearia*. The first may be called

the type, but the second always occurs with it. There is another form of both these varieties which occurs very rarely about London, in which all the wings are dusted over with minute black spots. Haworth took this for another species and called it *Nigricaria*. *Aurantiaria* does not vary much except sometimes the dark band is extended to the border like the second figure of *Progemmaria*, which is rather a variable insect. We have not often seen a variety like the third figure; the insect from which it was taken was captured near Bradford. The fourth male and the left hand female are the variety we have called *Fuscata*; it is not uncommon in the north of England, but we believe not in the south. We recently sent specimens to several eminent entomologists in the south and they said they had not seen the form before. The characteristics of this variety are that the fore wings are unicolorous fuscous brown; the band on the hind wing and the black dots round the margins of all the wings are entirely wanting.

H. defoliaria is the most variable of the whole genus, and we have given upon pl. 3 figures of eight of the most striking forms. Those that have the plates coloured will see that the insect varies in tint as well as markings. Fig. 3 is a very beautiful form: it is taken in several districts, but we have seen none so clear as those we have received from Bradford. Fig. 7 is a very striking form, and is one of those distinct recurrences which should be known by some distinctive name. It has been figured by Newman, but we are not aware that a name has yet been bestowed upon it, so we must content ourselves with calling it *the dark unicolorous form of defoliaria*, but think a shorter name would be better. All the specimens figured on pl. 3 were taken in the Bradford district, and have been kindly supplied or lent for figuring by our friend, Mr. J. W. Carter, and others.

THE YOUNG NATURALIST.

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NATURALIST,

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VOL. 3.

DARWINISM.

FOURTH PAPER.

WE have now to consider the influences that operate, in causing a domesticated animal to lose the peculiarities it had acquired, and revert again to the original form. We have already said that the fact that such reversion takes place, has been used as an argument in favour of the immutability of species. It was considered to be a proof that though from one cause or another an apparent change had been made, it was not a real change, and the species was still as at first. It was supposed to be as though it had merely put on another garment, below which the original form was unchanged. We do not know what evidence has been brought forward to support the proposition, but if it be assumed, as may safely be done, that the wild form of an animal is that most suited to its place in nature, then it is manifest that when a domestic variety runs wild, it must in one way or another adapt itself to circumstances, or it will die out or be killed off. If we could suppose that a large number of tame white rabbits with lop ears, were set at liberty on a place suitable for rabbits such as we find wild

now, it is very easy to see what would happen. Their colour would render them conspicuous to those animals that prey upon them. Their hearing being less acute and their motions slower, they would more easily become victims. Their power of resisting cold, and ability to provide themselves with food would be much less than in wild rabbits, and thus numbers of them would die off. Of the first succeeding generation those would be more likely to survive that were less conspicuous in colour, that could use their ears to more advantage, that could run quicker, and that were hardier in constitution. All or any of these things would give the possessor an advantage over the others. The duller coloured rabbit would be less easily seen by its destroyer. The rabbit that heard quicker would be aware of the danger earlier than that whose ears were duller. A start by a single second was life, delay by a second was death. If both started together the rabbit able to run faster or turn quicker would escape, while the other would be devoured. The hardier rabbit would bear cold that killed the other, would survive on less food, or of poorer quality. Thus, at the very beginning, all those,

causes would come into operation that had made the wild rabbit what it was, and acting in the same direction, would restore the domestic variety to its original form, not because species were immutable, but because the original form was most in harmony with its surroundings. Could we imagine that the rabbits so set at liberty were placed under circumstances where any of the differences between the wild form and themselves was an advantage to the possessor, then assuredly that difference would be retained. If rabbits could exist in a region of perpetual snow, then the white colour which was so disadvantageous on an ordinary rabbit warren would be an advantage certain not to be lost. Any darker rabbit that came into existence would be more conspicuous on the snowy surface, and as surely as the white rabbit becomes the prey of the hawk or buzzard on our warrens before the grey one, so surely would the dark ones be seen first when the surroundings were less in harmony with their colour. This is actually what has happened in a natural way. Both birds and animals inhabiting the polar regions are white, and it is a reasonable deduction to draw, that the same causes would operate with other species under like condition. The hare in Iceland and the polar regions is white. Those of the Scotch mountains are white in winter, while here, where we have comparatively little snow, a white one never or seldom occurs.

It will be seen then, that reversion to the original form under the circum-

stances assumed, is not because of the immutability of species, but because the original form will best fill that particular place in nature, and would survive when other forms would not. Instances of domestic animals running wild, are scarcely sufficiently numerous for many illustrations being given. Mr. Darwin mentions a curious case with respect to black pigs, that may be repeated here with advantage. In Virginia it appears all the pigs are black, and Professor Wyman on asking the reason was told that "the pigs ate the paint root (*Lachnanthes*) which coloured their bones pink, and which caused the hoofs of all but the black varieties to drop off; and one of the "crackers" (*i.e.* Virginia squatters) added, "we select the black members of a litter for raising, as they alone have a good chance of living." These pigs we suppose are running at large in the woods, as otherwise the injurious food would be kept from them, and there can be no doubt if left uncared for the same thing would happen, and very speedily only black pigs would remain. This would not be because the original form had been black, but because the black had an advantage over the white.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained

through the booksellers, but any one can have their plates coloured on application to the Editors.

W.H.B.—We will find room for the most important of your Notes as early as we can. We cannot spare space for all of them at once.

"AT HOME."

LIVERPOOL.—C. S. Gregson will be at home every Sunday until March next. Microlepidopterists, coleopterists, and artists should come early to secure good light; general naturalists any time from nine a.m. to nine p.m.—Rose Bank, Fletcher Grove Edge Lane, Liverpool.

Huddersfield.—S. L. Mosley every Saturday afternoon.

ASSISTANT NATURALISTS.

J. P. SOUTTER, Clyde Terrace, Bishop Auckland. All branches of Botany except microscopic.

JOHN A. TATE, 61, Merlin Street, Liverpool. Inhabitants of the Aquarium, Terrarium, and Vivarium.

DR. ELLIS, 101, Everton Road, Liverpool. Coleoptera.

(We shall be glad of additions to these lists)

NOTES, CAPTURES, &c.

GOOSANDER (*Mergus merganser*) AT HARWICH.—A mature female Goosander was shot at Harwich on the 19th inst. These birds are very seldom shot, being so cautious and wary that it is very difficult to approach them. The only other bird of this species that has been shot here within the last nine years was a mature female shot on the 17th January, 1876 (Zoologist, s.s. 4827).—F. KERRY, Harwich.

A. ÆSCULARIA IN JANUARY.—On the 14th inst. I saw a specimen of *A. aescularia* on a

gas lamp at Manningtree railway station.—F. KERRY, Harwich.

CAPTURES IN THE NEIGHBOURHOOD OF BOCKLETON,

Situated five miles south of Tenbury, in the county of Worcester, in 1881.

- A. Menthastris, 4.
- O. Pudibunda, 1 (bred).
- O. Antiqua, 3 (bred).
- B. Quercus, 2 (bred),
- U. Sambucata, 9.
- R. Cratægata, 15.
- M. Margaritata, 1.
- E. Dolobrararia, 1.
- S. Illunaria, 2.
- O. Bidentata, 3 (1 bred).
- C. Elinguaria, 2.
- H. Pennaria, 2 (1 a dark variety):
- A. Prodrumaria, 1.
- A. Betularia, 1.
- B. Repandata, 1.
- B. Rhomboidaria, 13.
- E. Heparata, 1.
- A. Scutulata, 2.
- A. Aversata, 1.

IN RE AUTUMNARIA.

After Mr. Tugwell's letter was in type, but before it was issued, we received a communication from Mr. Harbour much to the same effect. He says—

"I deceive no one, and strongly resent imposition as Mr. Gregson can testify. Now that gentleman would have the readers of the *Young Naturalist* believe that I have acknowledged the eggs sent to Mr. Tugwell were from foreign parents. Had I acknowledged such a thing I should have told a lie, and as proof of what I say let Mr. Gregson send the said letter to the editors, and if they think proper to publish it I have no objection. Indeed, I should very much like to see it in print, for that would confirm the article of January 14th, providing the whole

of it is published without being tampered with. I think the editors would know my handwriting as well as another individual concerned in the matter. I shall be content with their verdict, providing Mr. Gregson sends the said letter. As far as I am concerned I consider both *Centonalis* and *Autumnaria* good enough for my British collection, and possibly Mr. Gregson will think so too some day. I shall keep a double row of each in case of an emergency.—R. HARBOUR, 1, Landport Cottages, Deal.

As the size is made an important item in this matter we append the sizes of Mr. Bond's specimens, with which he has kindly furnished us.

Smallest Hampshire male, $1\frac{3}{4}$ inches.

Largest " " 2 "

Smallest " female $1\frac{1}{2}$ "

Largest " " 2 "

Kentist male, over 2 "

Mr. Tugwell's bred pair
rather more than 2 "

the female rather the largest.—EDS. Y.N.

NOTES AND OBSERVATIONS

By GEO. F. WHEELDON.

January 21st, 1882. *VITRINA PELLUCIDA*.—Found two under some bricks in a dell between Selly Oak and King's Norton this afternoon. I believe they are rather common here, but the empty shells are more often found.

MERCURIALIS PERENNIS.—Found some plants of the Dogs Mercury in flower on the sides of the same dell. This is early, as I believe they do not generally flower till March or April.

ROSA CANINA.—Saw a piece of the Common Dog Rose in leaf at the same place.

HIBERNIA RUPICAPRARIA.—Found a newly emerged specimen on the surface of a pond near Selly Oak. This was the first I have seen this year. Although I went out at night not a moth was to be seen where there were plenty last year.

January 22nd, 1882. *HYACINTHUS NON-SCRIPTUS*.—Saw a few bluebells just appearing above the ground in a wood at Selly Oak this morning. This, I believe, is early.

CORYLUS AVELLANA.—Saw a hazel-tree in full bloom in the same wood. On other hazel-trees the flowers were just appearing, and on one or two others the flowers were about half grown, but this was the only one in full flower.

STELLARIA MEDIA.—Saw some chickweed in flower in Nunnery Lane.

SENECIO VULGARIS.—Also saw plenty of groundsel in flower in same lane. These last two are to be seen in flower all the year round.

ULEX EUROPEUS.—Saw a patch of furze in flower on the railway embankment at Selly Oak this morning. I have seen pieces of this in flower nearly all the year round.

LIMNEA STAGNALIS.—Found ten in a pond at the edge of a wood at Selly Oak. I could have taken fifty more if I had wanted them.

HELIX ROTUNDATA. Found sixteen under some bricks and among dead leaves in the same wood this morning. They also were very plentiful.

CINCLUS AQUATICUS.—The following is an extract from a Birmingham paper of 25th January, 1882:—"One day last week Mr. Pedlingham, of Handsworth, shot upon his property a beautiful example of that curious and deeply interesting bird, viz., the Water Ouzel (*Cinclus aquaticus*). This species is noticeable for walking under the water to capture its food, where it sustains its power for a considerable period, running most nimbly and beautifully upon the pebbly bottom of running--ever so quickly--streams, anon rising to the surface, again diving and pursuing its wonted avocation. This fact or curious economy of bird existence was for some time much disbelieved, but is no longer a vexed question amongst the real students of nature. This bird is of extremely rare occurrence in the Midlands, being found

in some of the wilder portions of the Yorkshire moors and Scotch hill districts, frequenting the bold mountain streamlets, where it hunts as described for the ova of fish, especially of the salmon."

PERCA FLUVIATILIS AND LEUCISCUS RUTILUS.—Young fish of perch and roach from this year's spawn have been seen this week sporting upon the top of the water in the Lord Hayer Branch of the Birmingham Canal, situate between Bloxwich and Wyrley. The spawning time occurred last year about the middle of March.

FOSSIL HUNTING AT WHITBY.

During my holidays about a fortnight ago, three of us set out, equipped with hammer, chisels, and a good sized bag, for the purpose of fossil-hunting. We intended to walk to and from Saltwick, a place about two miles to the South of Whitby, on the Scour, but as the tide was flowing at the time, we were only able to go one way, and had to come back on the top of the cliffs. The Lias formation extends the whole length between Whitby and Saltwick, but is only visible to any extent at the two extremities. About midway the Sandstone is shewn to advantage; here ferns are very numerous, but only one species. The first few hundred yards of the shaly rock were paved with *Ammonites Communis*, after getting a sufficient quantity of these we turned our attention to the sides of the cliff where we found *Nucula ovum* in abundance, together with a few perfect specimens of *A. Hildensis*. Between here and the Sandstone beds *Gryphia incurva* were scattered about the shore in large quantities. After spending a little time among these, we made our way to the Sandstone, here we found *Calamites* or *Equisetum* and a very pretty fern. As the tide was now flowing fast, we made the best of our way to Saltwick, for at this place we could easily ascend the cliff by means of some dilapidated steps.

On what is called the nab, at Saltwick, we found *Belemnites tubularis* or *vulgaris*, *B. elongatus*, *A. Youngi*, and a few specimens of jet, we then climbed up to the Sandstone again, where we found more ferns, and a kind of grass *Cycaditis lanceolatus* and *Solenites Murrayana*.

Should any reader of the "Young Naturalist" wish for any of the following, I shall send them as far as my duplicates allow:—*Ammonites communis*, *Belemnites vulgaris*, *Solenites*, *Murrayana*, *Cycaditis*, *lanceolatus*, *Gryphia incurva*, and *A. Hildensis*.—J. A. TATE.

FIELD CLUBS.

On Saturday, the first ramble of the year of the "Bradford Frizinghall Union Jack Field Club, was taken on January 28th, to Shipley Glen, seven of our number taking part in it. Amongst the specimens obtained were the following, viz:—Plants in flower—*Poa annua*, *Potentilla fragariastrum*, *Senecio Vulgaris*, *Mercurialis perennis*, and *Stellaria media*. Plants about to bloom—*Crysosplenium oppositifolium*, *Ranunculus ficaria*, *Anemone nemorosa*, and *Corylus avellana*; also about a dozen species of Fungi, and a few lichens and mosses. The Entomologists found the following, viz.—*Hibernia leucophaea* and *Phigalia pilosaria*, 2 Craspedids and 2 beetles. The Conchological specimens are as follows, viz.—*Helix rotundata*, *Vitrina pellucida*, *Zonites crystallinus*. We left the Glen about about a quarter to six, after spending a very pleasant afternoon.—H. J. RILEY.

THE BIRMINGHAM & MIDLAND COUNTIES YOUNG NATURALIST FIELD CLUB.

A meeting of the above Club was held on Monday, 30th Jan., 1882, in Birmingham. The President, W. H. BATH, Esq., H.M.B. M.N.C., advised to change the name of the Club and it was agreed in future to call it "The Birmingham and Midland Counties Naturalists Field Club." Several

Gentlemen have kindly given in their names to become honorary members. We shall consider it at a future meeting.—H. WARWICK, H.M.B.M.N.C. (Acting) Hon. Sec., Aston Park, Birmingham.

BRITISH MOTHS:

BY JOHN E. ROBSON,

(Assisted by Contributors to the Y.N.)

II. APAMIDÆ, containing nearly fifty species, divided into eighteen genera. The imagines are mostly of dull colours, the yellow *G. flavago* being the gayest. They vary in size from *Miana exposita* which only expands three quarters of an inch, to *Xylophasia polyodon*, which often reaches two inches. The three stigmata are generally well marked. In repose the wings are roof-shaped. The larvæ are dull coloured, but generally shining; they live in stems or roots, or concealed among the low herbage or grass roots. The pupa is generally subterranean.

III. CARADRINIDÆ includes only seven species in four genera. They are dull coloured insects, but generally with the stigmata and lines well defined. The larvæ are short and stout, with short hairs, concealing themselves among the low plants on which they feed. The pupa is in a subterranean cocoon.

IV. NOCTUIDÆ contains nearly fifty species in only four genera, one of which has but one species and another only six. They are all dull coloured, though the hind wings of the genus *Triphana* are yellow. The stigmata are generally distinct. In repose the wings are nearly flat, the fore wings slightly overlapping. The larvæ are smooth and shining, concealing themselves under the leaves of the low plants on which they feed, or sometimes below the surface. The pupæ are enclosed in an earthen cocoon.

V. ORTHOSIDÆ contains between thirty and forty species in eleven genera. Almost

all of them appear either in early spring or late in autumn, some of the latter hibernating to appear again in spring. Many of the species are gaily coloured, especially among those appearing at the end of the year (*Xanthia*, *Dasycampa*, &c.) The imagines are all of moderate size, and the lines and stigmata are generally well defined. The larvæ are smooth and cylindrical, feeding on trees or low plants, but hiding during the day. The pupæ are enclosed in an earthen cocoon.

VI. COSMIDÆ only contains eight species in four genera. The imagines are all of moderate size. In repose the wings form a very inclined roof. They vary considerably in colour, from the pale ochreous *oo* to the reddish brown *affinis* and *diffinis*. Most of the larvæ feed between leaves fastened together with silk somewhat like the larva of a *Tortrix*, they are rather slender, some of them very brightly coloured. The pupæ are stumpy, often covered with a purple or violet bloom like a plum, and are enclosed between leaves or in cocoons formed on the surface of the ground.

VII. HADENIDÆ is another of the larger families, containing nearly fifty species, which are divided into thirteen genera. Considerable variety of habit obtains among the members of this group. The imagines vary in size from about one inch to more than two; the wings vary in shape and style of marking, but in repose form a very inclined roof. The abdomen is generally crested at the segments, in *Dianthæcia* it terminates in a pointed ovipositor in the female. The larvæ are smooth and often velvety, and very varied in their habits, feeding on roots, on flower seeds, trees and low plants; those of *Dianthæcia* feed in the capsules of the food plant when young, or throughout life, in which case they often change there. In others the pupæ are subterranean.

(To be continued).

BRITISH ANTS—By G. C. BIGNELL.

(Continued from page 95.)

constituting the so-called ant-eggs; after remaining some days in this state they emerge as perfect insects. In many cases, however, they would perish in the attempt if they were not assisted; and it is very pretty to see the older ants helping them to extricate themselves, carefully unfolding their legs, and smoothing out their wings with truly feminine tenderness and delicacy."

The males and females of several species arrive at maturity in August and September, and shortly after take flight. Many instances are recorded of the enormous numbers seen in towns, roads, and rivers. On the 28th August, 1866, the following paragraph appeared in a London paper. "Smoke was seen to issue from the small spire, above the belfry, of the handsome church of St. Maurice, in Coburg. The news soon spread that the church-tower was on fire. The fire alarm was given, according to the German fashion, from the church-tower itself; the brigade of volunteer firemen donned their helmets, and rushed in all haste from their ordinary vocations to the post of danger; an express messenger was sent to the burgomaster, who was gone to a neighbouring village; and the whole population turned out to see the curl of smoke gradually ascending and disappearing in the clear blue sky. Nor was their anxiety for the old church without cause. Twice before in its history—once in 1807 and again in 1812—had the lightning set this very tower on fire; but whence now could the fire have come? The spot whence the smoke issued was far from any place in the tower ever used or visited; the day was bright and clear, and there had not been, and was not any sign of a storm. The heat of the sun, it is true, was excessive, but no one could remember an instance when fire had been kindled by the lord of day. Whilst the spectators eagerly discussed these questions, hundreds

of eyes were watching the ascent of the firemen from point to point until they reached the belfry under the spire. A scaffold was then busily constructed, upon which a ladder was raised, and the cause and seat of the fire closely investigated. Sundry motions of the fireman on the ladder on high excited no little mystery below, for he seemed to be engaged in conflict with wasps or other warlike insects. The news soon spread to the earth that the cause of all this commotion was the millions of ants which had settled in countless numbers on the steeple, and as they rose to perform their gyrations in the air, had created the appearance of smoke."

The Rev. W. F. White says that on the 19th September, 1876, he observed a similar phenomenon. "On Doverow Hill, near Stonehouse, Gloster, I observed a swarm of ants rising and falling over a small beech-tree. The sun was shining brilliantly upon them, and on those also fluttering upon the leaves of the little tree. The effect of those in the air—gyrating and meeting each other in their course, reminded me of the little dodder, with its tiny clustered blossoms and and its network of ramifying scarlet threads, over gorse or heather. I noticed the swarm about thirty paces off, and it began to assume the appearance of curling smoke; at forty paces you could quite imagine the tree to be on fire. I captured some, and upon examination they revealed themselves as the male of *Myrmica lævinodis*."

Another instance is, I think, worth referring to. In this case the first lieutenant of the hulk 'Clorinda,' in September, 1814, while standing on deck, observed there was something black floating down the Medway with the tide. The boat was sent out and a bucket-full of this strange matter was brought on board, which proved to be ants, and it was afterwards found that this mass of living insects extended from the upper part of Salt-pan Reach out towards the

(Continued on page 127.)

THE YOUNG NATURALIST.

E. G. MEEK,

NATURALIST,

56, BROMPTON ROAD, LONDON, S.W.

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 118.

FEBRUARY 11TH, 1882.

VOL. 8.

REPUTED BRITISH LEPIDOPTERA.

THERE is an appendix to Doubleday's catalogue containing the names of rather more than one hundred species, of which he says, "The following species have either been placed in the British List without any authority, or specimens have only occurred under circumstances which rendered it probable that they had been accidentally introduced." Of these insects several have undoubtedly proved their claim to be of British nationality. With others various attempts have been made from time to time to palm off on the unwary, foreign insects for the purpose of fraud. But by far the larger number remain unchallenged on the "Reputed" list. It is, perhaps, not easy now to trace out the first record of all these insects on our British list, and, doubtless, it becomes more and more difficult as time goes on, and the old entomologists who have the knowledge, pass away from our ranks. In the butterflies not a single species has proved its title to a permanent place on our list. Among the Hawk moths a few specimens of *S. pinastri* have undoubtedly occurred, and if occasional occurrence establish a

claim, then *Sphinx pinastri* has so established itself. But this is a point worthy of separate consideration. *Z. meliloti* is now generally recognized as British, but though we have a goodly row of the species in our cabinet, we really know so little of the supposed differences between *Trifolii* and it, either as larva or imago, that we have no opinion on the subject. It is named from *Melilotus*, on which if the larva fed, we should be content to say the case was proved, but we believe it only feeds on Bird's-foot trefoil. An attempt was made to prove that we had two species mixed in our cabinets under the name of *Trifolii*, one emerging a month later than the other, and occurring in a different habitat. In our opinion a strong case was made out, but as the larva and imago could not be distinguished the matter ended there. *C. hera* is the next species that needs reference made to it. An odd specimen or two have no doubt been taken, but the species is so conspicuous and easily found in either stage, that we may safely say the records are but of accidental occurrences. Following the appendix, we now come to *A. herbariata* which has been taken once or twice in

herbalists' shops, and may very likely have been introduced with the dried plants on which the larva feeds. *L. purpuraria* next demands a word. It is said in Newman to occur in Scotland and the north of England. It may be so, but we know that some of the north of England specimens were not genuine. It was largely distributed a few years ago by a Mr. Batchelor, but his specimens were also importations for fraudulent purposes. We now come to *A. anachoreta*. Some years ago the larvæ of this species were found by Dr. Knaggs. It is a species that breeds freely in confinement, and was soon in all our cabinets. We never heard of it being turned up again, but we know that it has been successfully introduced into certain places. The next species is *H. palustris*. This was first introduced as British by the late Mr. Allis, of York, if our memory serves us right. It was taken by a young man who collected for him, but was stuck on the wall among poor specimens until Mr. Allis recognized it as new. There was sufficient of the element of doubt in this to make those who had not got a specimen hesitate. It was taken again, however, in 1863 near Cambridge, and since then has been often obtained, but it is one of those species that are carefully "nursed" and very little is known as to the number that are taken. Among the *Dianthæcia* more additions have been made than in any other genus, and of Mr. Doubleday's doubtful four two have been restored. *D. cæsia* and *D. albimacular*, the first occurring in the Isle of

Man and the latter on the south coast. *H. scutosa* was placed on our lists on the strength of a specimen said to have been taken at Carlisle. The many years that passed without another turning up made entomologists doubt its claim, but another specimen was taken near Londonderry, in Ireland, by Mr. Campbell, two or three years ago. It was named by Mr Birchall, and we quite expect the head quarters of the species to be found some day. These are all the Macro Lepidoptera to which we need refer under this head. On another occasion we may deal with those species that have been attempted to be passed off as British by unscrupulous dealers and collectors.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

G.F.W.—You had better remit us 2s. and we will send a coloured plate for you to our agent as issued. We only charge for them the actual cost of colouring, so cannot allow a discount to agents.

EXCHANGE.

Wanted, several odd numbers of the "Entomologist's Weekly Intelligencer."—S. L. MOSLEY, Huddersfield.

"AT HOME."

LIVERPOOL.—C. S. Gregson will be at home every Sunday until March next. Microlepidopterists, coleopterists, and artists should come early to secure good light; general naturalists any time from nine a.m. to nine p.m.—Rose Bank, Fletcher Grove Edge Lane, Liverpool.

HUDDERSFIELD.—S. L. Mosley every Saturday afternoon.

ASSISTANT NATURALISTS.

J. P. SOUTTER, Clyde Terrace, Bishop Auckland. All branches of Botany except microscopic.

JOHN A. TATE, 61, Merlin Street, Liverpool. Inhabitants of the Aquarium, Terrarium, and Vivarium.

DR. ELLIS, 101, Everton Road, Liverpool. Coleoptera.

W. H. BATH, Manor Villa, Sutton Coldfield, near Birmingham. Macro Lepidoptera. Will name specimens sent by post. At liberty any time till 31st March.

(We shall be glad of additions to these lists.)

Any one communicating with the above will please enclose stamped directed envelope for reply, or stamped directed label for return of specimens.

NOTES, CAPTURES, &c.

BIRDS IN SONG.—A stroll through the woods or fir plantations at this season will well repay a lover of birds, especially on a bright, cold day. On Saturday I was surprised at the number of our resident songsters thronging every coppice and shrubbery. Blackbirds with their powerful notes were numerous; robins answering each other in different trees; blue tits suspended in the fine twigs; and the finch tribe chattering in all directions.—J. HENDERSON, Croydon, February 1st.

THE MILD SEASON. V. ATALANTA IN DECEMBER.—The following cutting from the *Southern Times* (a Dorsetshire paper) of Jan. 7th, 1882, is kindly communicated by J. W. BROOKS, Esq., H.M. Prison, Walton, Liverpool:—"As evidence of the extreme mildness of the season, it may be mentioned on Saturday (New Year's Eve) a red admiral butterfly was found flying in the house of Mr. Goldie, Monmouth Street.

THE PHEASANT'S EYE IN FLOWER IN FEBRUARY.—On February 1st we found a plant of Pheasant's-eye (*Adonis autumnalis*) in flower. There were several other plants of it in bud. It is the first time we have found it growing wild in this neighbourhood. Withering says it flowers from May to October. — (Miss) N. PRESCOTT DECIE, Tenbury.

BIRMINGHAM NOTES.—On 31st December, when coming down Nunnery Lane, at Selly Oak, just before dusk, I heard a blackbird (*Turdus merula*) chirping and fluttering among some small firs on the other side of the lane, so I stopped to see what it was making the noise about. I then saw a cat stretched at full length among the branches about four feet from the ground and between two or three feet from the bird in a direct line. The bird kept fluttering with its wings drooping and chirping all the while, and occasionally would hop a few inches on to another twig, sometimes nearer the cat and sometimes farther away; then the cat would slightly raise its head. Twice the cat raised itself as if about to spring, but the bird would alter its position, when the cat would crouch at full length again. This went on for about ten minutes, when I, wishing to get nearer, trod among some dead leaves. I suppose they heard it, for the cat came down the tree and walked away, while the bird as soon as the cat had gone ceased its chirping and in a minute or two flew away. The bird was looking full at the cat all the

time, and seemed so fascinated that it could hardly stir.

ESOX LUCIUS.--A splendid pike was caught on Saturday, the 21st January, in Edgbaston Pool, which weighed over twenty-five pounds. On being opened, a Tench (*Tinca vulgaris*) was found inside him weighing two and a half pounds.

PHIGALIA PILOSARIA.---Caught one (the first this year) on a lamp in the Priory Road in the evening of 2nd February. Also saw one *H. progemma* on a hawthorn twig.---
GEO. F. WHEELDON, Birmingham.

GREASE.

We have never tried Mr. Stainton's plan for removing grease as given in the Y.N. of January 28th. Our first experiment was to cut off the bodies of the moths affected, and soak them in benzine for two or three days. But this was not at all successful, for in the first place the bodies never looked improved by the benzine, and in the second they had lost their shape so much during the soaking that we could not fit them on to the moths again. We have tried a new way lately, which, so far, has answered better. We paint the bodies with benzine without cutting them off, leave them for a few minutes to let the benzine soak right through the wings, and then put the moths to dry in a draught. After this treatment the wings are as beautiful as ever, and the body loses all appearance of grease; but the hairs on the thorax are apt to clot together and look draggled in the large moths, in the smaller ones they do not seem to do so.—R. PRESCOTT DECIE, Tenbury.

BRITISH MOTHS:

By JOHN E. ROBSON,

(Assisted by Contributors to the Y.N.)

VIII. XYLINIDÆ contains nearly twenty species in six genera. The wings are rather

long and narrow, generally with longitudinal markings, but some species show the stigmata and usual lines. In repose the wings are folded close to the sides, making the insect look very long. There is often a raised crest or hood on the thorax. The larvæ are of the usual form, smooth, and many of them gaily coloured. They live on trees, shrubs, and low plants, often preferring the flowers, and remaining exposed during the day. The pupæ have often a ventral projection, and are enclosed in a cocoon, generally subterranean, and sometimes buried at a considerable depth.

IX. HELIOTHIDÆ contains ten British species in four genera. Several of them are very rare, one *Chariclea delphinii* being perhaps of doubtful occurrence. They are rather of small size, and some of them very pretty. They often fly by day. They larvæ are of the usual form, and feed on low plants, generally preferring the flowers; some of them are very beautiful. The pupa is subterranean, enclosed in a slight cocoon.

MINORES, the third section of the TRIFIDÆ, is of very small extent in this country, only containing about a dozen species in four families. Its members approach closely to the next group or to the GEOMETRINA in some particulars.

I. ACONTIDÆ only contains three species in two genera. They are small insects, and rather showy. The larvæ are long and slender, with only twelve legs. One of our British species, however, *Acontia luctuosa*, has sixteen. The pupa is in a subterranean cocoon.

II. ERASTRIDÆ also contains only three species in two genera. They are small, rather pretty insects, the wings in repose lying rather flat. The larvæ have fourteen legs, the first ventral pair being sometimes rudimentary. The pupa is in a cocoon on the surface of the ground.

III. ANTHOPHILIDÆ contains three or four species in two genera, most of them excessively rare. None of the species expand over an inch, and all fly by day. The larvæ have but twelve legs, and sometimes the rudiments of another pair. The pupa is in a cocoon on the surface.

IV. PHALENOIDÆ contains but two species in one genera. The imagines have rather broader forewings, with the usual markings; they are very much alike in appearance. The larvæ have sixteen legs, but four of them are but rudimentary. They feed on trees, and the pupa is in a cocoon under bark, or among moss, &c. By Dr. Staudinger these insects are placed last in the group, being followed by the GEOMETRINA.

QUADRIFIDÆ.

The second group is of very limited extent in Britain, scarcely numbering thirty species. It is divided into four sections—VARIÆGATA, INTRUSÆ, LIMBATA, and SERPENTINÆ.

VARIÆGATÆ includes two families and fully half the species. In general appearance the imagines are more like the usual *Noctua* type than the last group of the TRIFIDÆ.

I. PLUSIDÆ contains about a dozen species in two genera. The imago often has metallic spots or blotches on the fore wings, sometimes it has raised scales round the stigmata. The larvæ of one genus have only twelve legs, and are rather attenuated towards the head. Of the other the larvæ have sixteen legs, one pair being but rudimentary. The pupa is in a silken cocoon among moss or on the food plant.

NOTES AND OBSERVATIONS.

By W. H. BATH.

HOUSE MARTINS (*H. Urbicæ*).—At a farmhouse I was visiting, a house martin built its nest inside a porchway over the door

and was a great nuisance, making such a deal of dirt by dropping mud from the nest while building. It was only six feet from the ground. As fast as the people of the house removed the nest the martin built it up again. They at last succeeded in driving it away. Last summer some new houses had not quite been finished before a pair of martins came and chose their residence on one of them.

SWALLOWS (*H. Rustica*).—One fine day in May I observed several swallows catching white butterflies (*P. rapæ*). Perhaps it was from the scarcity of their ordinary food. I have often seen them pass each other within a few inches without the one devouring the other.

WILD SWANS when flying at a considerable height look exactly in the shape of a cross. A few were accustomed to pass over in the neighbourhood of Birmingham a few summers ago. I was told they frequented a pool at Hampstead. I believe they were *A. Ferus*.

ROOKS fly at night occasionally as well as in the day-time. I have often seen them after eleven o'clock p.m. in the summer time, and sometimes seen the whole flock fly round and round their nest trees cawing. Rooks are very difficult to kill, and if wounded have the power of flying a long distance, so that the sportsman can rarely get hold of them. Rooks will not desert a rookery with any amount of shooting at, they will only go away if their nests are plundered. Mr. P., at Handsworth Hall, dismissed one of his servants for climbing up a tree and taking their eggs out of a nest.

CUCKOOS are very plentiful at Sutton in the summer. There is something about their voice that seems very peculiar. A short time after midsummer they drop their notes one by one, till the time when they have to depart they can not be heard at all. As, for instance, when they first arrive in this country they call "Cuckoo, Cuckoo."

About the end of June their voice begins to break, and they drop the last letter "Cucko, Cucko," and so on "Cuck, Cuck," till it gets to "Cu, Cu" (uttered sharply), they then lose their voice altogether.

CORNRCAKES are very plentiful in the low meadows by Jerome's Pool in the summer. They hardly fly at all, but rely chiefly on their powers of running, which they do with remarkable swiftness. When I have heard the "Crank, crank," I have dropped a stone into the place where the noise came from, and then seen a head peer quietly up, then dart down and run away through the grass. They begin their concert as soon as the sun has set, although they may be heard occasionally all the day long. They come about mostly at night.

PARTRIDGES.—A friend of mine, J. L. C., Esq., at Horse Brook Hall, said that he found a partridge's nest containing about a dozen eggs in it on a bank. He sat them under a hen and they grew up very plump and fat, and were very hardy, not one of them died. As soon as they had left their mother they took to the fields and did not come back again.

SCARCITY OF L. AURIFLUA AND P. GAMMA.—Could any one inform me if the scarcity of *Liparis auriflua* and *Plusia gamma* was general in 1880 and 1881, at least, I saw very few specimens around Birmingham, (although in October, 1880, I observed *P. gamma* in great numbers in a clover field in Shropshire.) They were both in great abundance in 1879. *L. auriflua* covered the hedges in October of that month like snow. Mr. C. M., an experienced entomologist, attributes it to their having laid their eggs in a different locality.

P. CARDUI.—In reply to a correspondent to the Y.N. in No. 107, vol. 3, I may state that I have not seen a single specimen during the last two years (1880-81) around Birmingham. In 1879 they were plentiful, some penetrating even into the Borough.

THE LANCASHIRE & CHESHIRE ENTOMOLOGICAL SOCIETY.

This Society held its Annual Meeting on Monday, 28th Jan., when S. J. Capper was again elected President. In the course of his remarks he gave a succinct account of the use and progress of the Society. Formed in 1877, at the house of Mr. Nicholas Cooke, Mr. Capper was elected president without his knowledge even that such a society was about to be formed, and he has been continuously re-elected to the same office. They originally consisted of only eleven members, and from the commencement there have been seventy-six; of these fifty-seven still remain connected with it. They have held fifty-six meetings, at which fifty-one papers have been read, ten of which have been published. Interesting exhibits have been made at the meetings, and they already have papers promised to be read at the meetings for nearly a year in advance. Not the least valuable portion of the society is its Entomological Library, purchased out of the surplus subscriptions, which is already so good that Mr. Capper advises those who cannot attend the monthly meetings to become members for the privilege of having access to the books, which are circulated among the members.

BRITISH BIRDS, THEIR NESTS AND EGGS.

By S. L. MOSLEY.

MONTAGU'S HARRIER.

Circus cinerareus (Mont.)

CINERAREUS (L.) Ash coloured.

Size.—Male, length about 1ft. 5in., expanse 3ft. 8in.; female 1ft. 7 or 8in., expanse 3ft. 9 or 10in.

Plumage.—A pair in my own collection, which I should presume are adult, are as follows:—

MALE.—Bill dark horn colour, darker at the tip; cere, eyes, and legs yellow. Head,

neck, and throat light bluish grey or ash coloured; back, wings (except primaries) and two central tail feathers, a darker shade of the same colour; primaries nearly black. The secondary wing feathers have each two black bars with indications of a third, but only the outer bar shows, the others being concealed by the wing coverts. The tail has the two outer feathers white, with four chestnut bars and an ash coloured one near the tip; the next feather is barred in the same way, but less on the outer web, which is mainly ashy grey; the next two are ashy grey, with blackish bars on the inner webs only; and the two central ones are entirely ashy grey. The under parts are white, the feathers on the sides and belly with a central streak of chestnut brown.

FEMALE.—Bill, eyes, and legs same as the male. Upper parts dark brown, the feathers on the nape margined with lighter colour. A pale streak over the eye and a broader one of the same colour below it. Ear coverts brown. Under parts yellowish white, each feather with a central chestnut streak. Tail, outer feathers white with four brownish bars, each feather darker until the centre ones are dull brown barred with darker. Tail coverts white.

IMMATURE birds vary very much in colour. Mr. Bond has had two full-grown females from the fens with the whole plumage much darker than usual, every feather in the back margined with rich rufus; the whole of the under parts, neck and throat rich reddish buff colour. The males begin life in a garb somewhat similar to the females. In all stages this species may be distinguished from the last by the greater length of wing, which reaches nearly or quite to the end of the tail, while in the Hen Harrier they do not reach the end of the tail within two or three inches.

YOUNG.—The young in down are white tinged with ash colour.

A VARIETY of an uniform sooty black sometimes occurs, and does not seem very rare. One is recorded by Hancock, in his "Birds of Northumberland and Durham." Mr. Stevenson records specimens from Norfolk, Kent, and Sussex; and one is recorded in the "Zoologist," which, in addition, had the nape marked with white.

Note.—Mr. H. Saunders, in his notice of the nest he found in the Isle of Wight, in 1875, says the female made a noise something like the Kestrel, when driving rooks from the neighbourhood of her nest.

Flight.—The flight of this species is said to be very similar to that of the Hen Harrier, but may be distinguished by the greater length of wings and tail.

Migration.—It is recorded as migratory in India and Africa, and probably was so in this country also, as it was seldom seen later than October.

Food.—The food consists of insects, reptiles, field mice, small birds and their eggs.

Habitat.—This species was but a few years ago the commonest Harrier in the Fens, and is recorded from both North and South, probably also from Ireland. It has been known to breed in several parts of both England and Scotland.

ABROAD it is found over the greater part of Southern Europe, and I have seen specimens from India.

Nest.—The nest is placed very near or quite upon the ground, generally near or in some large tuft of carex or brushwood, and is composed very loosely of small sticks, ling, coarse grass, &c., with softer material and sometimes a little wool for the lining.

Eggs.—The eggs are laid early, sometimes before the end of March. They vary in number from four to six, and are white with a faint tinge of blue, and occasionally spotted with dark chocolate brown.

E. G. MEEK,

NATURALIST,

56, BROMPTON ROAD, LONDON, S.W.

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 119.

FEBRUARY 18TH, 1882.

VOL. 8.

AN ENTOMOLOGICAL HERBARIUM.

AN ingenious friend who is always suggesting something new, asks our opinion of what he calls an Entomological Herbarium. Thinking the idea may be worth something to some of our readers, we lay it before them.

Our friend proposes to form a herbarium, but instead of mounting his plants on loose sheets in the ordinary way, he proposes to mount them on the third page of a folded sheet. He would append the usual label, but would give separately fuller particulars of the *character* of the locality, as well as of the place itself where the plant grew. On the second page, facing the specimen, he proposes to write as neatly as possible, the names of the various insects whose larvæ feed upon the plant in question. These he will arrange in columns according to the various orders, LEPIDOPTERA, COLEOPTERA, DIPTERA, &c. He will also make a further distinction by placing those species that feed on the flowers at the head of the column, those that feed on the leaves next, then those that feed in the stem, and lastly those feeding in the root.

Having rather an extensive herbarium, we confess we would not like the labour such an undertaking would involve, but were we just commencing to form it, the case might be different. As the various plants were procured, the labour of writing all that was known of the enemies of each (if we may call them such), would not be very great, and as the specimens would but increase slowly, the amount of labour involved would never be great at any one time. It is therefore an undertaking that may well be recommended to those of our readers who are just beginning their collections.

May we suggest other additions to those named, that perhaps might be an improvement. We would add figures of both larva and imago, whenever they could be procured, or if we could use the pencil, would sketch and colour them on the page beside their names. An undertaking of this kind, if well and properly carried out, would occupy many a leisure hour now spent idly or profitlessly. Might we commend the idea specially to ladies. Many young ladies have far too much leisure. The customs of society almost forbid them doing anything useful, and their occu-

pations and amusements are not always calculated to do more than help away the idle time. But such an undertaking as this would be a charming occupation for a clever girl. To form a collection of dried wild flowers is itself a very attractive pursuit, and if some portion of our friend's suggestion, or our own were added, the lady who could draw or paint would find unending pleasure in forming a herbarium somewhat after this fashion.

Of the value of such a collection we have said nothing, but it is certain that new ideas would arise in the mind of the owner, that affinities would be seen that had not yet been noticed, and that the store of knowledge would be vastly increased. On such matters as this we know little. Perhaps we know nearly all the larvæ of the larger lepidoptera that feed on particular plants, and a little may be known of the larvæ of other orders. There are systematic lists of the food plants of the larvæ of Lepidoptera in "Merrin's Calendar," in Owen Wilson's "Food plants of the larvæ," &c.; but there are no such tabulated lists relating to the earlier stages of other orders, and what has been printed is scattered through the pages of the various Natural History Magazines. If a herbarium was formed after this fashion, all this scattered information might soon be gathered together, and as new items were published they would be easily added in their proper place, and in a few years we believe this herbarium might be made

such a storehouse of knowledge as does not exist at present. We commend the idea to our young readers, either to be taken up for real study, or merely for pleasant and instructive amusement as may suit their tastes.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due.

Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

EXCHANGE.

Wanted, Nos. 19, Feb. 1877, and 24, July 1877, of the "Naturalist," (new series), edited by C. P. Hobkirk, F.L.S. and G. T. Porrit, F.L.S., 6d. each, or Lepidoptera, for clean copies.—J. W. CARTER, 14, Valley Street, Valley Road, Bradford.

DUPLICATES.—*Edusa*, *Paphia*, *Pamphilus*, *Sambucata*, *Biundularia*, *Atomaria*, *Dispar* and eggs, *Batis*, *Trapezina*, *Instabilis*. DESIDERATA.—*P. cratagi*, *C. album*, *Lanestris*, *Quercifolia*, *Maculata*, *Prunaria*, *Betularia*, *Reclusa*, *Vinula*.—WILLIAM F. CHAMBERS, 22, Elmwood Street, Fishergate, York.

"AT HOME."

LIVERPOOL.—C. S. Gregson will be at home every Sunday until March next. Microlepidopterists, coleopterists, and artists should come early to secure good light; general naturalists any time from nine a.m. to nine p.m.—Rose Bank, Fletcher Grove Edge Lane, Liverpool.

HUDDERSFIELD.—S. L. Mosley every Saturday afternoon.

NOTES, CAPTURES, &c.

BOHEMIAN WAXWING OR CHATTERER (*Ampelis garrula*).—A beautiful specimen of this species was killed on January 30th by a boy with a catapult, at Rednall Hall, near Bromsgrove Lickey. I saw the specimen in the flesh at Mr. Coburn's, the taxidermist, Birmingham. This rare bird is rather an interesting addition to the fauna of the Birmingham District.

Jan. 12th, 1882. LIMNÆA STAGNALIS.—Took a good series in a pool at Selly Oak, one of them was the variety *Alba*.

LIMNÆA PEREGRINA.—Took one small specimen in the above locality.

Jan. 25th. HELIX ROTUNDATA.—Took about twenty under dead leaves and rubbish round trees at Selly Oak.

ZONITES NITIDUS.—Found two under dead leaves at Selly Oak.

LIMNÆA STAGNALIS.—Found one in Pebble Mill Pool, Edgbaston.

Feb. 3rd.—Saw a flock of redwings picking up food in a field at Sellywick.—P. T. DEAKIN, Edgbaston.

THE DIPPER.—In the extract from the Birmingham paper given in the Y.N. of Feb. 4th, it is stated that the Dipper (*Cinclus aquaticus*) "is of extremely rare occurrence in the midlands, being found in some of the wilder portions of the Yorkshire moors and Scotch hill districts." It is not the case with regard to this part of West Worcestershire, where these birds are very numerous. There were fifteen nests found by one stream last spring. It is, however, only within the last few years that they have been so exceedingly common, but there have always been some in this neighbourhood.—N. PRESCOTT DECIE, Bockleton Court, Tenbury, Worcestershire.

INSECTS, &c., IMPORTED IN WOOL.—A friend here who is in the habit of picking up all he sees in the shape of animal remains,

has recently handed over to me a twelve months' accumulation picked from wool imported from Australia and Russia, and I was much surprised with the quantity and variety of them. The two lots have been kept separately, and among the Russian things there are about thirty beetles and almost as many species, including a specimen of our British rose beetle (*Cetonia aurata*). There is also a specimen of a green lizard. Among the Australian collection there are about sixty specimens of coleoptera, including one hydradephagous beetle, very similar to, if not identical with, our *Dytiscus marginalis*. There are also some grasshoppers, some hemipterous insects, centipedes, frogs, fish, and in lepidoptera one specimen of the ubiquitous *Triphaena pronuba*. A most curious and herogenous assembly, I must admit.—J. W. CARTER.

PHIGALIA PILOSARIA, &c.—This morning I had a walk to Shipley Glen and took three or four specimens each of *P. pilosaria* and *H. leucophaeria*, but neither species are as yet so common as I expect they should be from the great abundance of larvæ there was feeding last June. Both species are considerably below the average size: but this is not to be wondered at, as the larvæ of these and of the "winter moths," together with those of *Tortrix viridana*, had denuded the trees of every green leaf long before many of them were full fed. The first specimen of *P. pilosaria* recorded to me here was taken on the 14th January.—J. W. CARTER, Bradford, February 5th, 1882.

SKYLARK'S EGGS LAID IN CONFINEMENT.—Mr. Harker has sent us the eggs referred to in his note on page 75. Two of them laid the first year are pale greyish white, darkening to slate grey at the broad end. They are dull in colour, not bright as skylark's eggs are. These are very small, not so large as the eggs of the meadow pipit. Two laid the following year are more like the

normal form of the eggs in colour, &c., but the colouring matter is nearly all at the broad end. The other two are still nearer the type, except the size. We have had no previous knowledge of a skylark laying in confinement, and the two first eggs are exceedingly curious.—Eds. Y.N.

ANODON CYGNIA.—We found, the other day, a quantity of empty shells of *Anodon cygnia* in the mud at the bottom of a pond which had been emptied last autumn. Can any of the readers of the Y.N. tell us any thing about their habits and the way they live? We shall be glad to send specimens to any one who would care for them.—(Miss) N. PRESCOTT DECIE, Bockleton Court, Tenbury, Worcestershire.

IN RE AUTUMNARIA.

"Magna est veritas et prævalebit."

As Mr. Gregson fails to submit to the Editors of this Journal, the letter from which he professedly made his extract (see page 92), *after my challenge to do so, and Mr. Harbour's positive denial of its truthfulness* (see page 107), the reason is too significant to need comment, and virtually puts Mr. Gregson out of court. He boasts in his letter of having a supply of "dry powder." If this is a sample of it, his friends should carefully guard him from using an article so destructive to his own reputation! This controversy was commenced by Mr. G. professing to teach young naturalists entomological ethics and caution; *but the lesson will be to avoid the very questionable tactics of their would-be guide*, whom I will now leave with this large "thorn in the flesh!" May it do him good!

And now as a proof of *Ennomos Autumnaria* being a long established Deal and South Coast insect, I will quote an extract from a letter I received from Mr. Sidney

Webb (dated Feb. 23rd, 1882.) This gentleman has long been known as one of our ablest British Lepidopterists. "*ALINARIA* (—*AUTUMNARIA*) is an insect very easy to overlook in cabinets, and last October when I called on Mr. Sidney Smith, of Walmer, he showed me his specimen taken off a lamp in Castle Street, Walmer, many years ago, and yet although he had this as a guide, I pointed out to his great surprise three specimens amongst his tiliaria, one with pennaria, two with juscantaria!" This important item of information, coupled with my own published account of the insect, extending as far back as 1878, entitles me to say that I have proved beyond dispute my point of discussion, that is that the Deal specimens of *E. autumnaria* are GENUINE BRITISH MOTHS.

"Palman qui meruit ferat."

W. H. TUGWELL, Greenwich.

INSECTS DURING WINTER.

WE have received a number of the *Rivista Scientifico-industriale e Giornale del Naturalista*, an Italian publication, devoted to natural science. A novel feature in our experience is an appendix containing a brief summary of the principal articles in three different languages, French, German, and English. We extract the English summary of an article headed as above.

"The rivers whilst overflowing are carrying along a great deal of vegetable fragments, to which are stuck numerous shipwrecked insects. The entomologist can find many species in different localities in searching amongst these fragments on the banks of rivers. In this manner Mr. Piccioli found at Florence the blind Staphilina, *Glyptomerus etruscus*, Picc.

In the season of rains the carnivorous and phytophagus insects belonging to the subterranean fauna are obliged to creep up to the surface of the ground in search of air to breathe. In these conditions many blind

species of coleoptera can be found under stones, as *Reicheia*, *Anillus*, *Briaxis*, *Cephenium*, *Raymondia*, *Crypharis*, &c.

The masses of dry leaves, the vegetable detritus of forests, the grassy clods around the foot of trees, the base and holes of voluminous stones and of walls are also the winter quarters of insects. Old barks of trees, their wood itself, the stems and branches of humbler vegetables are in winter the shelter of many other species of insects, which, surviving to a great number of generations disappeared with summer, will in spring purvey to multiply the individuals of their species.

In the same manner caverns, the mud of pools, timbers and wooden furniture of men's houses are as many winter quarters of insects; and those who live as parasites of other animals and also of other insects, follow their victim even in their winter hiding places or in emigration. May we compare the hibernation of insects with that of other superior animals, as bats, dormice, marmots, many reptiles, &c.? Some entomologists observe that the winter quarters of insects are a very light shelter against the coldest temperatures, and the resistance of insects to cold is much superior to that of other animals.

It has been tried to expose insects even to frigorific mixtures, and many of them have resisted.

Hibernation of insects cannot be considered but as a providential means to preserve these living creatures from the terrible war of the elements.—P. BARGAGLI."

BRITISH MOTHS:

By JOHN E. ROBSON,

(Assisted by Contributors to the Y.N.)

II. GONOPTERIDÆ contains but one European species *Gonoptera libatrix*, whose bright colours and indented forewings makes it very conspicuous. The larvæ have sixteen

legs, and feed on the leaves at the end of willow shoots. The pupa is enclosed in a cocoon, among the leaves on the tree.

INTRUSÆ contains three families, all represented in Britain, though we have but seven species. They are rather large insects, one expanding nearly three inches, but dull-coloured. The larvæ have sixteen legs, and the pupa is sometimes underground. Three families are represented here.

I. AMPHIPYRIDÆ, with four species, mostly of largest size. Forewings smooth and shining, the abdomen sometimes very much flattened. Larva with sixteen legs, tapering to the head. Pupa in a cocoon on the surface, or subterranean.

II. TOXOCAMPA contains but two species, one of which is a recent discovery, and is rare. The forewings are grey, and there is a black collar in front of the thorax. The larvæ taper to each end, and have sixteen legs.

III. STILBIDÆ contains but one species, *S. anomala*. As its name implies it is an anomalous species, that may not be rightly located here. The larva has sixteen legs, and is more of the usual *Noctua* form than the last few named. It goes below the surface to pupate.

LIMBATÆ. Only one family is represented in Britain.

CATOCALIDÆ, containing the well-known red underwing, scarlet underwing, &c. It contains four species of considerable size, the Clifden Nonpareil (*C. fraxini*, expanding four inches. They may be known by their gaily coloured hind wings; three of the British species having them red or scarlet, and the other pale blue. The larva is twig like, but have sixteen legs. They often rest, as do some of the Geometræ, attached by the anal claspers only, and the body stretched out, resembling a small twig. The pupa is in a cocoon among leaves or in a crevice of the bark.

SERPENTINÆ. Only three families, with as many genera, are represented here.

I. OPHIUISIDÆ, has but one species *O. lunaris*, which has occurred very rarely in the South of England. It expands over two inches, and has rather broad forewings, with the usual markings. The larva has sixteen legs, but the first two pair of claspers are short. The pupa is in a cocoon among leaves, and is covered with a bloom something like the COSMIDÆ.

II. EUCLIDIDÆ, contains one genus with two species, both very common. They expand about an inch and a quarter, and have broad fore wings. The larvæ is long and slender, like those of the GEOMETRÆ, and has only twelve legs. It sits quite stretched out, or coils up the first three or four segments if disturbed. The pupa is in a cocoon.

III. POAPHILIDÆ has but one genus and one species. It is a small insect expand-some three-quarter of an inch, and rather variable in colour. The larva was unknown till lately, it resembles that of the last family in construction and habits. The pupa is in a cocoon of leaves of the food plant spun together with silk.

LOCAL NAMES OF BIRDS AT HARWICH AND NEIGH- BOURHOOD.

| | |
|------------------------------------|--------------------------------|
| Redbacked Shrike | Butcher Bird |
| Missel Thrush | Tulfet |
| Fieldfare | Dow Tulfet |
| Song Thrush | Mavish |
| Redstart | Redtail |
| Stonechat | Blackcap |
| Wheatear | Wall-bird |
| Whitethroat, Greater and Lesser | Hayjack and Nettle- creeper |
| Willow Warbler } Chiffchaff } | Oven-builder and Oven-tit |
| Goldencrested Wren | Woodcock Pilot |
| Blue Titmouse | Tom Tit |
| Longtailed Titmouse | Pudding Poke |

| | |
|--|--|
| Pied Wagtail | Washtail |
| Meadow Pipit | Titlark |
| Snow Buntings | French Ulfs |
| Common Bunting | Bunting Lark |
| Blackheaded Bunting | Reed Sparrow |
| Chaffinch | Spink |
| Tree Sparrow | French Sparrow |
| Greenfinch | Green Linnet |
| Goldfinch | King Harry |
| Linnet | Red, Brown, or Gray according to state of plumage. |
| Hooded Crow | Dun Crow |
| Wryneck | Cuckoo's Mate |
| Swift | Screech Owl |
| Goat Sucker | Night Hawk |
| Ring Dove | Dow |
| Rock Dock | Blue Rock |
| Great Plover | Owlheaded Plover |
| Ringed Plover | Stone-runner |
| Sanderling | Silver Sandpiper |
| Oystercatcher | Sea Magpie |
| Heron | Harnsey |
| Whimbrel | Jack Curlew |
| Green Sandpiper | Took |
| Knot | Murl Plover |
| Dunlin | Oxbird |
| Brent Goose | Black Goose |
| Shieldrake | Bar Goose |
| Common Scoter | Rock Duck |
| Pochard | Dunbird |
| Scaup | Daybird |
| Goldeneye | Jack Diver |
| Smews, Mergansers, } and Goosanders } | Sawbill Ducks and Smynen |
| Little Grebe | Dabchick |
| Divers, Red and Black-throated | Sprat-loons |
| Guillemot and Razor- bills | Willock |
| Cormorant | Scart |
| Gannet | Gant |
| Terns: Common and Lesser | Reeks |
| Blackheaded Gull | Kiddy |
| Gt. Blackheaded Gull | Saddle-back also Cob |
| Skua's | Dung-birds |

F. KERRY, Harwich.

BRITISH ANTS—By G. C. BIGNELL.*(Continued from page 111.)*

Great Nore, a distance of five or six miles. The column appeared to be in breadth eight or ten feet, and in height about six inches, by resting one upon another. These ants were winged. Whence this immense column came was not ascertained. From the numbers here agglomerated, one would think that all the ant-hills of the counties of Kent and Surrey could scarcely have furnished a sufficient number of males and females to form it."*

The first thing a young collector will wish to do, after capturing an ant, will be to name it. This, with a little practice and the assistance of the plates, he will, I have no doubt, very shortly be able to accomplish. When a capture is made, the segments of the abdomen should be examined, in order to see how many are narrowed, so as to form nodes or bead-like divisions. If one, then it belongs to one of the first seventeen; if with two, then it must be sought among the remainder. A glance at the plate (5) on which *Myrmica ruginodis* is figured will show what is meant by two nodes or bead-like divisions.

GENUS FORMICA, Linn.

Male and female about equal in size; the worker very variable in this respect. The large worker is often more than half as large again as the small one. Maxillary palpi with six joints (plate 5, fig. 5); labial with four joints. Antennæ thirteen-jointed in the male, and twelve in the female and worker. Upper wings with one marginal, two submarginal, and one discoidal cells; the apical margin of the second submarginal being the actual edge of the wing. Petiole with an erect, flattened scale, generally more or less triangular, widest above.

The species of this genus are rather naturally divided into two sections by their habits; the first four making their nests

* Kirby and Spence.

above ground, the last three underground.

Messrs. Emery and Forel consider the last three to be all races of one species.

1. Formica Rufa, Linn.

MALE.—(Pl. 5, fig. 1) black-brown; legs and genital segments testaceous; base of femora, tibiæ and tarsi sometimes darker. Head and thorax covered with fine semi-erect hairs. Mandibles not toothed. Eyes with scattered hairs. Abdomen widest at the base, somewhat egg-shaped. Wings clouded with brown at the base; nerves brown. Length 10-12 mill.

FEMALE.—(Pl. 5, fig. 2) head and thorax dull-red; the antennæ, the upper part of the head, the middle of the clypeus more or less, and the mesothorax dull-fuscous; the scutellum and abdomen shining black; the tibiæ, tarsi, and tips of the femora reddish-fuscous; the femora, scale of the petiole, and base of the abdomen dull-red; wings clouded as in the male; eyes not hairy. Length 10 mill.

WORKER.—(Pl. 5, fig. 3) head and thorax dull-red; the antennæ, the upper part of the head, the pro- and mesothorax more or less above the legs and abdomen dark-fuscous. Small and large workers vary in size from 6 to 10 mill. [A scale for measurement will be found on plate 5.]

HABITAT.—Common in woods, &c., generally forming its dome-like nest on the ground, but occasionally in the trunk of an old tree. The males and females appear about midsummer. In August, 1877, I discovered a very large nest of this ant, and observed a number of large workers bringing home to their nest other ants of the same species as prisoners; and on the 23rd August, 1878, I again visited the same formicarium, and found the war in full force. The raid this time was made on a small nest about two hundred feet from the large one. The stream of workers was continuous. The distance from each other on their homeward journey was about eight or ten inches, each

(Continued on page 143.)

THE YOUNG NATURALIST.

E. G. MEEK,

NATURALIST,

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VOL. 8.

PUNCTUALITY.

AMONG the many virtues needed by naturalists, punctuality is one of the most important. Especially to the entomologist is it a valuable quality to possess, and, perhaps, the lepidopterist needs it more than any one else. It is true that we read of abnormal appearances of various species from time to time. *P. rapæ* was brought us alive on the 16th of December last, and a day or two later a larva of the same species was found feeding, but nature soon reverts to her usual course, and we may depend on finding any species almost on the same day year after year. The lepidopterist who knows when a species emerges and does not take the trouble to be punctual, but goes a fortnight or three weeks later, may obtain the object of his search, but it is not likely to be in very fine condition, while if he goes at the proper time he will get specimens equal to bred ones, and for our part, we prefer captured specimens when equally fine. But not only must the lepidopterist be punctual to the day, he must also be punctual to the hour. You will not find butterflies on the wing after sunset, nor Swifts flying after dark. Almost

all species have their particular hour of flight, and though some remain a longer time on the wing than others, each kind keeps to its own hours. Perhaps we might except *Plusia gamma*, for that ubiquitous species flies at all hours, and almost all the year through. But this is the exception that proves the rule, and you will find if you want to be successful as a collector that you must learn the hour of flight and prepare yourself accordingly. Nor is it only for the capture of the perfect insect that punctuality is needed. It is no use digging for pupæ after the imagines have emerged, nor searching for larvæ after they have pupated.

If you are collecting birds' eggs the same rule obtains. Some species, of course, nest earlier than others, but that is what you have to learn; and if you know when the bird begins to lay you must look then for the egg. Do not wait till it is "black sitting." You may with much trouble blow an egg that is nearly ready for hatching, but you are more likely to break it: besides, there is much more harm in taking an egg in this state than when newly laid. If the egg be taken at first, the bird lays again directly, and a brood is not lost;

but if you delay until they have been sat upon for a fortnight, the bird is much more exhausted, and will not lay again so soon, and in all probability a brood will be lost. Now when we know the value of birds, we also know this to be a real loss.

If it be birds themselves you seek, do not delay when the opportunity is afforded. You will not find birds in winter with their summer plumage, nor will you then find those birds at all, that only come here to nest. The same rule obtains in summer. You will not then find birds in their winter garb, nor will you find those birds at all that go further north to breed.

Are you a botanist? You will still find the rule hold good. You must collect your plants when the proper time arrives for them flowering, or you will find them in fruit. Perhaps you may get a solitary bloom when the flowers are nearly over, but it will not be very valuable as a specimen. If you put off till finer weather to gather your specimens of plants that bloom in early spring, you will find you have lost a year.

Are we writing unnecessarily? An old proverb says "time and tide wait for no man," which modern innovations have made into "time, tide, and train wait for no man." We know a gentleman who boasts he never lost a train in his life. He is always there a few minutes too soon. We know another who may sometimes catch one, but if he does it is with a breathless rush as the train moves out of the station. Do we need to ask which of these would

make the best Naturalist? Nature never waits for any one. Larvæ feed up, imagines emerge and waste. Eggs hatch, and young birds fly. Flowers bloom and fruits ripen, all at their own time, and none of them ever delay for the convenience of the off-putting collector.

One other point before we close. We would urge our young friends to be punctual in their correspondence. Particularly would we urge upon them to be prompt in returning boxes that are not their own. You will soon acquire a character for punctuality or the reverse of it, and it will depend on which you are known by whether your friend who is distributing his duplicates sends to you first or last. If first you may be sure you will receive more and better specimens than if your parcel is composed of those that remain after others are served. But not only from this motive should you be punctual. It is not right that you should inconvenience others by delay; and you will always find your work and correspondence accumulate to great inconvenience if you put off till to-morrow. We are writing for beginners who have their habits to form, and we would urge in all things that they should never put off till to-morrow what can be done to-day.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured

plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

DR. SHARP'S CATALOGUE OF COLEOPTERA.

Several correspondents write us in reference to Dr. Sharp's catalogue of Coleoptera. The publisher informs us it is out of print. He also adds "the author is occupied in the preparation of a second edition, but as he has other and more serious calls on his attention, I cannot say when it will be ready." We have had it in contemplation for some time to publish figures of every British species, and will probably make an announcement on the subject shortly.

CAPTURED IN THE NEIGHBOURHOOD OF BOCKLETON,

Situated five miles south of Tenbury, in the county of Worcester, in 1881.

(Continued from page 107.)

- T. Amataria, 1.
- C. Pusaria, 6 (some bred).
- C. Exanthemaria, 2.
- H. Wavaria.
- H. Petraria, 4.
- N. Pulveraria, 4.
- A. Grossulariata, 2 (1 bred).
- L. Marginata, 4.
- H. Defoliaria, 10 (bred).
- A. Æscularia, 1.
- L. Didymata (bred a quantity).
- E. Decolorata, 1.
- Y. Elutata, 16.
- M. Rubiginata, 2.
- M. Albicillata, 1.
- M. Montanata, very numerous.
- A. Derivata, 1.
- C. Bilineata, very numerous.
- S. Dubitata, 2.
- C. Russata, numerous.
- C. Suffumata, 1.
- C. Testata, 1.
- P. Mensuraria, numerous.

- C. Spartiata, 1.
- T. Batis, 4.
- A. Psi, 3.
- A. Leporina, 1 (at rest on a birch-tree).
- A. Megacephala, 3 (2 bred).
- A. Aceris, 1 (bred).
- A. Alni, 1 (from chrysalis).
- A. Romicis, 3 (1 bred).

(To be continued.)

BRITISH MOTHS:

By JOHN E. ROBSON,

(Assisted by Contributors to the Y.N.)

GEOMETRINA,

According to the arrangement here followed this group comes next in order, and it is certainly seems very naturally to succeed the last named genera of NOCTUINA, whose long slender larvæ, many of which have but twelve legs, so closely resemble the looping larvæ of the group now under consideration. The GEOMETRINA take their name from the peculiar manner in which the larvæ walk. Having no legs in the central portion of their bodies, they progress by stretching out the anterior portion as far as possible, then bringing up their hind legs the body forms a loop, and the larva looks as if it were measuring the surface over which they move, hence the name *Geo-meter* — to measure the earth. The larvæ are also commonly called "loopers." The imagines are characterised by large wings and slender bodies, though some few have rather robust bodies. Nearly all of them when in repose sit with the wings expanded, and the under wings, which generally bears the same colour and markings as the fore wings, exposed. Some few sit with the wings erect like a butterfly, and most of them when slightly disturbed elevate the wings in this fashion preparatory to taking flight. With only few exceptions, the larvæ have but ten legs, and where this is exceeded the additional legs are

more or less rudimentary. The pupa varies very greatly both in shape and colour, it is sometimes subterreanean, sometimes under bark, among leaves, &c., &c. Some few spin a peculiar boat like cradle in which the pupa reposes, a few others suspend the pupa after the fashion of some of the butterflies.

Both Doubleday and Stainton follow Guenée in their arrangement of this group. Seventeen families are represented in these lists, viz.---

| | |
|---------------|--------------|
| 1 Ourapterydæ | 10 Macaridæ |
| 2 Ennomidæ | 11 Fidonidæ |
| 3 Amphidasidæ | 12 Zerenidæ |
| 4 Boarmidæ | 13 Ligidæ |
| 5 Boletobidæ | 14 Hybernidæ |
| 6 Geometridæ | 15 Larentidæ |
| 7 Ephyridæ | 16 Eubolidæ |
| 8 Acidalidæ | 17 Sionidæ |
| 9 Caberidæ | |

I. OURAPTERYDÆ contains but one species, the well-known "Swallow-tail" Moth. The larva is twig-like, and the pupa which is rather long, is in a suspended cocoon.

II. ENNOMIDÆ. This family includes twenty-one species in thirteen genera. The wings are angulated, and most of them are yellow or orange coloured, many of them being very pretty. Some of the larvæ have 12 or 14 legs, but where this occurs the additional pairs are seldom or never used. They are generally twig-like, and some of them, as *P. syringaria*, are very curious. The pupa is either in a cocoon among leaves or subterreanean. *E. autumnaria*, which is attracting such attention at present, belongs this family.

III. AMPHIDASIDÆ. Only six species in four genera occur in this country. In general appearance they are more like the BOMBYCES than any other family of the GEOMETRINA, and, like some members of that group, some of the species have wingless females. The imagines have rather

stout bodies, and the thorax is well covered with down; the antennæ of the males are highly pectinated. They are all greyish in colour, and vary in expanse from over an inch to two inches. The larvæ have only ten legs, and are long and slender, but only some of them are twig-like. The pupæ of all of them are subterreanean.

IV. BOARMIDÆ. Eighteen species in seven genera are found in this family. They have slender bodies and rather large wings, the same pattern often occurring on both. The larvæ have 10 legs, and are generally twig-like. The pupa is nearly always subterreanean. Two or three species included in Mr. Stainton's Manual are not now recognized.

V. BOLETOBIDÆ. Only one species occurs in this family, the larva of which feeds on rotten wood and seems most partial to the metropolis. It is placed by Dr. Staudinger among the NOCTUINA, and next to *Aventia flexula*, a British species of very doubtful location.

VI. GEOMETRIDÆ. This family contains only eight British species in six genera. The imagines are all green in colour, some of them very brilliant, but they fade quickly in the light, and can only be had in perfection by breeding. The larvæ are rather shorter and stouter in proportion than others of the group, and are frequently rather rough looking. The pupæ are among leaves loosely spun together or in a slight web.

BRITISH BIRDS, THEIR NESTS AND EGGS.

BY S. L. MOSLEY.

Family II. Strigidæ.

The members of this family inhabiting Britain are sometimes divided into several genera, but the species are so similar that they may with advantage all be placed in one genus.

GENUS I. STRIX.

STRIX. The Latin name for an Owl. These birds are very peculiar in their structure, but are so well known as not to require a very minute general description. The head is large, the face round and flat, surrounded by a frill of short stiff feathers. The eyes are large and sunk, and some, if not all the species, have the power of closing one eye only, as if they slept with one at a time, and always had "one eye open." The upper mandible is pointed, and much curved over the end of the lower mandible. The plumage is very soft and fluffy, enabling the birds to approach their prey on the wing, and execute the most rapid manœuvres in doing so, without making the slightest noise. The legs are covered to the ends of the toes with a kind of hairy down, the outer toe on each foot can be moved backwards, almost as much as that of a parrot. In some species the head is adorned with two tufts of feathers called "ears" or "horns," which can be raised or depressed at pleasure. Morris implies that the depression is only apparent, caused by the other feathers on the head being raised. These tufts are not the true ears, which are of large size, enabling the bird to hear the slightest sound. The ears may be seen by raising the frill of feathers on either side of the face. Owls are chiefly of nocturnal habits, but some species fly in quest of prey by day, sometimes even in bright sunshine. Their food consists of small mammals and birds, the smaller ones also devour beetles, moths, and other nocturnal insects. The indigestible portions of their food are formed into small rounded pellets in the stomach, and then disgorged. The eggs are white, and generally of a rounded form.

Four species of owls are natives of this country, but several European species visit us occasionally, and one American species has been obtained.

16. LONG-EARED OWL.

Strix Otus, Linn.

OTUS, *Ota* (L.) (gr.)—The ear.

Size.—Male, length 1 ft. 2 to 3 in.; expanse nearly 3 ft. Female slightly larger.

Plumage.—A pair in my collection which are figured on the plate, are as follows:--

MALE, bill nearly black; eyes orange; "horns" dark brown, edged with ochre yellow; face grey, intermixed with brown; the feathers of the frill pure white, tipped with dark brown; the whole of the upper parts finely mottled with grey, orange, and brown; primaries ochre, barred with blackish brown; tail yellowish, barred with brown above, pale underneath; breast and under parts yellowish white, with herring-bone stripes; legs and feet covered with yellowish hair-like feathers.

THE FEMALE is similar, but not so distinctly marked, having less or lighter brown, and more yellow in its plumage.

IMMATURE birds are like the adults, except that the plumage is duller in colour. *The length of ears* will sufficiently distinguish this species in all stages.

THE YOUNG is at first covered with white down.

VARIETIES. I have never heard of any variation in this species, except slightly in colour.

Note.—Most of the owls are well known in the country for their peculiar and dismal cries. Meyer resembles the note of this species to the word "hook." But generally the Long-eared Owl seems to be comparatively silent, except when young, at least this is the opinion expressed by Prof. Newton (Ed. of Yarrell.)

Migration.—Most if not all remain with us throughout the year.

Flight.—The flight of the owl is very

little observed owing to its nocturnal habits. When out in the middle of a forest we may occasionally see a light fleeting shadow flit silently past us, or see the bird to better advantage gliding swallow like, between the eye and the moon-lit sky.

Food.—The food of this species consists of rats, mice, moles, young rabbits and hares; also of small birds which it takes from the perch while at roost.

IN CONFINEMENT they may be fed upon the same, and will also eat raw meat. They are very easily tamed if taken from the nest while young, and are very interesting creatures on account of their grotesque appearance and habits. If kept in a house or about a stackyard they are very useful in clearing it of vermin such as rats and mice.

Habitat.—This species is found more or less in all the wooded districts of England, and most of Scotland and Ireland.

ABROAD it is found over the greater part of Europe, in India, and other parts of Asia, and in Africa.

Nest.—This species never builds a nest of its own, but adapts that of a crow or magpie, preferring those that are in a thick fir or ivy-covered tree, sometimes repairing it by the addition of a little wool or a few feathers. It also repairs the deserted "Arey" of the squirrel.

Eggs.—The eggs are white, and nearly of equal thickness at both ends. It number they are said to vary from three to seven, and are laid during the latter part of March or in April. It has been suggested that the eggs are laid at intervals of a week or more, and that the young hatch at equal intervals. I have no personal knowledge of this, and would be glad of communications on the point.

NOTES AND OBSERVATIONS

By W. H. BATH.

SPIDERS.—Has anybody observed a spiders nest on some palings or a hedge? It is a round ball of a silky nature, full of young spiders, who are generally of a yellowish colour when first hatched. If you give it the least touch it scatters in all directions, and produces a very curious appearance. If you wait a short time you will see them gradually coming back to it again when they think the danger is all over. In the early frosts at the beginning of autumn it is astonishing to see the countless multitudes of spiders webs on the hedges that have been revealed by the moisture settling upon them. For several mornings last September I observed great numbers on the hedges all along the railway. They were thickest in the most sheltered situations, and were so close together that it would seem a fly settling anywhere on the hedge would be certain to be caught by one of them.

CATS. We had a female tabby cat who used to catch a number of rabbits from the fields. She laid wait for them by their holes and pounced on them if they showed their faces outside. Several mornings she brought in two or three, they wore mostly very young ones, but several were quite large enough for cooking. The cat would never eat them herself.

A short time ago a friend of mine told me that a Sparrow Hawk settled on his lawn, when their cat rushed out to it. The hawk stood on its toes and pecked out at the cat the cat struck out to it with her paws. They both seemed to be afraid to assume the offensive, but to the annoyance of the witness, a dog came on to the scene and separated the combatants.

JACKDAWS are very fond of congregating with rooks, and I have often seen starlings

flying and feeding with them, but mostly with jackdaws.

On the oak trees, I noticed in December, numbers of leaves that had not fallen off, on looking to see what it was that prevented them from doing so, I found each leaf was curled up and contained a Micro pupa. The leaves were firmly attached to the twigs by means of threads which the larva had spun.

HARES.--I have often come upon a hare in the heather, stooping; one morning I nearly trod on one before I was aware of its presence. I have heard persons say that if you shout when you see a hare stooping it will be paralyzed for the moment, and not know from what direction the sound proceeds, gives you time to catch it. I have also been told by several persons that they have captured hares and rabbits by approaching them stealthily from behind. I have not myself been a witness to either of the facts. Mr. A. R. Hoole said that hares coming up a road or pathway, where you are standing, will sometimes come straight on if you will keep quite still. He has had them run between his legs. When I was in a turnip field a hare ran up the path where I was walking till he got within a dozen yards from me when I moved. I do not know whether it is from the position of their eyes or absentness or what cause. (See Y.N., Vol. II., page 215.)

GNATS.--I have seen gnats out all the year round, except in frosty weather, when they retire into the bark of trees and under leaves to escape from the cold. They appear in greatest number about midsummer. Anybody who has watched a swarm of gnats for a few minutes will be astonished at their antics, the whole swarm flying backwards and forwards with one motion.

MICE.--When a corn-rick was being taken down for threshing, I counted over 300 mice in it, of all ages and sizes. They were mostly of the common mouse (*Mus*

musculus), but there were a great number of field mice (*Mus messorius*). Some specimens were of a delicate pale fawn colour. There were multitudes of nests. We also counted about a dozen rats (*Mus decumanus*), but between men and dogs not many escaped. It was a complete slaughter. I once caught a white mouse, with black eyes, in the furnace of our back kitchen. I suppose some tame white mouse or mice must have escaped and bred with the common grey ones. I obtained a little field-mouse (*Mus messorius*) out of a hay field, I put it in a cage, but the next morning I found that it gone. It must have escaped between the bars which were only $\frac{1}{2}$ of an inch apart. It is surprising through what small holes rabbits also can get. I have seen young rabbits over a month old get through holes no larger than the size of a crown piece. A lady told me once she went into a stable and was surprised by seeing a quantity of mice scampering off in all directions. She observed a lame old mouse that could not get away itself being carried on the back of a young one. I have kept a great number of mice of all colours. I once had a white mouse that would sing whenever the piano was played. His voice very much resembled a canary's, but was very faint, and was not audible if there were the least noise. I have succeeded in taming the common house mice and making them run about over my shoulders, although I have had a bite now and then. A mouse's nest is a beautiful piece of workmanship, being exactly round. Several that I have found by digging in the pigeon pen were made of feathers and bits of straw nibbled upon into small pieces and inwoven with each other somewhat like a bird's nest. The young are blind when just born like kittens. I have never seen the old ones eat them, although I have handled them enough just after their birth. Generally there is an odd number at each birth, 3, 5, 7, or 9.

THE YOUNG NATURALIST.

E. G. MEEK,

NATURALIST,

56, BROMPTON ROAD, LONDON, S.W.

Supplies Entomologists with every requisite:—Steel Knuckle-jointed Net, 4/6. Self-acting Umbrella Net 7/6. Ladies Umbrella Net, 5/- Wire Ring Net, with Brass Screw 2/- Pocket Folding Net, four Brass Joints, 4/6. Balloon Net, 20 by 18, for beating, 6/- Telescope Nets, 6/-, 8/6, 10/6. Self acting Sweeping Net, 8/- The New beating Tray, for Collecting Larvæ, &c, 15/-, Pocket Larva boxes, -/6 1/-, 1/6, 2/-, and 3/. Sugaring Tin, with Brush affixed, Corked Setting Boards, -/6, -/7, -/8, -/9, -/10, -/11, 1/-, 1/2, 1/4, 1/6, 1/8, 1/10, and 2/- Breeding Cages, 2/6, ditto, with two compartments, 5/- Tin Y, -/6, Brass Y, 1/- Corked Store Boxes, best make. 2/6, 3/6, 4/-, 5/-, 6/-, ditto, covered in Green Cloth, book pattern, 16 by 11, 8/- Mahogany Pocket Box, with Glass and Slide in groove, 4/6 Exchange Lists, 1d. Entomological Pins, any size, gilt or plain, 1/- per box. Silvered pins, four sizes mixed, 1/- per oz., postage 1½d. Bottle of Mite Destroyer, 1/- Willow Chip Boxes, four sizes, nested, 2/6 per gross. Setting and Drying House, complete, 10/6, 12/6, 15/- and 20/- Pocket book, -/6, 1/- and 1/6. Postal box, -/6, Pocket Lanthorns 4/-, 5/-, and 10/6. A Zinc Oval Pocket Box, 1/6 2/-, and 2/6. Pupa Diggers 2/- and 3/- Brass Chloroform Bottles, 4/- The New Glass Killing Bottle, charged ready for use, 1/-, 1/3, and 1/6. A large assortment of British Insects kept in stock. Cabinets of every description made to order; estimates given. New price Lists sent on receipt of stamp. All orders, when accompanied by Post Office Orders, will receive immediate attention. Post Office Orders to be made payable at Brompton Road, S.W.

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 121.

FEBRUARY 25TH, 1882.

VOL. 3.

NATURAL HISTORY EDUCATION.

FEW will dispute that it would be better if some instruction on Natural History were introduced in our National System of Education. In fact the authorities themselves seem aware that it is wanted, for there are few schools in which we do not find hung on the walls, pictures of various animals, with some account of them printed below. Unfortunately, however, those in authority, while they have a sort of general idea that something is wanted, have little idea what it is, and still less how to give it. The pictures most generally seen are horses, cows, sheep, occasionally a camel, an elephant or a whale. Now there are few children able to go to school that do not know as much or more about most of these creatures than the school authorities propose to tell them. They know a horse when they see it, and know it is used for drawing burdens, for riding, &c., and that it eats grass or hay. They have seen it so used every day of their lives. So too with other animals, and there are few children whose acquaintance with animals does not extend even to elephants and

camels. Thus it happens that they learn nothing on the subject beyond what they knew before, or would soon have picked up.

With other matters of far less importance, systematic instruction is pushed almost to an extreme. Children who will have no after use for such knowledge learn the names and positions of the mountains, rivers, capes, and what not in all parts of the world; they learn how many different kind of verbs or nouns there are, and all about the cases, moods, tenses, and various other things that may be all right and necessary perhaps in their way. But this sort of instruction is not of more importance than similiar instruction on Natural History. Why should words be classified, nouns and verbs divided and sub-divided, while the great book of nature is practically closed? We do not think there are any great difficulties in the way of what we suggest, and will endeavour to give a few hints as to how it might be carried out. In the first place we would have every school to possess a museum to which the children could have access. Not a miscellaneous collection of rubbish from the four quarters of the globe, but a

small museum for practical every-day use. It need neither be large nor costly, and where there are several schools under one control, as in the case of a School Board in a large town, one museum might be made to answer for all the schools. Where the teacher was not competent to undertake such a matter, a competent man could always be found who would undertake the duty. In winter time lessons, illustrated by suitable diagrams and figures, could be given at fixed intervals, and in summer time he could conduct classes for excursions into the country, where the pupils would make the acquaintance of much that they had previously only heard of. These excursions would answer two purposes, for while additional instruction could be given on the spot as each new fact came under notice, the specimens observed could be brought home and prepared for the museum. The excursions themselves would prove greatly attractive, and if only those were allowed to go who appeared interested, the numbers would not become too large, and they would be encouraged to pay attention to the subject. Lessons in botany, entomology, &c., given out in the fields would never be forgotten, while the amount of knowledge thus obtained would be greater in amount and really more practical than could be got in any other way. Especially to town children would such a plan be beneficial, and many whose feeble constitution needs fresh air and exercise would gain new strength.

In this way the museum would not

cost much beyond the requisite cases, though it should also contain other things that would not, perhaps, be so easy for the little pupils to furnish, at any rate, at first. There should be a few stuffed birds, arranged in scientific order, and the specimens selected so as to show the more striking characteristics by which they are distinguished. There should be a collection of insects injurious to crops, and it should be so arranged and labelled that an examination of the contents would give all necessary information. A collection of plants would be easily made, and should show which were good for food or other use and which were poisonous. Advanced classes might be taken beyond the mere rudiments of the science, and, probably, many might be induced to take up natural history as an attractive pursuit for their leisure time. If what was taught in the school-room thus encouraged some of them to follow it up, they would be kept from many a temptation that besets the path of the idler.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 11 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

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Plate II. not being suitable for colouring, has been sent out plain, but an extra coloured plate will be given during the volume.

EXCHANGE.

Wanted, Vol. I. of the "Young Naturalist." Will give in exchange either of the following:—Vol. XV. of "Science Gossip" (1879), Vol. III. of "Midland Naturalist" (1880), or "The Home Naturalist." Also, will give several odd numbers of "Entomologist" (1881) for Nos. 54 to 63 of the "Young Naturalist," vol. II.—A. DAVIS' Jun., High Street, Great Marlow, Bucks.

PUBLICATIONS RECEIVED DURING FEBRUARY.

Rivista Scientifico-industriale e Giornale del Naturalist, No. 2, Vol. 14; *Coleoptera of the Liverpool District*, Part II, by J. W. ELLIS, L.R.C.P., L.R.C.S., Ed., &c.; *The Ichneumonidae*, by CHAS. H. WALKER; *The Frizinghall Naturalist*, Part 2, Vol. 2; *The Union Jack Naturalist*, No. 4.; *The Amateurs Arena*.

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(We shall be glad of additions to these lists.

Any one communicating with the above will please enclose stamped directed envelope for reply, or stamped directed label for return of specimens.

NOTES AND OBSERVATIONS

By W. H. BATH.

Lapwings are very plentiful at Wood farm. I saw vast flocks on ploughed fields when I was there. Their flight is very peculiar, turning over from side to side in the air, and look very pretty if the sun is shining upon them, turning over their black and white sides alternately, and gambolling and darting up and down as though they were possessed. The flaps of their wings can be heard a long way off. The farmers do not like to shoot them because they do good in eating the worms. Once in May I went into a ploughed field where they had laid their eggs in great abundance. The whole flock came flying round me, uttering cries of "Peweeet, peweeet." Some darted within a couple of yards off my head flapping their wings, while others ran along the ground close to where I was standing and pretended to be lame, in order to draw me away from their eggs. They are very difficult to find to an unexperienced ornithologist, looking so very much like the ground on which they are placed.

Stock Doves (*C. œnas*) build in low bushes. In August I saw several nests built in bushes. Some were overhanging pits of water. The nests were composed of small twigs like those of wood pigeons, but were on a smaller scale. One contained a pair of full-grown young ones which flew away at our approach.

Wood Pigeons (*C. palumbus*) build in pine trees, and I have often seen them build in hedges. Several nests in August contained eggs and young ones. One pigeon sitting on a nest containing newly hatched young wouldn't fly off till I had thrown several sticks up to her. At any other time they are very wild. The flaps of a wood pigeon's wings are quite startling when it rises up to fly. Mr. A. R. H. says that the way he shoots them is to lie in wait for them under brushwood in the evening when they are

returning home to roost. They are very shy birds, and can tell where there is danger a long way off.

I had a Quease given to me by a gentleman. It was wounded slightly in one of its wings and could not fly far. It fed ravenously on Indian corn, twice as much as any of the other pigeons. I kept it for about three weeks, but it died. I believe it was through the damp: it always would roost on the floor of the pen.

Several years ago, in the autumn, I saw several very long strings of wood pigeons flying in a southerly direction; very likely they were migrating.

I have kept domestic pigeons over eleven years, tumblers principally. They lay all the year round, at least, some pairs do, and breed about half-a-dozen times during the year. I have never succeeded in getting the pigeons to bring up three young ones in one nest, either one or the other of them would be starved to death. I know a noted pigeon fancier who allows the pigeons to sit on one egg only. The young one having sole attention grows up a very much finer pigeon, although in tumblers the smaller they are the better. I once produced a very small one, not so large as a thrush. It was very destitute of feathers. I believe it fell down a chimney, for I lost it suddenly.

COMMON SEA WEEDS OF THE BRITISH COASTS.

By JAMES MCGROUTHER, Glasgow.

SEA as well as land has its vegetation; its palms, its ferns and mosses; and although they are very different in structure and appearance from those which enliven our hills and plains, nevertheless, many exotic species rival in length our tallest trees.

To those "Flowers of the Ocean" we have unjustly given the appellation of *Sea Weeds*—sea weeds indeed, rather flowers!

Let any one examine them—their graceful fronds, their delicate thread-like branches of beautiful and complicated structure, and he will never again use the term without a grudge.

Although our weather-beaten coasts do not exhibit as many, and as beautiful varieties as those of more genial climes, still a little diligence will be amply rewarded by the discovery of many exquisite specimens.

It is true that many Algæ are more useful than ornamental, but these give employment to hundreds of poor people on the coasts of Scotland and Ireland, who, when a sufficient quantity has been collected, set fire to them, and thus make what is known by the name of Kelp—a substance largely used in the manufacture of glass.

Sea weeds, or Algæ as they are scientifically called, are divided into three great classes, MELANOSPERMÆ, RHODOSPERMÆ, and CHLOROSPERMÆ, or the olive-brown, the red and the green.

The first plant likely to attract your attention is the Common Bladder Wrack (*Fucus vesiculosus*), the most common of the *fuci*. It, along with the other representatives of the same family, covers in great abundance the rocks which are exposed when the tide retires. Another species, *F. nodosus*, much the same in appearance, is also very beautiful.

As you approach low water mark, the plants increase in size. Here the oar-weed, or tangle (*Laminaria digitata*), one of the largest of our British species, abounds. It consists of a very strong stem, the top of which branches out like a palm, and affords a safe retreat to many small crustacea.

Another plant of frequent occurrence is the *Chorda filum*, commonly known as "parten strings." In appearance it may be likened to a cord which gradually tapers towards each end. Being naturally viscous, and covered with very minute hairs, it is exceedingly difficult to hold.

Among the red-spored algæ, perhaps the most remarkable is the Common Coralline (*Corallina officinalis*). This plant has been the cause of great discussions between scientific persons as to whether it belonged to the animal or vegetable kingdom, and until recently it was assigned a place in the former, but it is now acknowledged as a plant. It possesses the curious property of coating itself with carbonate of lime which it extracts from the sea, the real plant being completely invisible. When thrown upon the shore by the waves, the vegetable portion is withered up and the chalky skeleton alone left.

Many algæ are used as food, notably the Dulse or Dillisk (*Rhodymenia palmata*). It is gathered in considerable quantities and forwarded to our large towns. On certain coasts it is found in great profusion, while on others it is of rare occurrence.

Another well-known edible algæ is the Irish moss (*Chondrus crispus*.) It is very variable in colour, and often assumes a yellow, or even a green tinge.

During the summer months the red dock-leaved Delesseria (*Delesseria sanguinea*), may often be found cast up by the waves. It closely resembles a leaf, and indeed is often mistaken for such. When mounted on paper it looks exceedingly well.

To the third series, CHLOROSPERMÆ, those who keep marine aquaria are much indebted. By placing a few of the more hardy species in the tank, the water is well supplied with oxygen, and thus the lives of the inhabitants are preserved.

The Sea Grass (*Enteromorpha compressa*), is a plant which may be easily recognized by its name. It seems to thrive best half-way between high and low water marks.

The Green Laver or Stoke (*Ulva latissima*) is the best plant for the aquarium, as it not only bears the confinement well, but also gives off an unlimited supply of oxygen. The colour is bright green, and the breadth

of the frond is generally about six or eight inches.

Before concluding, I would say a word as regards using *salt* water in mounting sea weeds. Fresh water is most decidedly better, as it frees the plants from salt. It is very difficult to get those to dry which have been mounted in salt water, and even when dry they absorb the damp, and in a short time are completely spoiled.

BRITISH MOTHS:

BY JOHN E. ROBSON,

(Assisted by Contributors to the Y.N.)

VII. EPHYRIDÆ. Six species in one genus occur in this family. They are of small size, all expanding a little more than an inch. Most of them have an eyed spot in the centre of the wing. The larvæ are slender, but of the usual form. The pupæ are very curious, being suspended by the tail, and with a silken thread round the body exactly like the pupa of a white butterfly.

VIII. ACIDALIDÆ. A family with between thirty and forty species in six genera, but more than three-fourths of them are in the typical genus *Acidalia*. Most of the imagines are of small size, expanding from three-quarters to an inch. They are mostly white, or various shades of grey or ochreous grey, with markings common to both wings. The hind wing of some species is angulated. The larvæ are smooth and slender; they feed mostly on low plants by night, and conceal themselves during the day. The pupæ are on the surface among leaves, or just below.

IX. CABERIDÆ. A family with only six species in three genera. With one exception the imagines are white; they expand rather over an inch. The larvæ feed on trees, and are of the usual form of the group. The pupa is in a cocoon upon or under the surface.

X. MACARIDÆ. This family only contains four or five species in two or three genera.

Aventia flexula, the beautiful hook-tip, already named as of uncertain location, is included here by Mr. Stainton. Dr. Staudinger includes it among the NOCTUINA, while Mr. Doubleday places it in a group by itself, which he calls AVENTIDÆ. The forewings of most of the species project at the tip, forming a slight hook, while the hind wings of most of them are rather angulated. The larvæ is of the usual form, and feed exposed on trees or shrubs. The pupæ are in a cocoon or in one case subterranean.

XI. FIDONIDÆ. In this family we have fifteen species in nine genera. Many of them are rather pretty, and in some cases there is considerable difference between the sexes. Some of the species fly in the day-time, even in the bright sun, and others appear very wakeful and will flit out when any one passes. They vary in size from three-quarters of an inch to nearly two inches, and vary equally in colour and style of marking, but several of the species have dark borders. The larvæ are of the usual shape, and feed mostly on low plants. The pupa is sometimes in a cocoon, generally subterranean,

XII. ZERENIDÆ. Only four British species in three genera occur. They are all white with black or grey markings, one species having also a yellow band across the wings. The larvæ feed on trees and are of the usual form. The pupæ are subterranean or on the surface, except *A. grossulariata*, which is suspended in a boat-shaped web. The pupa of this species also departs so far from the usual colouration that it is a bright shining black, with yellow rings at the abdominal segments.

XIII. LIGIDÆ. Only one species occurs here, which is a dull coloured insect with markings scarcely perceptible. The larva feeds on heath and is of the usual form. The pupa is subterranean.

XIV. HYBERNIDÆ. Six species in two genera are found in this family. They are all winter moths, and have been so fully

described in our pages lately that we will not take up space here by repeating it. The larvæ are rather long and slender, and feed mostly on trees or shrubs. The pupæ are subterranean. *A. æscularia* sits with the hind wings concealed beneath the forewings, and the hind wings are without markings.

XV. LARENTIDÆ. This family contains very nearly one hundred and fifty species in eighteen genera, including, as it does, about one half the British GEOMETRINA. General characteristics are not, therefore, easily given in a few words. The family includes the "Pugs," "Carpets," and many other well-known insects. The females of one genus have rudimentary wings, in all the others the sexes are alike or nearly so. The larvæ are of the usual form, and, as may be expected, are of very varied habits, but the majority feed exposed on trees or low plants. Some conceal themselves in leaves, others feed in the seeds, in flowers, &c., &c. The pupæ are also of the usual form, and are generally in a cocoon under the surface; some few are in a cocoon among leaves, under bark, &c.

XVII. EUBOLIDÆ. A small family of less than a dozen species, in five genera. They vary in size from one inch to nearly two, and have rather large wings, the tip of which is pointed, sometimes almost forming a hook. The larvæ are of the usual form, and feed exposed on low plants, concealing themselves during the day under the leaves of the food plant. The pupa are either subterranean or in a loose cocoon, and after the usual form.

XVIII. SIONIDÆ. A family of but a single species, the well-known "Chimney Sweeper," so called from the blackness of the wings. The larvæ and pupa are of the usual form.

The next group is the Pyralidina, but as many beginners do not collect them, and Dr. Staudinger includes them with his Microlepidoptera, they will be reserved for future consideration.

BRITISH ANTS—By G. C. BIGNELL.

(Continued from page 127.)

one bearing another worker between the mandibles. The worker from the large nest (which I shall call No. 1), would come up to the worker of the small nest, No. 2 (who was evidently just returning from a foraging expedition, and ignorant of what was going on at home), would exchange a few words, or something very closely allied, as if to say, "You must come with me." No. 2 indignantly replied, "No, I shall not, what have you to do with me?" No. 1. "You will have to come." No. 2. "If I must come, you will have to carry me." A very slight resistance followed, when No. 2 would turn over on its back, be immediately seized by No. 1, who at once returned towards the large formicarium. This was repeated almost every minute, in the path close to my feet, which No. 2 had to cross to get to its home. The struggle was carried on for many yards in the wood among the undergrowth, wherever the worker of No. 2 could be found. How long the battle lasted I know not. I watched them for about an hour; but before my departure, in order to remove all doubts from my mind as to the species, I boxed about a dozen of the Amazons and their prisoners, and sent half of them to the late Mr. F. Smith, who pronounced them all to be *Formica rufa*. The nest measured at the base about forty feet in circumference; and in the centre it was about three feet in height. The cold and wet seasons of 1879-80 destroyed it. Not a single worker could be seen on the spot in May, 1881.

2. *Formica congerens*, Nyl.

The MALE differs from *F. rufa* in having the eyes more densely and regularly hairy; the wings with pale yellowish nerves at the base, and less clouded; the abdomen dull, and all the segments above with black bristly hairs.

The FEMALE differs in having the eyes with very short, scattered, fine hairs, and the

abdomen covered with fine short sericeous adpressed grey pubescence. Scutellum dull.

The WORKER differs in having the thorax comparatively densely covered with hairs and the eyes hairy.

HABITAT.—It was first taken at Loch Rannoch in 1864; since that it has been taken at Bournemouth. The Rev. W. F. White states that *F. congerens* "is the common wood-ant of that unique watering-place, and constructs its nest on the same plan and architectural principles as *F. rufa*, which has not yet been found in the neighborhood." Since the above was written, the writer had occasion to pass through Bournemouth, and having four hours to spare visited a pine-wood about a mile from the town, saw only one ant-hill, and brought away twenty-one workers from it, which are certainly *F. rufa*.

Forel and Emery, the latest authorities on ants, consider this as only a race of *F. rufa*, with which I quite agree.

3. *Formica sanguinea*, Ltr.

Resembling *F. rufa*, the female and worker much brighter in colouring.

The MALE differs in having the mandibles with three to five teeth and the clypeus emarginate (plate 5, fig. 9). The thorax also has only a few isolated bristly hairs. Length, 9 mill.

The FEMALE differs in the brightness and extent of the red colour, the thorax sometimes being entirely red, and in having the clypeus emarginate and the frontal area dull. Length, 9-10 mill.

The WORKER differs much in the same respects as the female. The thorax is generally unspotted and the legs are slightly fuscous; the scale of the petiole and clypeus emarginate and the frontal area dull. Some of the pale varieties of *F. cunicularia* resemble it closely in colour, but the emarginate clypeus will distinguish it at once. Length, 5-9 mill.

HABITAT.—Weybridge, Chobham Heath,
(Continued on page 169.)

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VOL. 3.

DARWINISM.

FIFTH PAPER.

SELECTION BY MAN.

SO far we have spoken only in general terms of what may result from natural selection or from selection by man under domestication. It will be well before we leave this branch of the subject to speak more particularly of what has actually been done. Mr. Darwin for many years reared pigeons that he might study their changes of form more closely. We will therefore illustrate the point by reference to domestic pigeons, and that it may be better understood we will give a plate (6), on which are depicted some of the more striking forms of these birds as now existing. It is generally understood that all races of the domestic pigeon have sprung from the Blue Rock, or Rock Pigeon (Fig. 1, Pl. 6), a not uncommon bird in many parts of the country. Mr. Darwin argues at some length on the origin of our domestic birds, and shows that if they have not all sprung from the Blue Rock (*C. livia*) they must have sprung from other pigeons that were not arboreal in their habits. But there are only three or

four other rock pigeons known "and these have not any of the characters of the domestic breeds." Besides this the common domestic pigeon has often escaped in numbers, and has been known to join the Rock pigeon, fly with it, feed with it, and nest with it. The common Skemy is but one remove from the wild bird, and had the other forms sprung from some other pigeon, equal opportunities have been afforded for them joining their ancestors as these have done, in other parts of the world, to which the various domestic races have been exported. Mr. Darwin points out also that our best marked forms—the carrier (Fig. 6, Pl. 6), the tumbler, the jacobin (Fig. 4, Pl. 6), the pouter (Fig. 5, Pl. 6), or the fantail (Fig. 2, Pl. 6), do not in their distinguishing characteristics resemble any known race of wild pigeon; and, therefore, if they had been originally reared from distinct species, all these extraordinary abnormal species have died out since, "So many strange contingencies are improbable in the highest degree." He describes the colour and markings of the Rock pigeon. Some of the peculiarities are shared by other wild birds, but there are certain marks that do not

occur together in any other species. Now most of the domestic races "breed very true"; that is, white fantails produce white fantails; black barbs produce barbs, and so on; and the production of markings, peculiar to the original type, by crossing birds from which these marks or peculiarities had been entirely eliminated, can only be accounted for on the principle of reversion, a subject on which we may enlarge on another occasion. One experiment had better be told in Mr. Darwin's own words. "I crossed some white fantails, which breed very true, with some black barbs—and it so happens that that blue varieties of the barb are so rare that I never heard of one instance in England; and the mongrels were black, brown, and mottled. I also crossed a barb with a spot, which is a white bird with a red tail, and a red spot on the forehead, and which notoriously breeds very true; the mongrels were dusky and mottled. I then crossed one of the mongrel barb-fantails with a mongrel barb-spot, and they produced a bird of as beautiful a blue colour, with the white lines, double black wing bar, and barred and white-edged tail feathers as any wild rock pigeon!" Mr. Darwin tells us that there is no instance of "crossed descendants reverting to an ancestor of foreign blood" removed by more than a dozen or twenty generations. We certainly know that there has been no ancestor of foreign blood within hundreds or perhaps thousands of generations, and a reversion like this is only

explainable on the assumption that all these races spring from that common ancestor so well known to bear these peculiarities. Another strong argument in favour of this position is the perfect fertility with each other, of all our domestic breeds. It is also known that the Rock Dove is easily domesticated now, and when so reared agrees in many of its habits with the domestic breeds, as they do when run wild with the habits of their supposed progenitors. But our space will not permit us to enlarge, and we must reserve for another paper our remarks on the marked differences of those birds that figure on our illustrative plate.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

D.D., Edinbro'.—We believe neither of the catalogues you name are procurable now. We have in contemplation an Illustrated Catalogue of British Beetles, of which we hope shortly to be able to announce particulars.

EXCHANGE.

DUPLICATES.—Imagines of *Zonaria*, male and female. DESIDERATA.—Very numerous. N.B.—If the specimens be desired alive, please write early.—R. A. FRASER, Seafield, Abbotsford Road, Great Crosby.

Will give to anybody who will send box, live or dead specimens of *Phigalia pilosaria* and *Hybernia progemma*, *H. ericetorum*, *L. stagnalis*, *L. peregra* and other snails. Botanical specimens, bullrushes, fern roots or leaves, flowers for pressing, &c.: will procure for those who would like them. Please state particulars. W. H. BATH, Manor Villa, Sutton Coldfield.

NOTES AND OBSERVATIONS

CALLUNA VULGARIS, ERICA CINEREA AND TETRALIX.—Your correspondent, Mr W. H. Bath, records the flowering of the above-named plants on the 11th December (Y.N. vol. iii., p. 100). I have never seen any of them in flower here before the end of June or beginning of July, but as the flowers of all the species are very *persistent*, they are doubtless *last year's* flowers which he has seen.—J. W. CARTER.

O. PUDIBUNDA, &c.—A female *O. pudibunda* emerged in my breeding cage to-day, which seems very early. I think the proper time is May. The only insects I have captured this year are *H. rupicapra* on the 10th inst., and *P. pilosaria* on the 16th, but I have had little time lately for entomology.—A. K. A. CÆSAR, Cao College, Cambridge.

NATURAL HISTORY NOTES FROM GREAT MARLOW, 1882.—Honeysuckle (*Lonicera periclymenum*) in leaf, January 1st. Daisy (*Bellis perennis*) in flower, January 4th. Red Nettle (*Lamium purpureum*) in flower, January 11th. Groundsel (*Senecio vulgaris*) in flower, January 13th. White Nettle (*Lamium album*) in flower, January 14th. Buttercup (*Ranunculus acris*) in flower, January 21st. Five-spot Ladybird seen, January 21st. Furze (*Ulex europæus*) in flower, January 21st. Hazel (*Corylus avellana*) male catkins in flower, January 21st. Dandelion (*Taraxacum dens-leonis*) in flower, January 21st. Robin's nest (*Erythaca rubecula*) with three freshly-laid eggs, January

21st. Shepherd's purse (*Capsella bursa-pastoris*) in flower, January 28th. Sweet Violet (*Viola odorata*) in flower, February 2nd. Snowdrop (*Galanthus nivalis*) (wild) in flower, February 12th. Spurge Laurel (*Daphne laureola*) in flower, February 12th. Primrose (*Primula vulgaris*) in flower, February 12th. Dor beetle (*Geotrupes vernalis*) seen, February 12th. Bees first seen on the wing, February 12th. Dog's mercury (*Mercurialis perennis*) in flower, February 12th. Palm Willow (*Salix*) in flower, February 12th. Field Speedwell (*Veronica officinalis*) in flower, February 12th. Small tortoise-shell butterfly (*Vanessa urticae*) seen, February 14th.—A. DAVIS, Jun., High Street, Great Marlow, Bucks.

GENERAL NOTES FROM WORCESTERSHIRE.—Snowdrop (*Galanthus Nivalis*), and Dog's Mercury (*Mercurialis Perennis*), in flower, January 16th. Primrose (*Primula Vulgaris*) in flower, January 17th. Pheasant's-Eye (*Adonis Autumnalis*), and Red Dead Nettle (*Lamium purpureum*) in flower, February 1st. Dandelion (*Leontodon Taraxacum*) in flower, February 5th. Lesser Celandine (*Ranunculus ficaria*) in flower, February 13th. Daisy (*Bellis Perennis*), Wood Strawberry (*Fragaria Vesca*), and Barren Strawberry (*Potentilla Fragariastrum*) in flower, February 13th; there have been a few plants of the three last in flower all the winter. Marsh Marigold (*Caltha Palustris*) in flower, February 14th. Sallow in blossom, February 17th. Honeysuckle (*Lonicera Periclymenum*) in leaf, February 18th. Oxlip (*Primula Elatior*) in flower, February 21st. Sparrows building, February 5th. Saw the first Pied Wagtail, February 13th, and the first Grey Wagtail, February 22nd. *P. pilosaria* from chrysalis, February 8th, first this year; *E. lanestris* from chrysalis, February 19th, first this year.—N. PRESCOTT DECIE, Bockleton Court, Tenbury, Worcestershire.

STOCK DOVES.—Mr. Bath, in his "Notes and Observations," says that "Stock Doves

(*C. ænas*) build in low bushes," but this is by no means always the case. We find their nests in holes in trees, generally in apple trees; and Morris says they build either in holes in trees, or on the ground under some bush, or sometimes in a deserted rabbit burrow. I did not know they ever built in bushes.—N. PRESCOTT DECIE.

CAPTURES NEAR LIVERPOOL.—*January 15th.*—At roots of trees in Eastham Wood, besides pupæ of *Teniochampæ* and *P. pilosaria*, I took the following beetles:—*Leistus fulvibarbis*, *L. rufescens*, *Dromius quadrinotatus*, *Anchomenus prasinus*, *A. parum-punctatus*, *Calathus melanocephalus*, *Tachyporus hypnorum*, *T. obtusus*, *Philonthus intermedius* (new to the district), *P. laminatus*, *O. æneus*, *Stenus providus*, and *Aphodius rufipes*. Mr. Smedley took a hibernating specimen of *Necrophorus humator* at the foot of a tree.

February 11th.—Bidston Hill. Larvæ of *Agrotis porphyrea* fairly abundant on heath (*Erica cinerea*), which they seem to prefer to the ling (*calluna*). Cases of *Coleophora cespititiella* very abundant on the seed of the rush. I took a long series of *Bradycellus similis* under heath, among the dead leaves.

March 1st.—Storeton fir plantations. I took two specimens of *Trachea piniperda* and one of *Larentia multistrigaria* sitting on the tree trunks. *Coccinella oblongo-guttata* was very abundant, and *C. 18-guttata* fairly common on the fir trunks, the former being variable in its markings. If any of the readers of the Y.N. would like living specimens of this fine insect I shall be glad to supply them in the course of a week or so.

March 3rd.—Wallasey sandhills. *Nyssia zonaria* fairly common. At the meeting of our Entomological Society on Monday evening last, Mr. Nicholas Cooke remarked that he had found this species emerged on the 10th of last February—a month earlier than its usual time, and a proof—if such were wanting—of the mildness of the season. I have bred a number of females of this

insect—the larvæ of which were exceedingly abundant last summer—but only, so far, a single male. Several of my friends have also noticed that the females seem much easier to breed than the males. *Bombyx rubi* larvæ are just emerging from their winter quarters, as also are the larvæ of *Arctia fuliginosa*. *Aphodius inquinatus* was flying about in the few gleams of sunshine during the afternoon. This is much earlier than I have seen this insect—which is a favourite of mine—in previous years. This also I shall be glad to send alive to any young (or old) coleopterists. I should feel obliged if your readers who know this genus would kindly let me have lists of the species of *Aphodius* which occur in their respective localities, with any notes as to abundance, or scarcity, or habitat, which they can attach to the lists.—Dr. JOHN W. ELLIS, 101, Everton Road, Liverpool, March 4th, 1882.

THE BIRMINGHAM & MIDLAND COUNTIES NATURALIST FIELD CLUB.

An excursion was made on Saturday, 4th March, 1882, to Sutton Chase, by a few members of the above club. We started from New Street Station, by 2.15 p.m. train, and reached there just before 3.0 o'clock. We commenced operations in Holly Hurst, by digging for pupæ. Afterwards we had a search for moths, and took great quantities of *Phigalia*, *Pilosoria*, and *Hybernia Progemmemaria*. The weather was very fine all the time. Squire Bath kindly invited us to his house to tea, where we spent a very pleasant evening, looking at his collections. We returned home again by the 9.15 train.

IN RE AUTUMNARIA.

It is due to Mr. Gregson that we should enter into some little explanation with regard to the production of the following letter, with which we hope this unpleasant con-

troversy may terminate. In No. 114, p. 82, we say "we have read *all* the correspondence," by which we meant, all the correspondence between Messrs. Harbour and Tugwell, but which expression we must admit was open to a wider interpretation. Mr. Gregson tells us he understood the sentence to include all Harbour's correspondence on the subject with any one. He therefore did not trouble to send us the letter asked for, believing we had already seen it. He sent us a communication for publication, giving that reason for not having sent it. We then told him we had not seen it, and Mr. G. replied at once that he had misunderstood our remark, that the letter was not in his possession, but that we should have it as soon as he could get it back. We received it from him accordingly on the 26th February, and it should have been published last week, but we had not the permission of the gentleman to whom it was addressed. His Mr. Gregson forwarded later on, and the letter is now given in full, from the original in our hands. We were aware (see page 83, col. 2), that Mr. Harbour had said something of this sort while labouring under the impression that Mr. Tugwell had recognized the larva in his breeding cage. Our readers will draw their own conclusions from the letter now given. Mr. Gregson maintains that it bears the construction he put upon it, while others may think it contains a mere idle threat. The history will be found in No. 114 and though much more correspondence has reached us us since, we do not know, now that this letter is given, that there is any advantage in referring to any of it. The letter in question is as follows—we print in italics the portion quoted by Mr. Gregson.

"1, Landport Cottages, Deal.

"Dear Sir,

"Accept my thanks for the insects sent, one box came in last night, the other two this morning. I have unpacked one, and enclosed the four *Centonalis*, which I hope will prove satisfactory, to post by early mail on Monday, will send the others by evening mail all well. My special thanks for sending me two speci-

mens each of *Betularia* and *Valezina*, they are truly beautiful, and I am pleased with them all. I don't despair of getting *Amiaria* yet, and of having the pleasure of having some to offer you, not like Mr. Tugwell's, which are, or will be, the third time of breeding. I bred the eggs from the lamp-aken mother, he had eggs from those and now he has got eggs again, so that they will be well inbred, but I suppose he will not have done with them yet. *One goat turn deserves another, and as he deceived me and told me an untruth what would he think if I was to write to the "Entomologist," and say that the eggs I sent him were from foreign parents, and not taken from a lamp (which is true), as I bred those.* But I will think this over, and consult my friends here, but I will serve him some trick for his falseness, and I think that would do it most effectually; but I never saw or had a foreign specimen, as I should have recognized them. Again thanking you, believe me, yours truly, R. HARBOUR."

CAPTURED IN THE NEIGHBOURHOOD OF BOCKLETON,

Situated five miles south of Tenbury, in the county of Worcester, in 1881.

(Continued from page 107.)

- L. Comma, 4
- L. Pallens, 1
- H. Nictitans, 14
- H. Micea, 1
- X. Rurca, 9
- X. Lithoxylea, 5
- X. Polyodon, numerous
- H. Popularis, 9
- C. Graminis, 1
- M. Brassicæ, 3
- A. Basilinea, 1
- A. Oculea, 1
- M. Strigilis, numerous.
- G. Trilinea, 1
- A. Exclamationis, very numerous
- T. Janthina, 2
- T. Pronuba, very numerous
- N. Augur, 7
- N. Plecta, 6
- N. C-Nigrum, 2
- N. Festiva, 1
- N. Rubi, 1
- N. Xanthographa, 1

T. Gothica, numerous
 T. Instabilis, 6
 T. Stabilis, numerous
 T. Gracilis, 2
 T. Munda, 1
 T. Cruda, a few
 S. Sattellitia, 2
 C. Trapezina, 8
 D. Capsincola, 1
 P. Chi, 5
 P. Meticulosa, 1

(To be continued).

ECONOMIC ENTOMOLOGY.

BY S. L. MOSLEY.

THE term Economic Entomology, I scarcely need explain, is intended to refer to the study of those insects which, "for better or for worse," in one way or another, affect the well being of man. Lately it has been somewhat restricted to those insects which affect our vegetable crops, but in its widest sense, and the sense in which it will be used in these papers, it refers to *all* insects which are, directly or indirectly, injurious or beneficial to the human race. In discriminating between our true friends, foes, and neutrals, it is sometimes a matter of no easy task, for while a particular insect may be a benefit when it exists in limited numbers, when it becomes too numerous it becomes a positive injury. To kill, therefore, every insect we see of some particular kinds, would be an act of folly, while on the other hand there are species which *seem* to be of no benefit whatever. Nature, if left to herself, will never err, and if any insect appears in superabundance in any particular season there is some reason for such appearance, and nature herself will also provide the antidote. But, as Edward Newman says, if a farmer tries to make a certain piece of ground produce more turnips than nature ever intended it should, the farmer must not be surprised if nature makes an effort to produce a number of caterpillars

equal to the supply of their (turnip) food. The food being in plenty, and the enemies of the grubs, such as rooks, partridges, &c., being shot off, often enough by the farmer himself, they (the grubs) are enabled to revel in peace, and to totally demolish not only the superabundant crop, but the entire crop. It, therefore, is clear, as must appear to every thinking mind, that a knowledge of the insect world is of paramount importance to the grower of plants; and as we cannot tell of any child what avocation it shall pursue in after life, it is also of importance that such instruction should be taught, without which no education can be considered complete. But as the state system at present lacks such instruction, the deficiency is being tried to be met in some degree by getting up collections in our public museums showing the various kinds of insects which come under this head, and the following notes are intended as a guide to the formation of such a collection.

As no scientific arrangement can be adopted in such a collection, the alphabetical will, in part, be used, as being the simplest for reference, and by this all the insects injurious in a certain way can be brought under one head, confining ourselves to such only as affect the British subject.

1. Man's Personal Enemies,

or such as attack his person and do him injury or annoyance.

Ants.—A small species of ant is sometimes a great nuisance in houses, swarming to such an extent as to get into everything, causing great annoyance when found mixed up with the eatables. Some of the metropolitan districts have been particularly infested.

REMEDIES.—Perhaps a hedgehog would be of service in clearing off the vermin, or a toad, but popular prejudice would, no doubt, object to the latter harmless benefactor. The "insect powders" sold by chemists and which are a vegetable preparation would

likewise be effective in keeping them out of drawers or other places where it was strewn.

Bed-bug.—This disgusting pest is always the result of a filthy state of the furniture. Often it causes great annoyance to persons of cleanly habits to find that a house they have just taken, or a piece of furniture they have just bought is infested with bugs.

REMEDIES.—If it be a bed or other piece of furniture that is infested, take it out of doors and take all the parts asunder that can be got, well clean the joints and every part. Then procure some *mineral naphtha*, and with a long-nosed oil-can pour some of the liquid into every joint that cannot be undone: By this means I have known infested furniture to be thoroughly cleared. Should it be the house that is infested, pour some of the liquid under the skirtings and into the joints of the floor, plugging all crevices up with putty, and keeping a diligent after-watch. It is said that the cockroach is an enemy to these insects.

Body Louse.—Two kinds of lice infest the body of the human subject. One is called *Pediculus vestimenti*, and is similar to, but larger than, the head louse. It is found on various parts of the body of uncleanly persons. The other is a different creature, being shorter and broader, with strong hind legs and bent claws, by which it clings tenaciously to the skin on any part of the body where there is hair except the head. Its name is *Phthirius inguinalis*.

REMEDIES.—The best remedy for these vermin, and the one said to be used in the London hospitals, is "the application of white precipitate," which is bicarbonate of mercury (*poison*) in the form of an ointment."—*Murrey*. This preparation may be had at most chemists, and should be rubbed upon the parts affected. Cleanliness is the best preventative.

Cockroach.—Persons generally consider it a nuisance to have their houses over-

run with these insects, though they are injurious in a certain degree, they are also of some benefit. Cockroaches generally infest houses where crumbs, bones, and other refuse from the kitchen are thrown carelessly about. Upon these the cockroach feeds, and by this means prevents their decay, and if these were not there it could not exist, but being tempted by these dainties to take up his habitation and make his home, he does not content himself with the refuse of the kitchen only, but when that supply fails he will attack the leather of boots, clothing, corks, and other articles, which make his presence very unwelcome.

REMEDIES.—The best means of getting rid of these creatures, or preventing their appearance, is care in not allowing particles of edible matter to accumulate. I once took a house that was badly infested, but at the end of a few months they were a great rarity. Their presence was caused, doubtless, by the carelessness of the previous tenants; but by the above precautions, and by getting up in the middle of the night, suddenly striking a light and firing away with the sole of a slipper they were soon cleared off. N.B.—Weak-nerved persons had better put their slippers on, as it is not an over pleasant sensation before you strike the light to put your bare foot upon a fat, full-fed cockroach. Sulphur powder is good for getting rid of any insect pests, and a hedgehog is said to be particularly useful in clearing these insects.

Flea.—The flea is another insect which gets its living by sucking our blood, and is a great pest in hot weather.

REMEDIES.—If bedding be badly infested the best thing to do is either to burn it or stove it at a very high temperature. In moderate attacks there appears to be no better plan than catching and killing them singly. Sulphur powder and charcoal are also said to be effective.

(To be continued.)

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No. 123.

MARCH 18TH, 1882.

VOL. 3.

A DAY'S SHELL HUNTING NEAR BIRMINGHAM.

By GEO. F. WHEELDON and P. T. DEARIN.

ON Sunday last, the 5th March, after providing ourselves with pill boxes and a small basket, we took train for Perry Barr, and after twenty minutes riding arrived there. Leaving the station we turned towards Walsall, and a walk of a few minutes brought us to the valley of the Tame, where we stayed a short time watching the rooks flying about their nests, in a group of trees on the river's bank. Near here our first captures were made, a fine specimen of *Zonites cellarius*, among the dead leaves at the foot of a wall. Continuing our way for half a mile, with thorn hedges on each side of the road just coming into leaf, and the banks covered with flowers of the Dog's Mercury (*Mercurialis perennis*), we came to where the road passes over the canal. Larks now began to be seen and heard, rising out of the adjoining fields; one rose close to the hedge, and at about ten feet high was right over the centre of the highway, there it stopped fluttering and singing for a few moments when it soared up

again and was almost lost to sight. The Blue Titmice (*Parus caeruleus*), next made their appearance, playing about the hedges and keeping a few yards in front of us. The Hedge Sparrows (*A. modularis*), and Chaffinches (*F. caelebs*) were singing in the hedges and trees by the wayside. Soon after passing into Great Barr we came upon a damp sandy bank covered with a luxuriant carpet of moss. This proved to be a fine locality, for we took several *Helix nemoralis*, also variety *hortensis* (hybernated), both plain yellow and the banded specimens, and some fair *Zonites nitidus*, whilst *Helix rotundata* and the rare *Cochlicopa tridens* were very abundant, two or three being under every piece of moss. After leaving this bank nothing of interest was noticed for the next two or three miles till we came to the Rushall Canal, where we turned to the left down the towing path. The canal here is cut through a bed of Wenlock limestone, and fossils are plentiful, both in the rock itself and washed down by the rain. In less than twenty minutes we had secured some fine (fossil) specimens of *Atrypa reticularis*,

A. affinis, *Rhynconella*, segments of Encrinite stem, small cup corals, fragments of several pieces of coral, and a fragment of a star fish—a very pretty object. After leaving the cutting the canal runs along an embankment, at the bottom of which, under pieces of moss-covered rock and coal thrown out of the passing canal boats, we found *Cochlicopa tridens* (common), *Zonites nitidus* (pretty common), *Z. celarius* and *Helix hispida* (uncommon), two or three specimens of a minute *Zonites* which at present we are unable to name, and *Helix rotundata* (very abundant). A little further on we came to a small bridge through which a little stream ran under the canal, here among the moss and grass overhanging the arch we found a fair number of *Clausilia rugosa*. At the foot of the bridge on pulling some of the grass away we found *Vitрина pellucida*, *H. rotundata*, and *Z. nitidus*. Just past here, in a small ditch in a field, we found *Limnæa peregra* in abundance. We next tried dredging the canal, but found nothing except a dead specimen of *Dreissena polymorpha*. The embankment and fields along the sides were bright with Coltsfoot flowers, (*Tussilago farfara*), while the hedges were festooned with the long male flowers of the Hazel (*Corylus avellana*). We now turned our steps homewards, caught a train again at Perry Barr, and arrived in Birmingham very

tired, but very well pleased with our days excursion.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due.

Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

C.H.H.W., Liverpool.—We have reared *D. templi* successfully by placing the larvæ in a large flower pot, and supplying them with cut stems of cow parsnip (*Heracleum sphondylium*.)

NOTES AND OBSERVATIONS

ANTS.—Now Mr. G. C. Bignell is good enough to give us the family history of Ants, I thought it apropos in mentioning that I observed last summer, when rambling through a wood near the New Forest, a nest of Ants in the stump of a tree, and from Mr. Bignell's description, I firmly believe they were *Formica rufa*. I watched the movements of these busy creatures for some time, and I observed (what I thought) a singular fact, that many of them were ejecting some clear fluid from the extremity of the abdomen, which looked like small dew drops, about the size of a pin's head, scattered over the decayed wood. On close examination I found this fluid was somewhat gummy like, the viscid globules in a spider's web, in fact I thought at once it served as a species of bird-lime to detain its prey. Can any of your correspondents inform me whether this is a common occurrence?—THOS. W. KING, 3, The Terrace, Camberwell.

BIRMINGHAM NOTES.

January 1st. REDBREAST (*Sylvia rubecula*). Heard a great number singing at Sutton this morning. In the winter-time robins seem to frequent orchards and gardens mostly. I hardly ever see them very far from houses; but in summer-time, when food is more plentiful, they go farther away into the fields and woods. I have heard robins singing all the year round. In the summer I have heard them singing both day and night. One moonlight night (about 12 p.m.) in June I was awakened by a robin singing loudly on an elder-tree close to my bedroom window. At first I thought it was a nightingale. I could hear him very plainly, everything else being so quiet. He sang for about half-an-hour. Last May for several mornings before it was light I heard robins singing. They make good cage birds when reared up from the nest. I have seen several recently in the Birmingham Market Hall. Their price is about 1s. or 1s. 6d. each. Those that sing would be a little more.

PARIDÆ.—The Long Tailed Tit frequents woods and copses, and very seldom comes near the habitation of man; but the Great, Blue, and Cole Tits all frequent houses and build in them. I have not unfrequently found nests of the Blue Tit in holes in old walls.

January 8th.—Saw a single Field-fare at Sutton this morning. I have hardly seen any here at all this winter, although Hips and Haws are extremely plentiful everywhere. I have not seen the like for several winters. Saw a Blackbird feeding on hawthorn berries in a lane. Blackbirds make a peculiar wattle noise when disturbed: it can hardly be described in words. Saw a flock of Brown Linnets on a ploughed field. They seemed all to be hens.

MOLES.—I observed this morning several fields completely covered with mole heaps. I counted over two hundred in a very small space. Moles generally frequent meadows in the vicinity of water.—W. H. BATH.

ECONOMIC ENTOMOLOGY.

By S. L. MOSLEY.

(Continued from page 151.)

Gnats and Flies.—The gnat is one of those insects which act in two ways. We will now speak only of the annoyance it causes, reserving its good qualities for remark under beneficial insects. I do not think the large species (*Pulex pipiens*) causes much damage, simply a slight annoyance by its too great numbers in dwelling houses in the proximity of stagnant pools. But in North Yorkshire I have noticed a smaller species, which makes a singing noise in its flight. At hay-time these are sometimes very numerous, and the necks of the mowers are blistered to great pain by the suckers of these little creatures. Besides gnats, many other species of blood-sucking flies cause great pain by the insertion of their suckers into our flesh. The large *Labanus bovinus* will come wheeling round ones head with a very unpleasant buzz, and would do mischief if not driven off.

REMEDIES.—All insectivorous birds and animals should be encouraged as being natural remedies against insect pests. The swallow and martin are particularly destructive to gnats, and spiders destroy a large quantity of flies. The application of some preparation, such as the "white precipitate," to the bare parts of the skin would, most likely, be a means of keeping them off persons much exposed to their attacks.

Harvest Mite.—This is the *Tetranychus autumnalis* of naturalists. It is a very minute red insect, and is sometimes very abundant among various kinds of plants in the autumn. When it has the opportunity it attacks the human species, especially those with tender skins. It fastens upon the skin and is very difficult to remove. It will even bore its way underneath the skin, as I know from experience, and produce intolerable itching, raising the skin up in blisters where it enters. Once, when on an entomological

expedition in the New Forest, I was awoke one night by a pain in my arm, and upon striking a light, I found an insect had penetrated half way into the flesh, which, in my endeavour to extract, I pulled in two. This, however, was much larger than the harvest bug, and I regret I did not preserve it or note the species.

REMEDIES.—The means used to get rid of these pests are, rubbing the skin with sulphur ointment, benzine, oil of petroleum, or phenic acid.

(To be continued.)

BRITISH BIRDS, THEIR NESTS AND EGGS.

By S. L. MOSLEY.

SHORT-EARED OWL.

Strix brachyotus, Forst.

BRACHYOTUS.—*Brachys* (Gr.), short; *Otus* (Gr.), the ear.

Size.—Male, length about 1ft. 2in.; expanse rather over 3ft. Female rather larger.

Plumage.—The following descriptions are taken from a pair in my own collection:

MALE.—Bill nearly black; eyes reddish yellow; the frill of feathers surrounding the eyes are dark in the centre, shading off to white at the outer extremes. The ears, which are much shorter than in the last species, are composed of a few feathers which are blackish brown in the centre and ochreous at the edges. The whole of the upper parts are of the same colours, each feather being pale ochreous, or whitish, and having a dark centre. The primaries are ochreous tinged with orange, and barred with brown. Tail ochreous, with about seven brown bars; under parts lighter, in some specimens nearly white, with longitudinal brown stripes which are thickest towards the throat

THE FEMALE is darker in colour than the male, the yellow being deeper and the dark patches more pronounced.

IMMATURE birds are darker and browner in colour, and the markings larger, and the eyes lighter than in adult birds.

THE YOUNG, according to Dresser, is "covered with close, soft down; upper parts dull dark brown; the down tipped with warm ochreous; forehead and round the eye deep brown; under parts ochraceous; the throat and upper breast clouded with sooty brown.

VARIETIES sometimes occur very pale in colour, the ochreous colour being entirely absent, leaving the ground colour white; the dark markings rather paler, giving the bird a very grey appearance. This variety is not peculiar to either sex.

Migration.—This is a migratory species, arriving in this country about the first week in October and departing in March, though not unfrequently it remains to breed. Coming, as it does, about the same time as the Woodcock, it is known in some districts as the Woodcock Owl. Upon its arrival it is generally found in some abundance in all the eastern counties. Its prey draws it into the vicinity of corn and stubble fields, where it is sometimes congregated in large numbers. At Flambro' Head some men begun to cut a field of corn, and seeing an owl they procured a gun and brought the marauder to the ground. As they proceeded with their work, owl after owl sprung up; each in turn were brought down, until when the field was done they had slain fourteen. Of course, this is only farmer-like, and quite compatitive with an Englishman's stupidity: the owls being there for the very awful crime of killing mice, they must be brought to the (iron) bar of (in)justice.

But man, proud man!

Drest in a little brief authority;

Most ignorant of what he's most assured.

His glassy essence—like an angry ape,

Plays such fantastic tricks before high heaven,

As make the angels weep."—SHAKESPEARE.

Note.—The note of this species is said to resemble the words "Kiow" or "Keaw."

Flight.—The flight of this owl seems to be more diurnal than any other of the British species, flying generally in a pretty straight line by repeated and easy flaps of the wings.

Food.—Its food consists of rats, mice, and large insects; but when these are not procurable it will attack small birds up to the size of a plover. It will also eat reptiles.

IN CONFINEMENT it may be treated to a similar diet, with the addition of butcher's meat.

Habitat.—In this country the short-eared owl seems most numerous along the eastern counties of England. It is also found in parts of Scotland and Ireland. It seems more of a ground bird than the other species of owls, very seldom alighting in trees.

ABROAD it is found in most parts of Europe, also in various parts of Asia; in America, from the arctic regions to far south; and in Africa and the Sandwich Islands.

Nest.—Little or no nest is made, a hollow being simply scraped out on the ground beneath the shelter of some overhanging tuft of heather or other vegetation. The site chosen is generally upon a moor or heath. When any material at all is used it is generally some dry grass or something of that sort.

Eggs.—Four or five eggs are laid, but sometimes the number reaches six or even seven. They are white, and generally of a very rounded form. This species seems to breed rather later than the last.

A DAY AT THE "GHOST GROUND."

By R. CHRISTIE, Glasgow.

WHAT a charm there is in the very name of Summer, and at the return of this lovely season how the hearts of all are gladdened!

The scenes which nature at this period afford, conspire to render it a season of pleasure and delight, inspiring the whole creation with joy. The trees are then in their fullest dress—a profusion of flowers and various plants are everywhere scattered around—our hedges display their verdant foliage—the warbling of the feathered tribes have a peculiar sweetness of melody—the insects, those gems of nature, are particularly active and vigorous—while the gaiety of all surrounding objects, together with the genial warmth of the weather, are such as to inspire all, whether pleasure-seekers or students of nature, with delight. The holiday is welcome for its very sense of freedom—free to come or go where we will at our leisure, unfettered, undisturbed. The classical student forgets that either Ovid or Virgil was ever in existence, and, for the present, the cash-book and ledger are things of the past to the man of business.

But now to come to my subject—"A day at the 'Ghost Ground.'"

A bright, sunny, summer's day invites us—that is, an esteemed friend, a member of the "net brotherhood," an enthusiastic naturalist, and myself—to exchange the dusty streets of the town for the sylvan shade. Do not, reader, imagine that the "Ghost Ground" is the abode of some supernatural being; this rather uncommon name having been given to a small field within a few miles of Glasgow by some entomologists—and I think that is the only name it is known by—in consequence of the great numbers of the Ghost Moth (*H. humuli*) which were taken here in the summer of 1880. This moth is a ghost by name and really a ghost by nature: for while they were plentiful for a few days, all at once, as if by magic, they disappeared and, I believe, have never been seen here since.

The first creature that attracts our attention is the larva of *A. caja*, better known, however, as the "woolly bear," or as some

rustics prefer to call it, the "hairy worm," The Dock leaf seemed to be its favourite food plant. One one occasion I had over a hundred of these caterpillars alive, and watching the larva of the Tiger Moth through all its changes I found to be a most interesting study; as Mr. Wood remarks there is really something more in the caterpillar than "skin and squash."

But to return to our hunting ground. *P. brassicæ*, *rapæ*, and *napi* are, of course, plentiful, and within a few minutes the collecting box contains several specimens.

Our attention is next directed to *Polyommatus Alexis*, sunning itself on a tuft of clover, and at the same time *C. phlæas*, the lively little Copper, comes flitting along, soon, however, along with that member of the *Polyommata* family, to occupy a place in our net. The next insect that finds its way to the killing-bottle is the large Yellow Underwing Moth (*Triphæna pronuba*), and *T. orbona* follows it in quick succession. *Vanessa urticæ* is also seen, but we are forced to content ourselves with the sight, for scarcely has the net been grasped than *V. urticæ* disappears over the hedge. The Meadow Brown (*H. janira*), Wall (*L. megæra*), and Small Heath complete the list of butterflies caught.

We now devote some time to those lepidopterous insects called moths, and are successful in obtaining at the roots of various plants *H. proboscidalis* and *Plusia gamma*, which last-named moth is popularly named the silver Y. Coleoptera are numerous, but chiefly common. *Olypus olens* (an ill-tempered fellow, well deserving the distinguishing title, the "devil's coach-horse") and its near relation, *Creophilus maxillosus*, literally swarm. *Necrophorus vespillo*, *Cassida viridis*, *Geotrupes vernalis*, and *Phyllopertha horticola* are also obtained.

At the west end of the field there runs what we in Scotland would call a "burn," which widens in its downward course into a pond. Here are found quite a number of

specimens for the aquarium. Fresh water molluscs are abundant, and not a few small fish, such as stickleback and minnows. *Itybius ater*, the small water-beetle, is very common.

Leaving our entomological equipments and captures in a place of safety, we leave the "Ghost Ground," and a smart walk of ten minutes brings us to a pit which contains many a hidden treasure for the geologist. *Mytilus* and other shells are plentiful, and at a pit a little further on *Lepidodendron elegans* is found. A portion of this extinct plant was once shewn me by a friend, who, until I pointed out his error, had the belief that it was the "fossilization of a serpent." At the time I was greatly amused at the comparison, bringing to my memory another incident, of a youth who brought me several specimens of *Gryphæa incurva*, and with the pompous air of one who knew, informed me that they were nothing less than "antediluvian oysters."

The remainder of the day is spent at the pits, the hammer and chisel being of great service.

As evening is now drawing on we retrace our steps homeward, entering the field for the entomological specimens which we had concealed there. On our way home *P. cratægata*, *A. grossulariata*, and *M. brassicæ* are added to our list of captures.

Of the botany of the "Ghost Ground" I have said nothing, but I am sure if the student of that science botanized here his search for specimens would not be unrewarded. Different men spend a holiday in different ways; but he who would read a few pages of the great book of Nature—watching the birds, the fish, the insects, or noting the flowers in their ever-varying hues—will find there a vast store of enjoyment. They are indeed simple pleasures, but they have been enjoyed by thousands now at rest. With the end of the excursion I also bring this account of it to a close; to me it has been a most pleasurable and, I trust, not unprofitable "Day at the 'Ghost Ground.'"

BRITISH ANTS—By G. C. BIGNELL.

(Continued from page 143.)

Shirley Common, New Forest, &c. The nest generally found in banks, and this ant makes slaves of *F. fusca* and others. *F. fusca* has, I believe, been always found in their nests, and is the principal slave. Mr. Rothney has found from time to time in the nests of *F. sanguinea* the following species, in addition to *F. fusca*:—*Lasius niger* and *flavus*, *Tapinoma erraticum*, *Myrmica ruginodis*, *scabrinodis*, *lobicornis*, *Leptothorax acervorum* and *Nylanderia*.

The late Mr. F. Smith appears (in the summer of 1843), to have been the first person in England to witness the slave-making in full operation. He says "I visited the spot, and to my delight I found the army in battle array. Numbers of the largest ants at length separated from the rest, and formed the advanced guard or van, and the whole body was in motion. At a distance of about twenty yards was a nest of *Formica fusca*. This was the object of their attack. Without the slightest pause, the advanced warriors boldly entered the nest, and in poured swarms after them. After a few moments had elapsed numbers issued forth, each carrying their slaves in their jaws. Occasionally, a number of black ants rushed out of the nest and gallantly attacked their invaders; but they were quickly overcome, and carried off to the nest of the victors. Frequently, however, they were torn limb from limb, in which case their mangled bodies were borne off, no doubt for food, to the nest. In plundering a nest, although numbers of ants are carried off, by far the greater number convey the pupæ, or young brood, of the black ants; and I have some suspicion that it is these which, being born in the nest, become slaves from birth."

The Rev. W. F. White appears to have found a nest on the 9th June, after the first struggle had passed; for he says "my attention was arrested by ants of an unusual appearance and peculiar gait traversing the ground with wondrous expedition; and while

watching the triumphant procession of *Sanguinea* returning from the successful marauding expedition, I did not observe a single black worker being borne along. The spoils of conquest consisted almost entirely of pupæ, a small portion being larvæ."

Mr. Charles Darwin witnessed the slave-making propensity of *F. sanguinea* during June and July in three successive years, in Surrey and Sussex. He also observed a migration from one nest to another, the masters carrying instead of being carried by their slaves.

4. *Formica exsecta*, Nyl.

(Plate 5, fig. 10; worker, fig. 11; head of do., fig. 12.)

Similar in colour to *Formica rufa*, but very distinct in form. The wide emargination at the back of the head, the smaller eyes placed farther from the posterior margin, and the sides of the head behind the eyes converging to the posterior margin, easily distinguish it in all the sexes, besides the narrow, almost straight-sided and deeply notched scale of the petiole, and the smaller size of the male and female. Length 7-8 mill.

HABITAT.—Bournemouth and its neighbourhood, Poole, and on the outskirts of the New Forest, near Ringwood, by the Rev. W. F. White. Male and female appear in July (July 14th); the nest frequently found on the open heath.

5. *Formica cunicularia*, Ltr.

Very like *Formica rufa* in colour.

MALE differs in being smaller, with clearer wings; in having the thorax without semi-erect hairs, and the frontal area dull; the legs clear, testaceous. Length, 8 mill.

FEMALE differs in having the metathorax generally brown; the abdomen; dull the legs clear, testaceous; and the frontal area dull. Length, 9 mill.

WORKER like a small elongated *rufa*, but in colour they vary very much; sometimes they

(Continued on page 175.)

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VOL. 3.

DARWINISM.

SIXTH PAPER.

DOMESTIC PIGEONS.

THE first figure on our plate (fig. 1) is the Blue Rock. It is a pigeon, as already said, sufficiently numerous on most of our rocky coasts. It builds in holes in rocks, often far back in the crannies and crevices of caves. Its nest is loosely made, and it lays two white eggs. In colour it is slaty blue with white loins; the tail has one dark bar at the end, and the outer feathers are edged with white. The wings have two black bars.

The fantail (fig. 2) is a white bird with a wonderful development of tail feathers. The number of these feathers in all wild pigeons, whether blue rocks or any other species, is but twelve or fourteen, but the fantail often has as many as thirty or forty. "These feathers are kept expanded and carried so erect that in good birds the head and tail touch."

The trumpeter (fig. 3) is either pure white or mottled with black and white. There is a tuft of feathers which sprouts from the root of the bill, a kind of

crest behind the head, and the legs and feet are thickly clothed with long feathers. It is also remarkable for its note, which differs considerably from the ordinary coo, coo, of the genus.

The jacobin (fig. 4) has the feathers on the neck reversed, and they appear to form a ruffle or hood. It also has the tail and wing feathers long in proportion to the size of the bird.

The pouter (fig. 5) is a large bird with the legs, tail, wings and body much elongated, but it is most remarkable for the enormous development of its crop, which it has the habit of inflating, as it struts about, in a most extraordinary manner.

The carrier (fig. 6) is remarkable for the quantity of "carunculated skin about the head, and this accompanied by greatly elongated eyelids, very large external orifices to the nostrils, and a wide gape of mouth."

The tumbler (fig. 7) has an exceedingly short beak, the head and beak having been compared to an oat stuck in a cherry. It also has the singular habit of tumbling over and over in the air as it flies.

Now these seven birds which we

have very briefly described differ far more widely from each other than do many species acknowledged to be distinct. Nay, Mr. Darwin says "at least a score of pigeons might be chosen, which, if shown to an ornithologist and he were told they were wild birds, would certainly be ranked as distinct species. Moreover, I do not believe that any ornithologist would, in this case, place the English carrier, the short-faced tumbler, the runt, the barb, pouter and fantail in the same genus; more especially as in the case of each of these breeds several truly-inherited sub-breeds, or species, as he would call them, could be shown him."

Pigeons are known to have been domesticated nearly 5000 years, there being records of them as early as the fourth and fifth Egyptian dynasties. They have been carefully reared and much prized during all that period, and the origin of more important breeds cannot now be traced. If the assumption that they are all descended from the blue rock be correct, and we see not the slightest reason to doubt it, all these wonderfully distinct races or breeds have been produced by selection during this period. Compared with the immense ages some species must have existed, this time is very short indeed, and it may safely be said that no such changes could have been brought about by Natural Selection during the time. Besides, as we have

tried to show in former articles, natural selection can only produce permanent changes of form that are beneficial to the animal, and it is not to be supposed for a moment that the large crop of the pouter or the numerous tail feathers of the fantail would be any advantage to them in the struggle for existence. But here we have changes made in the appearance and structure of the birds, so great that if they had occurred among wild birds they would have not only been considered different species, but some of them would actually have been placed in different genera. Now all that we want our young readers to understand here is the extent and character of these changes. We want them to observe that they are not confined to one portion only of the body, nor to variation in one direction. The feathers of the tail in one bird are increased to four or five times the normal number; in another the legs and feet are feathered; the feathers in others form a ruffle, a crest, a hood, or almost what you please. The shape of the bird, and, consequently, its internal skeleton is changed both in form and size. It acquires such habits as the summersault throwing of the tumbler, the inflation of the crop of the pouter, the erection of the tail by the fantail. All pigeons have certain homing powers, but the carrier has them to a wonderful extent, and many other well-marked

peculiarities might be enumerated. If these changes can be produced, who shall say what changes are impossible. Nor must our readers suppose that in taking pigeons for our illustration we were at all restricted in our choice. Dogs, poultry, even canaries might have been spoken of much in the same way, though canaries have only been reared in domestication for a comparatively limited number of years. But one illustration is enough for our purpose, and we will next refer to some other branches of the subject.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

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EXCHANGE.

The Editors of the Y.N. require Nests of the following birds, for figuring in their "British Birds":—Great Grey, and Woodchat Shrike; Spotted Flycatcher; Fieldfare; Redwing; Ring Ouzle; Nightingale; Redstart; Black Redstart; Stonechat; Wheatear; Grasshopper, and Dartford Warbler; Lesser Whitethroat; Garden Warbler; Blackcap; Wood Warbler; Chiffchaff; Longtailed, and Bearded Titmouse; Grey Wagtail; Rock Pipit; Woodlark; Common, and Cirl Bunting; Brambling; Hawfinch; Goldfinch; Siskin; Mealy Redpoll; Bulfinch; Crossbill, &c., &c.

They will either return the specimens sent, paying postal expenses, or make such other return as may be acceptable to the sender. All such help will be duly acknowledged in the book. Their thanks are due to many correspondents for aid last season. Address—S. L. MOSLEY, Beaumont Park, Huddersfield.

DUPLICATES:—*Batis*, *Herbida*, *Nebulosa*, *Brunnea*, *Lubricipeda*, *Elutata*, *Tragopogonis*, *Rubi*, *Potatoria*, *Orion*, *Montanata*.

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NOTES AND OBSERVATIONS

NOTES FROM BIRMINGHAM.--January 11th. Cocks (fowls) often crow on a light night, especially when the moon is shining, perhaps they think it is break of day. Fowl eggs, when stale, have a mottled greyish look about them.

January 15th. Hedge Sparrows (*Sylvia modularis*), love to sit upon the highest twigs of a hedge and make their voices heard. Their song only consists of a few notes repeated over and over again. Saw a cluster of fifty Spiders' nests, under some bark on an old oak tree.

January 22nd. Saw a Stock Dove (*C. anas*), in Upper Nut Hurst. I also saw a great flock of Paridæ. Golden-crested Wrens and Nuthatches were in great numbers. There were also Great, Blue, Cole, and a few Long-tailed Tits. They made such a noise by rustling among the holly bushes and bracken that they could hardly hear my approach, and I was enabled to get very near to them. They kept up a continual chirping. I followed them through the wood for about an hour to observe their habits. They kept mostly on the outskirts all the time. The way I did was to run round in advance of them, and hide beneath a holly or fir tree. The whole flock would slowly pass by without seeing me. Scores of Golden-crested Wrens settled

all around me. They ran along the branches looking under the leaves, hanging upside down, peering into the crevices of the bark, darting down into the undergrowth, and then flapping their wings to drive out any insects that might be hiding under the leaves, and if a gnat flies out it darts after it in the same manner as a fly-catcher. They were by far the tamest of the flock, and most agile, they did not seem to be any more tired when they ended than when they began the search of a tree. The Nuthatches were not so tame, although several times when I was standing under a tree several would come and tap the bark a few yards above me. They run up the trunks of the trees just like a mouse, searching for insects until they have found a place that looks likely, then balancing themselves with their tail, which they press firmly against the trunk, they commence operations by giving a series of pecks on the bark in rapid succession. The sound produced is just like a pencil being tapped on a drawing board. They seldom walked downwards, and when all the insects were exhausted out of that place they would fly to another. Their flight is rather quick, giving a few sharp flaps with their wings they almost dart along. I expect their food consisted of coleopterous larvæ. The Tits were not so tame as the Wrens, they also showed great agility in creeping along the branches for their food. Saw numbers of Common Wrens (*T. parvulus*), about the Park. I heard one cock wren making a peculiar drilling noise, "calling its mate." I thought it was some distance off, but I observed the object only about a couple of yards from me, he darted down into a bush and did not stir until I had nearly trodden on him.—
W. H. BATH.

BIRMINGHAM NOTES. *Galanthus nivalis*.—The snowdrop has been in flower since the beginning of February in Hampstead Park. This plant is rather uncommon round here.

Zonites nitidus.—Found three under stones near Selly Oak on 4th February. They were quite lively.

Sphærium corneum.—Found a few in the mud at bottom of a pond near Selly Oak on 12th February. Last summer the same pond was swarming with them, but I always found them amongst the water weed as described by Mr. Robson on page 63.

Limnea limosa.—Also found a large quantity of young peregrina amongst the weed in same pond. From their size I should think they were hatched about last spring. They were very lively.

BIRDS SINGING.—Heard about half-a-dozen robins (*Erythaea rubecula*), two or three blackbirds (*Turdus merula*), and one thrush (*T. musicus*) singing at Selly Oak same morning.

Phigalia pilosaria.—Caught two on lamps at Edgbaston on 17th February; one was a very dark variety. I have noticed that round here *Pilosaria* varies a great deal more than they did last year. How is this?

Sambucus nigra.—Saw a lot of Elder trees in leaf near the Pebble Mill on 19th February, some leaves were full grown. This is early.

SHILLS ON WATERCRESS.—A friend on the 20th February gave me three *Physa fontinalis*, three *Limnea limosa* (*peregrina*), three *Planorbis contortus*, and two *P. vortex* that he had found on a small quantity of watercress yesterday. He informed me he once found a dozen *Valvata cristata* on a few sprigs of watercress.—G. F. WHEELDON, Birmingham.

"BRADFORD NATURALISTS SOCIETY."

On the 7th March, I had the pleasure of reading a paper before the members of the above Society, and was highly pleased with the visit. This Society meets in the Grammar School of that town, which is as it should be. Every naturalist's society is, or should be, an educational institution and for them to meet in a school-room is a happy alliance, beneficial to both. The

society should endeavour to gather together specimens of Natural History, and arrange them in such a manner that they may be useful to the pupils and to instil into their minds a love for nature, and thus benefiting them, and strengthening the society. A school-room is the best of all places for a naturalists' society to meet; a public-house the very worst. Another matter connected with this society pleased me most of all. I was glad to find that its meetings are graced by the presence of ladies, who take a deep interest in the science. Their presence at our meetings and excursions, should be deemed essential and if they cannot be got to join by any other means admit them free; many would no doubt join but they are afraid of being alone, but a woman with a true mind will throw off this mock delicacy—someone must come first. How pleasant our rambles and excursions would be made if they would only join in with them; and would keep many in higher classes of society from a state of idleness to which they are now forcibly doomed. Success to this society! It is on the way to progress.—S. L. MOSLEY.

ECONOMIC ENTOMOLOGY.

By S. L. MOSLEY.

(Continued from page 156.)

Head Louse.—This insect is well known. It is the *Pediculus capitis* of naturalists. It is sometimes very difficult to keep children who are much together in schools, entirely free from this parasite, and by its prodigious powers of increase it soon spreads when it once gets possession. Leewenhock proved by experiment that in eight weeks a single female louse may be the progenitor of 4000 descendents, and perhaps more during the warmer seasons. It is worthy of remark that the louse which infests the negro is like him a black, differing somewhat in different races of men.

REMEDIES.—The "precipitate," before mentioned, is the best remedy for bad attacks.

Itch Mite.—This is the insect which produces the disease known as the itch. Its mode of working is to make burrows under the outer cuticle of the skin. In this burrow the insect works its way along, the female laying her eggs at the same time. These eggs hatch in the course of a few days, the young make fresh burrows, producing an intolerable itching sensation. The mites, or their eggs, are transmitted from one person to another, in unclean clothes, beds, &c. I have known painters have their hands attacked by using "graining rags," purchased at the rag stores. It may even be communicated by shaking hands. When any part is attacked by this mite it presents a scaly appearance, and by the aid of a magnifying glass the burrows may be seen, and the mite extracted. The insect generally found in Britain is called *Sarcoptes scabiei*, but others and more injurious species exist.

REMEDIES.—Directly the disease is detected, take off the under-clothing, and have it thoroughly washed. Bathe the parts in water as hot as you can bear, and by means of a brush scrub off as much of the skin as possible. Then apply an ointment made with sulphur, which will kill the insects, but not the eggs; in a few days, after the eggs have hatched, a second application may be made, which will generally be sufficient to clear the disease.

(This parasite was once very troublesome in Hartlepool, and attacked classes not much accustomed to insect parasites. A medical man, who was attending a family that suffered very much from it, was giving special instructions to the washerwoman as to how the bed clothes and under linen should be washed, and how she was to do to save herself from attack. She replied that she was accustomed to whitewash ceilings, and with

having her arms and hands much among lime, she was never troubled with the itch insect. The doctor took the hint, prepared a lotion of lime water, and soon had his patients cured, with a more convenient and effectual remedy than the sulphur ointment he had been using.—J. E. R.)

(To be continued.)

COMMON SHELL FISH OF THE BRITISH COASTS.

By R. CHRISTIE, Glasgow.

ALTHOUGH the word Shell is also applied to the hard covering in which the bodies of the different Crustacea, such as lobsters and crabs, are enveloped, I shall confine the word to its popular meaning; and in this article I propose giving a short account of some of the most common of our British Shell-fish; considering their form and structure, and also the habits of these soft-bodied animals.

Formerly, the outward appearance of the shell was all that interested the collector, he determined its place in the system by mere shape and colour—"They were trinkets on which he looked dotingly, without knowing, and scarcely wishing to know, the organization of the animal whose outer covering only was before him." Now, however, CONCHOLOGY, the science which treats of the construction, varieties, and classification of Shells, is only looked upon as a branch of the greater science of MALACOLOGICAL, which also embraces a knowledge of the nature and habits of the molluses which these shells are intended to protect. This department of Zoology has not received the attention of collectors to such a high degree as some of the other branches of Natural History, and, perhaps, the principal reason for this is because it is generally imagined that the British coasts furnish us with but a scanty supply of Shell-fish, and that even these are of no importance. We

have, it is true, no specimens of special rarity; none, perhaps, so beautiful, or so attractive as those found in warmer and more genial climates, yet we have quite enough to form a general introduction to either CONCHOLOGY or MALACOLOGICAL; and were the collector to form even a local collection, he would be astonished with the result of his search, and certainly it would be far beyond his expectations.

According to the present mode of classification, shells have been arranged as follows:—

A *Univalve* consists of one piece, as a periwinkle.

A *Bivalve* is composed of two pieces, of which the oyster affords a good example.

A *Multivalve*, the Chiton being the only instance we have, is a shell composed of several pieces.

If we were to wander along the shore, perhaps the first shell that might attract our attention would be the Limpet (*Patella vulgata*). This is undoubtedly one of the most common coast shells. Like a sentinel, it is stationed on the top of the rock, and though often exposed to the heat of the sun, as well as the tossings of the waves, it is safely lodged in its little cone. Its close adhesion to the rock is caused by atmospheric pressure.

The Whelk is another which is very common, and the empty shell may often be found occupied by the Hermit Crab, a most curious little fellow. There are many species of whelk, but *Buccinum undatum* and *Purpura lapillus* are the most common. From the mollusc, which inhabits the last-named shell, the Rev. J. G. Wood thinks that the famous purple dye was extracted; and an interesting account of the process may be found in his "Common objects of the sea-shore."

A great number of little shells are cast ashore by the waves, which, from their conical shape are called Tops (*Trochi*).

Some of the are exceedingly beautiful, and, according to Mr. Sowerby, there are no less than 16 British species. The Top is a very useful member of an aquarium, for having a tongue of curious structure, he keeps the glass sides clean.

The next I would mention is the Common Periwinkle (*Littorina*). The "Winkle" is the shell-fish in which the operculum, the horny plate or door, which Mr. Peri Winkle politely closes behind him when he "turns in," is most noticeable.

The Cockle (*Cardium edule*), is too well known to need description. It is a capital digger, and with its notched edges it can burrow deep into the sand.

The Cutler or Razor Fish is another of the "delving" class. It never creeps, but penetrates perpendicularly into the sand, and how nicely is its long and slender shell formed for the purpose!

I would yet mention another burrower. The *Pholas dactylus* is really a most wonderful animal. It is able with a small fleshy instrument, resembling a tongue, to perforate the hardest stones or timber; indeed nothing can offer any hindrance to the Pholas save iron, and having effected an entrance, it then enjoys a life of security and ease, increasing its habitation as it increases in size. The *Iholades* are, indeed, a very interesting race.

The Common Mussel (*Mytilus edulis*), is a bivalve. Not only is it useful for food, but also for fish bait, and we are told that "the total consumption of mussels for bait annually in Newhaven alone may be reckoned at 4,320,000." The mussel, when young, spins a cable—or byssus, as it is scientifically called—to a rock, where it anchors itself. There are frequently a hundred and fifty of these little cables employed in mooring a mussel, each cord being scarcely two inches in length.

The British Scallops (*Pecten*) are very beautiful, and also very plentiful. Mr.

Sowerby mentions nine characteristic species. The Common Scallop (*Pecten Jacobæa*) gets the title *Jacobæa* (Lat. Jacobus), from the shrine of St. James, at Compostella. We are told that many pilgrims, tramping to this spot, and having paid their devotions to the saint, they bore home a scallop-shell with them as a memento of their visit. When the Scallop is deserted by the tide, it jerks itself forward in a curious manner by opening and shutting its shell.

Of the Oyster (*Ostrea*), I need say nothing. it is known too well to all.

Of Cowries, which are so plentiful abroad, we have but one variety, which is very common in Scotland.

The Chiton is the last shell-bearing mollusc I would at this time mention. There are several varieties, but our native species are not very large. The Chiton is the only multivalve we have.

Shells are in themselves of little importance, unless they are classified and named. Here it is that the interest begins. We have few shells, but there is no part of our coast altogether barren, and a local collection, classified and arranged, each specimen being popularly and scientifically named, and a slip denoting the locality where obtained, will give a peculiar interest to the collector.

I have also, bear in mind, referred only to coast shells, making no mention of our land or fresh water molluses, which are also highly interesting.*

I would again quote from a popular author, who says:—"Even among the few score of species which may exist in our neighbourhood, he (the collector), will be sure to find many an attractive subject for examination; and, indeed, there are few localities in which he may not hope to have his diligence rewarded by some new or interesting observation of habit or economy."

* All the British species were described in Vol I.—Eds.

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Vol. 3.

THE CHANNEL ISLANDS.

MORE than once the question has been asked us, why is the Flora of the Channel Islands included in lists of British Plants, while the Fauna is never so included? We confess we are unable to give a satisfactory answer to the enquiry, but it appears to us that the Fauna is rightly excluded, and we would like to know why the Flora should not share the same fate. The Channel Islands are close to the French coast and some sixty miles from the nearest English land. The island of Heligoland is in a somewhat similar position, being very near the German shores while it is very far from our own. There is, however, one noticeable political difference between the two. The Channel Islands were a part of Normandy at the time of the Norman conquest, and while the various possessions the English crown held in France slipped from her grasp some centuries ago, these islands have ever remained under our government. Heligoland only came into our hands in the early part of the present century, and though we believe the inhabitants

call themselves Englishmen with some degree of pride, there has never been a shadow of pretence on which its Fauna or Flora could have been incorporated with our own. It may be a consequence of the Channel Islands having belonged to us for so many centuries that their Flora was incorporated with ours before the importance of the matter was rightly understood, though if this were the case we would expect to find the Fauna included also. Be this as it may, the really important question is, is the Flora rightly included or the Fauna rightly excluded? We venture to state our opinion that exclusion ought to obtain. The distance from our own shores is an important item in the question. It is generally understood that there was a time when the English coast was united with the opposite continent, and that either by wasting away, or by depression, or perhaps by both, separation took place many long ages ago. That the plants and animals insulated in Britain were from that time subject to the usual conditions of an insular Flora or Fauna, and like all such insular groups are of special interest, as show-

ing the changes in some cases and the want of change in others. But that insular character and the special interest attaching to it are necessarily lost if our natural productions are mixed with those of the Channel Islands on no other ground than that they have belonged to the English crown for 800 years. In Morris's British Moths the writer argues that because the Jersey Tiger (*C. Hera*) occurs in Jersey, and Jersey plants are included in the London catalogue, therefore *C. Hera* should be included in our lists of British Moths. But he does not attempt to show that the plants are properly included. We do not know much of the strata composing the Channel Islands, but our friend, Mr. H. H. Walker, of Liverpool, tells us "The largest, Jersey, contains in part beds of slate and other protozoic rock. This island, in fact, is formed entirely of these rocks together with granite. This latter stone is of true volcanic origin, including in its composition crystals of quartz, feldspar and mica. Guernsey consists of equal proportions of granite and gneiss. Here we have a volcanic in juxtaposition with a metamorphosed sedimentary rock. Sark, again, is entirely granitic, while in Alderney we have porphyry (another igneous granitic rock) together with old red sandstone (?)" The nearest British land is, we believe, the coast of Dorset or Devon, but the nearest land to the

French coast, where probably the connection of England with the continent was last severed, is the chalk hills of Kent. Chalk is a deep-water formation, while the Channel Islands are shown above to be of volcanic origin. It seems quite possible then, that these islands may have been formed since Britain was separated from the continent; but, at all events, their geological structure is not similar to that of the nearest part of Britain, nor yet of that part nearest the continent; and, as a consequence, we would expect to find plants growing there that do not occur in those portions of Britain nearest to them, and, in fact, several plants are found there that do not grow in Britain at all. Birds and insects can cross a considerable extent of water, and it is no wonder that French or Channel Island species are occasionally taken on our southern shores. That they have so rarely established themselves there is another evidence that they do not belong to us, and other species have never been taken here at all. The question is not a very important one perhaps, but the importance of insular species being separately studied is becoming better understood, and if collectors like to admit Channel Island specimens to their British collections they should certainly so label them that it may be understood where they were taken. The desire to possess *Daphidice*, *Lathonia*, *Euphorbia*, &c., no doubt makes

one inclined to stretch a point so as to obtain them; and while we see no harm in placing a properly-labelled European type among our British insects until we can obtain a native example, we certainly would not admit Channel Island specimens without a similar precaution against error. Even the plants peculiar to these islands that have been so long included in the "London Catalogue of British Plants" are distinguished there with a "C," and certainly entomologists should not do less than this.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

W.H.B.—Thanks for the interest you manifest in the Y.N. We would be very glad to enlarge it if the circulation increased.

EXCHANGE.

DUPLICATES.—*Machaon*, *Lathonia*, *Edusa*, *Iris*, *Betula*, *Atropos*, *Quercus*, *B. trifolii*, &c. DESIDERATA.—Larvæ only of *Argynnis*, *Cratægi*, *Sibylla*, *Cassiope*, *Ægeria*, *Davus*, any *Lycæna* or Skippers. COLEOPTERA.—I have still a supply of *C. granivinis*, and will send a pair to any one who will send a small box and postage. If a few eggs of any species of Lepidoptera be enclosed I will pay postage one way.—S. L. MOSLEY, Beaumont Park, Huddersfield.

DUPLICATES.—*Argynnis aglaia*, *Zygæna trifolii*, *Crambus dumetellus*, &c.; *Anchomenus oblongus*, *Carcinops minima*, *Octomenus glabriculus*, *Stiliculus rufipes*, *Trogophlæas elongatulus*, &c. DESIDERATA.—Numerous Lepidoptera and Coleoptera.—S. HUME, 4, Overton Terrace, Clive Vale, Hastings.

DUPLICATES.—*V. Urticæ*, *E. Janira*, *E. Tithonus*, *C. Pamphilus*, *P. Phlæas*, *L. Argiolus*, *R. Rhamni*, *P. Napi*, *P. Rapæ*, *M. Stellataruu*, *C. Caja*, *A. Lubricipeda*, *A. Menthastri*, *U. Sambucata*, *R. Cratægata*, *O. Bidentata*, *P. Pilosaria*, *N. Zonaria*, *T. Crepuscularia*, *I. Lactearia*, *C. Fusaria*, *H. Wavaria*, *A. Grossulariata*, *H. Rupicaprararia*, *H. Leucopheararia*. *H. Progemmaria*, *H. Defoliaria*, *A. æscularia*, *C. Brumata*, *C. Boreata*, *L. Viretata*, *M. Albicillata*, *M. Rivata*, *M. Montanata*, *M. Fluctuata*, *C. Bilineata*, *C. Comma-notata*, *E. Mensuraria*, *G. Derasa*, *H. Nictitans*, *X. Lithoxylea*, *X. Sublustris*, *X. Polyolon*, *M. Brassicæ*. *A. Basilinea*, *M. Strigilis*, *T. Pronuba*, *N. Plecta*, *N. C-nigrum*, *N. Festiva*, *X. Ferruginea*, *E. Lucipara*, *N. Nebulosa*, *H. Proteus*, *H. Oleracea*, *P. Gamma*, *X. Typica*, and many others. DESIDERATA—very numerous (especially *Nocturni*), only British. Please write quickly, and send a list to W. H. BATH, Manor Villa, Sutton Coldfield. P.S.—Please send box and return postage.

NOTES AND OBSERVATIONS

BIRMINGHAM NOTES.—January 23. Saw a Heron flying over Birmingham, in a south westerly direction.

February 4. Saw a pair of Wood Pigeons in Holly Hurst.

February 5. Heard a Skylark singing. After it had risen up to a great height it came down to the ground like an arrow. When skylarks have a nest in a field, they never dart straight down to it, but always settle a little distance off, and run along the ground to it in order to hide its real

position. Saw a number of Wood Pigeons Hurst. I believe they migrate from these parts in the winter time. While I was gathering fern leaves for pressing, I heard a peculiar noise as though it were raining. At every step there would be a clicking sound. I found out that it was caused by a number of little white insects jumping through the grass.

February 5. Gnats were out in abundance to-day. In frosty weather *C. ciliaris* hides in houses, and *C. nemorosus* hides under leaves and bark of trees. Gnats, like fleas, prefer certain people to others for their attacks. Some people they hardly ever bite. A friend of mine says whenever gnats are about he is bound to be bitten by them. They make very large and irritable blisters on his hands and face.—W. H. BATH.

INSECTS CAPTURED AT HARWICH.—On March the 9th I went mothing for the first time this season, having been laid up with bronchitis. I feared I was too late for the winter moths, but I found them fairly abundant. Of *H. rupicaprariva* I captured two; *H. progemmaria*, two. On the 11th, *H. rupicaprariva*, one; *H. progemmaria*, one; and *T. gothica*, one. On the 13th, *H. rupicaprariva*, five; *H. progemmaria*, six. On the 14th, *H. rupicaprariva*, four; and *H. progemmaria*, four. I might have taken many more of *H. rupicaprariva*, those I took were apparently freshly emerged. At sallow bloom on the 13th I took one *T. instabilis*, four *T. stabilis*; on the 14th, three *T. stabilis*, one *T. rubricosa*, and one *A. œseularia* ♀; on the 15th, two *T. stabilis*; on the 16th, three *T. stabilis*, two of which deposited eggs in the pill boxes.—F. KERRY, Harwich.

BIRMINGHAM NOTES.—February 18. *Crataegus oxyacantha*. Saw two or three pieces of hawthorn in leaf at Edgbaston. On the 24th I saw three or four large patches in leaf at Erdington. I believe a piece was found in flower at Xmas by a farmer. This was very unusual.

Salix caprea.—Saw a sallow in flower in a sheltered position at Cannon Hill Park. Some others in the park were not even in bud. Also saw one in flower in the Pebble Mill Fields next day.

Betula alba.—Saw two or three silver beeches in flower in Cannon Hill Park.

Passer domesticus.—Saw a house sparrow building under the eaves of the boat-house in the park.

Hybernia progemmaria.—Caught three on two lamps within a few yards of each other in the Pershore Road on the 24th February. They were all three varieties; one a very light one, another the same as No. 2 figured on pl. 2 of vol. iii. of the Y.N., the other was variety *Fuscata*. On page 103 of vol. iii. you say this variety is not known in the south; but they are not uncommon round here in the midlands. I also took a female on some palings at Cannon Hill Park on the 26th February.—GEO. F. WHEELDON, 6, Newhall Street, Birmingham.

NOTE ON THE ABUNDANCE OF NYSSIA ZONARIA ON THE LANCASHIRE & CHESHIRE COAST THIS SEASON.—Some years ago this species was exterminated on the New Brighton and Wallasey Sandhills, and I determined to re-introduce it, so went to Lytham, at the mouth of the river Ribble, and collected a number of females, and put them out on the Lancashire coast, from Churchtown, north of Stockport, and especially in my rabbit warren at Formby, along the coast by Hightown to Crosby on the Lancashire coast, and afterwards I put a few eggs on the Cheshire coast at Wallasey, in quiet hollows where I knew they would be safe for some time. Later on I found a strong colony at "North Meols," near Hoylake, whilst shooting, and secured a good supply of females, these I distributed along the coast as I traversed the sandhills all the way to Wallasey, and there I left the balance of my gathering in what is known as the "Great Flat." Our collectors

soon found *N. zonaria* had been re-established in its old locality, and it was taken in more or less abundance each year, until this year it has appeared in profusion all along the Lancashire and Cheshire coasts, for about thirty miles. Its usual time of appearance is on or about March 12th, but this exceptionally warm season it was out freely quite a month before its time, and it remains out still. On the 19th, I gathered quite a lot as they were stretching on the "Green," at Brighton-Le-Sands, a piece of land, or rather sand, on the Lancashire coast; from which many thousands have been collected by a number of young collectors who live near Crosby, during the past month.—C. S. GREGSON, Fletcher Grove, Liverpool.

A RAMBLE IN SEARCH OF TYPHÆUS VULGARIS.—On March 12th, in company with two friends, I started in search of *Typhæus vulgaris*. It was a splendid morning, the sun was shining beautifully, and where it had not reached it the grass was quite white with the frost. The train started about 9.15, and after a few minutes' ride we arrived at Bredsaal station. From there we started along the path by the canal. The first thing I found was a couple of cocoons of *Trichiosoma lucorum*, one of the large saw-flies. After a sharp walk we arrived at our hunting ground. A large sallow bush was teaming with insect life. After capturing several species of *Bombus* we went a little further up the lane, where we observed a number of small bees burrowing in the bank. Of these we secured a nice series. Here my friend captured *Cicindela campestris* flying in the sunshine, which I think this is very early for that species. From the lane we made for the moor, where we soon observed the burrows of *Typha* in the manure. We then inserted a thaw so as not to loose their burrows, and dug them out, generally male and female, and occasionally *Geotrupes stercorarius*. After securing about a couple

of dozen each, and a few *Aphodius inquinatus*, besides a few *Tortrices*, we made for the station, and arrived home about four p.m. thoroughly pleased with our day's sport.—G. PULLEN, Derby.

FIELD CLUBS.

FRIZINGHALL.—A lecture was delivered on Saturday, March 18th, in the Congregational school-room, Aweville Road, Frizinghall, by Mr. S. L. Mosley, of Huddersfield (editor *Young Naturalist*), on "Our insect foes and friends." The Rev. T. Close, an honorary member of our club, presided.

After eulogising the members to some considerable extent, the chairman called on Mr. Mosley for his lecture. The lecturer on rising was received with cheers. He said he should first take "our foes," as he wished to leave his audience with a favourable impression (hear). He then proceeded to name the insects which attack the human body, corn, trees, clothing, furniture, animals, &c., naming the best means of getting rid of them. He also mentioned the "friends," which farmers and gardeners often kill under the impression that they are destroying their foes. The lecture was illustrated by diagrams on the blackboard. Rev. D. D. Waters in proposing and Mr. W. Riley in seconding a vote of thanks to the lecturer said they had been very pleased with and instructed by the lecture.—W. RILEY, Hon. Sec.

BRITISH BIRDS, THEIR NESTS AND EGGS.

By S. L. MOSLEY.

TAWNY OWL.

Strix stridula, Linn.

STRIDULA.—From *stridulus* (L.), creaking, harsh.

Size.—Male, length about 1ft. 2in., expanse of wings about 2ft. 8 or 10in. Female one or two inches larger.

Plumage.—The following is a description of my own pair :—

MALE.—Bill pale horn colour. The eyes are dark brown. Face grey, with long black bristles on each side of the bill, and shading off to reddish beyond the eyes. Frill of feathers white, tipped with reddish and brown. Head and back reddish, or yellowish tan colour shaded with brown. Greater and lesser wing coverts white on the outer half of the web. Primaries yellowish white, barred with brown. Tail yellowish white, barred with brown. Under parts white, each feather with a dark brown mark down the centre and a ferruginous band across the end. Legs white, faintly spotted with brown.

THE FEMALE has scarcely any ferruginous, the markings being darker and more distinct, especially on the under parts. Mr. Bond says these differences of colour are not due to sex, and that the rufous variety similar to my male is the more common of the two.

IMMATURE birds are scarcely distinguishable from the adults.

THE YOUNG is at first covered with brownish grey down.

A VARIETY is recorded (Zool., p. 2411) with the parts light ash grey which are usually brown. A supposed case of melanism is reported (Ibis, 1876, p. 63) by Messrs. Sclater and Taylor. It was shot near Constantinople.

Note.—This owl is the veritable hooter and excels all the other species in that accomplished act. I have frequently listened to their concerts in Sherwood forest and other places, and it is interesting to note the different pitched voices which the various individuals possess. Gilbert White noticed this. He says "A neighbour of mine, who is said to have a nice ear, remarks that the owls about this village hoot in three different keys, in G flat or F sharp, in B flat, and in

A flat." The note is a wild and dismal "hoo, hoo, hoo," which is rendered still more melancholy by the stillness of the night. Owls seem to have a particular liking for dismal cries. Wolley, when in Lapland, had several owls brought round him at night by the barking of his dogs. He then tried some unearthly noises himself and was successful in bringing more. His attendant said that if anybody heard him they would think it was the "djefoul."

Flight.—This is not so buoyant and graceful on the wing as the last-named species, but being purely a bird of the night it is oftener heard than seen.

Migration.—Does not migrate in this country.

Food.—The Tawny Owl preys principally upon the smaller mammals—rats, mice, moles, young hares and rabbits. It will also sometimes eat birds, insects, worms, and even fish.

IN CONFINEMENT they soon become tame if fed by hand, especially if taken from the nest while young.

Habitat.—This owl inhabits most parts of England and Scotland, but is rare in Ireland. It frequents wooded districts, especially where there are large hollow or ivy-covered trees, in which it resorts during the day.

ABROAD it is known all over Europe, in parts of Asia and north Africa.

Nest.—The nest is placed in an old tree, and composed of chips of rotten wood, or sometimes in the old nest of a crow or magpie, which undergoes very little repair. Mr. Wharton records (Ibis, vol. ii., N.S., p. 324) a nest he found in Wales upon the ground. Mr. Bond says he has also heard of its breeding in rabbit burrows.

Eggs.—The eggs are laid in March, to the number of from three to five, and are white like the others of this genus.

BRITISH ANTS—By G. C. BIGNELL.

(Continued from page 159.)

are found brighter than *rufa*, and others are so like *fusca* as to be practically undistinguishable. The writer once mistook it for *fusca*, and did not discover the mistake for some months. These were captured on the sea-cliffs near Plymouth, on the flowers of *Silene maritima*.

It may be always distinguished from *fusca* by its smaller head, and thorax not so robust; from *rufa* by the dull frontal area; and from *sanguinea* by the entire clypeus. Length, 7-8 mill.

HABITAT.—Generally distributed; in some places common; makes its nest in the ground. Male and female appear during August.

6. *Formica fusca*, Linn.

MALE.—Black-brown, shining, with a somewhat bronzy tint. Scape of the antennæ of the same colour as the head; frontal area dull; legs and genital segments testaceous-red. Length, 8 mill.

FEMALE.—Dark brown, polished, with a bronzy tint, only the legs and scape of the antennæ dull brownish red; head and thorax with a few erect hairs. Abdomen remotely and very slightly punctured, bearing a few scattered bristly hairs. Length, 8 mill.

WORKER.—Dark brown, with a bronzy tint, covered with an exceedingly fine pubescence, which gives it a sheeny appearance; legs and antennæ slightly paler. Abdomen with a few short, pale, bristly hairs near the apex of each segment. Length, 5-8 mill.

HABITAT.—Generally distributed and common; makes its nest in the ground, preferring a southern aspect. The nest of this species frequently contains some of the rarest of our myrmecophilous beetles. In the nests of nearly all ants beetles will be found. It is supposed that they act the part of scavengers.

7. *Formica gagates*, Ltr.

WORKER.—Shining black, with the man-

dibles, antennæ and articulations of the legs rufescent; the tibiæ and femora piceous; abdomen shining and sprinkled with a number of erect hairs; the scale of the petiole truncate above and slightly emarginate. Length, 7 mill.

This is recorded as a new British species in the *Entomologist's Annual* for 1866. It was taken by Mr. Smith at Bournemouth. He says it "closely resembles *fusca*; but the workers are larger, blacker, and more shining, and the abdomen has a quantity of erect rigid hairs." Smith has omitted it from his Catalogue published in 1871 by the Entomological Society of London, no doubt considering it a race of *fusca*, and which Emery and Forel supposed it to be.

GENUS LASIUS.

Differs from *Formica* in having the male much smaller than the female. Also in the shape of the antennæ: the male has the first joint of the flagellum much thicker than the rest (in *Formica* it is not thicker); in the female and worker the first joint of the flagellum shorter than the apical (in *Formica* it is as long or longer).

1. *Lasius fuliginosus*, Ltr.

This species would be recognized at once by its jet-black colour.

MALE about the same size of the worker, flagellum of antennæ and the tarsi testaceous. Length, 4-5 mill.

FEMALE, rather more shining than the male, and larger. Length, 6 mill.

WORKER, same colour and polish as the female. Length, 3-5 mill.

HABITAT.—Generally distributed, and found inhabiting decayed trees, &c. Mr. Smith has found them in a hard sand-bank. This is a very unusual occurrence. Male and female appear about the end of June or beginning of July.

2. *Lasius niger*, Linn.

MALE.—Dark fuscous; legs and flagellum
(Continued on page 191.)

THE YOUNG NATURALIST.

H. G. MEEK,
NATURALIST,

56, BROMPTON ROAD, LONDON, S.W.

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Palpina, Dictæa, Dromedarius, Asteris, Nupta, 6d. each. Cardamines, Rhamni, Artemis,
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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 126.

APRIL 8TH, 1882.

VOL. 3.

EYES AND NO EYES.

WE remember, when a boy, reading a tale in one of the school books with the above title. Two lads went out together for a walk. On their return their teacher asked them separately where they had been and what they had seen. One had been the dullest road and had seen nothing; the other had had the most delightful walk, and gave a long account of the many interesting things that had attracted his attention during his ramble.

It is not every one that has the power of making observations, or of knowing which are worth recording. An observation to be worth recording should either be something new or something that has been seldom noticed, making its recurrence interesting. Thus a sparrow in a farm yard, or a white butterfly in a garden is not a fact worth noticing; but if the sparrow were white, or the butterfly seen at Christmas, the circumstance would be uncommon enough to deserve recording. But even with observations worth making, one person sees what an-

other does not. We read the other day in an old *Intelligencer* that one collector had taken a certain insect at light, another recorded the same species as taken at sugar, while a third, taking it both at light and sugar, makes the interesting observation that they were nearly all females that came to sugar, and nearly all males that came to light. A generalization cannot be arrived at from a single observation, and we know of no other notice similar to the above. But we were deploring our inability to obtain females of a certain day-flying *Noctua* to an experienced collector, and he advised that we try sugar, adding, that he had got females of *Bondii* by that means. This raises the question, is sugar more attractive to females than to males. We know no more about it than we have said, but if it be so, how important would be the knowledge. *Agrotis cinerea* is a rare species, but the female is so much scarcer than the male that we never saw one, and have heard of thirty shillings being asked for a specimen, the male being sold at about one-tenth of the price. If the females could be

got at sugar our cabinets would not remain, as so many of them are now, with only one sex represented.

But sugar itself, in the meaning of the term as used by entomologists, was not always known, though the predeliction of insects for sweets was known to everyone. It required an entomologist who could not only use his eyes, but use his brains at the same time, to try to attract insects by a saccharine mixture spread for the purpose. We have many a time seen at the grocer's door the bluebottles assisting the gamins of the neighbourhood in clearing out a sugar cask, and who has not been annoyed at the intrusion of the house-fly in the sugar basin or the treacle jar. But entomologists had collected for many a year before it occurred to Mr. Doubleday to try and attract moths by means of such a bait. The fact is, we see, without knowing we see. We do not connect the effect with the cause. We use our eyes as we go along, perhaps, seeing whatever there is to see, but we do not attach a meaning to what we observe. The desire of the moth for the star is proverbial, but the fen "Lighthouse" is one of our most recent innovations, and neither the magnesium nor the electric light have yet been utilized for our purpose. It was once said that a proportionately large number of discoveries had been made by entomologists when they had been seated at

lunch. The fact was that when collecting they knew what they were looking for, and, doubtless, found it; but their minds being set in that way on given objects, other things were passed unnoticed. At lunch their minds relaxed—had no fixed object—and whatever came within the reach of their vision was observed and thought about, with the result of new discoveries being made. These desultory remarks are not without a purpose, rambling as they may seem. We want our young readers as they move about to use their eyes, of course, but we do not want them to stop there. Whatever they see, we want them to think about. Not to be like he of whom Wordsworth wrote—

A primrose on the river's brim
A yellow primrose was to him,
But it was nothing more.

There is so much to learn, and we know so very little, that every one can add to the general store of knowledge if he will. But it requires intelligence to direct our thoughts in the right channel, and without that, observations are useless. We do know why we find sparrows in farm yards and white butterflies in cabbage gardens, but do we know all there is to know about these two "common objects;" is there not knowledge without limit open to us at every step if we only have the eye to see and the brain to think?

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

H.W., Birmingham.—We are obliged for your notes, but do not publish them as similar records have already appeared from your district, and yours are now so old. Besides, we doubt if some of them are correct. For instance, you speak of taking great numbers of *Gothica* at sugar on 14th July! The note will be a most curious one if true, but we think there must be some mistake. We once took a wasted female ourselves in June, but to take "great numbers" in July seems difficult to understand. Show the specimens to Mr. Bath, the secretary of your field club, and let us know what he calls them, and in future send us your notes as they are made.

EXCHANGE.

DUPLICATES.—*Suffumata*, *Biundularia*, *Gemina*, *Rufina*, *Ferruginea*, *Velleda*, *Lucipara*, *Oleracea*, *Plecta*, *Nebulosa*, *Tristata*, *Sylvata*, *Casiata*, Tree Grasshopper,—*Mecynima varia*, &c., &c. I shall be glad to send to anyone for box and return postage.—J. HARRISON, 7, Victoria Bridge, Barnsley.

NOTES AND OBSERVATIONS

BIRMINGHAM NOTES.—Shells at Dudley. Found the following shells at the Wren's Nest, on Saturday, 4th March:—*Cochlicopa tridens*, one, under moss; *Clausilia rugosa*, fourteen, among roots of grass growing on ridges on the face of rock; *Helix arbustorum*,

three, hybernated under moss; *Hispidia*, one, and *rotundata*, sixteen, under moss; *Zonites nitidus*, three; *nitidulus*, one, and *cellarius*, nine, under moss and pieces of rock. The limestone here was crowded with fossils.

Found the following shells at Selby Oak, on 12th March:—*Helix aspersa*, four (also some young ones); *hispidia*, ten, *nemoralis* var. *hortensis*, thirteen, and *rotundata*, nine, under dead leaves in a copse; *Clausilia rugosa*, four; *Z. nitidus*, four; *C. tridens*, two under moss on an old tree stump. Saw the following plants in flower same day:—Alder (*alnus glutinosa*), Red Dead Nettle (*Lamium purpureum*), Lesser Celandine (*Ranunculus ficaria*), Hazel (*Corylus avellana*), Dog's Mercury (*Mercurialis perennis*), Groundsel (*Senecio vulgaris*), Chickweed (*Stellaria media*), Daisy (*Bellis perennis*), Dandelion (*Leontodon taraxicum*), Furze (*Ulex Europæus*), Wood Anemone (*Anemone nemorosa*), Sallow (*Salix caprea*), and the Stitchwort (*Stellaria holosteu*), and Lesser Wood Rush in flower same place on 19th March.

Found the following shells on the Canal bank, at King's Heath, on 18th March:—*Helix nemoralis*, a splendid one-banded specimen, hybernated; *Z. fulvous*, two, and *nitidus*, a few under moss; *C. tridens*, three, and *lubrica* two, under moss; *Vitrina pellucida*, two three dead ones under moss; *Limnæa stagnalis*, found some very large ones in a pond near; and saw the following plants not mentioned in previous list:—Primrose (*Primula vulgaris*), and Cowslip (*P. veris*), Daffodil (*Narcissus pseudo-narcissus*), a field covered with them near May Pole, on Alcester Road.

A gentleman was out for a walk the other day at Selby Oak, when his dog suddenly ran towards a bird that had fallen as if shot. He called his dog off, and picked up the bird, which was one of the Great Grey-backed Shrikes, a bird that is rarely found round here.—G. F. WHEELDON, Birmingham.

BIRMINGHAM NOTES. February 12th.—This morning was very fine and warm for the time of the year. The air resounded with birds. Skylarks singing on high; robins in every orchard and garden; the blackbird pouring forth his strains from a holly bush; the hedge sparrow perched on the top of a hedge; while on the chimney pots may be heard the screechy starling; under every eave the noisy house sparrow; the cawing of the rooks among the nests close by; built on the tops of the highest trees the impudent jackdaw also; and in the woods one's voice is lost by the merry twittering of the tits.

The insects came out in abundance flying in the sun. Gnats swaying to and fro among the trees. I quite expected seeing some hibernating butterfly, but a breeze sprung up and my hopes were frustrated.

Phigalia pilosaria was very plentiful on oak trees, but I did not take any as I have as many specimens as I want.

Hybernia progemmaria was plentiful.

Saw a heron by Spade Mill Pool.

Saw a flock of jays on the common, past upper Nut Hurst. They are a great nuisance with their screeching, giving the alarm to every bird in their path.

There were a number of small fishes in a brook leading into Brace Bridge Pool.

Throughout the last month I have not seen one flock of fieldfares, although I have seen a few singly now and then.

Saw *Hybernia progemmaria* in great abundance at night. Took a very peculiar specimen on a window, being of a dark smoke colour with scarcely any markings.

February 19th.—Saw three Bullfinches sunning themselves on a hawthorn-tree at Sutton. Yellowhammers were very plentiful in flocks on ploughed fields. Saw a flock of Lapwings on ploughed fields near Penns. They numbered about 160. I was enabled to observe them very well with the aid of a large telescope that I took with me,

February 26th.—Saw a few Fieldfares in the park.

Phigalia pilosaria bears a very marked resemblance to the lichens on the trunks of the trees upon which it rests. When alive it has a beautiful green tinge, but when dead it seems to lose it.

Hybernia progemmaria looks very much like a dead leaf. The same may be said in regard to several other of the winter moths.

March 6th.—Saw a large flock of starlings at Sutton. They haven't all separated into pairs yet, although many commenced to build a fortnight ago.

PARASITE ON A FLY.—The other day I caught a small fly for the purpose of looking at it through a microscope. Its wings exhibited beautiful colours, but I observed on the underside of its body, just between the abdomen and thorax, a little ball clinging to it. I picked it off with a penknife and found that it moved. Its body was somewhat in the shape of a pear, and pointed at one end. Its colour was reddish brown edged with white, and altogether it had a very transparent look about it. Underneath it was creamy white. It had six legs and two antennæ, which were each composed of several joints, and of a yellowish colour. It walked very slowly, and waved its antennæ from side to side, both at the same time. I did not discover any eyes. It had a pair of minute horns between its antennæ which I believe were mandibles. It was a very minute parasite. There were three others on the fly, but two were not $\frac{1}{2}$ the size of the largest. They had very hard bodies like Coleoptera, but in appearance they very much resembled one of the Lepti or harvest bugs.

FOXES.—A gentleman remarks that foxes are so fat in the neighbourhood of Sutton that they are no good for sport as they cannot run. One fox made its way into a farmhouse and killed a peacock and eat it all but its head.—W. H. BATH.

COLEOPTERA ON THE WALLASEY SANDHILLS.—The following is a list of the coleoptera taken by myself and Dr. Ellis on the afternoon of March 8th, 1882.

Notiophilus aquaticus.

Elaphrus cupeus.

Dromius linearis.

„ melanocephalus.

Dyschirius globosus.

Anchomenus marginatus.

„ parumpunctatus.

„ viduus.

Olisthopus notundatus (by the roadside at Liscard).

Calathus mollis.

„ flavipes.

„ cisteloides.

„ melanocephalus.

Pterostichus nigrita.

„ niger.

Narpalus (serripes?)

Bembidium littorale.

Trechus minutus.

Helophorus aquaticus.

Hydrobius fuscipes.

Oxytilus rugosus.

Stenus (?)

Quedius impressus.

Ocypus cupreus.

Xantholinus (?)

Aphodius firnitarium.

„ scybalarium.

„ conspurcatus.

„ rufescens.

„ inquinatus.

„ prodromus.

„ constans.

„ niger.

„ plagiatus.

„ contaminatus.

Ægialia arenaria.

Cneorhinus geminatus.

Grypidius equiseti.

Sitones griseus.

Apion (?)

Centhorhynchus (?)

This was one of the best day's collecting we have ever enjoyed, and the great number of specimens taken (we set nearly 400 between us) testifies to the fact of there being really more beetles (at any rate, Geodephagous beetles) in winter than in summer, only that they require looking for at that time; for instance, *E. cupreus* in summer would be running on the wet banks in the sunshine, whereas, we found ours in rectamenta.—JOHN H. SMEDLEY, 73, Soho-street, Liverpool, March 12th, 1882.

CAPTURED IN THE NEIGHBOURHOOD OF BOCKLETON,

Situated five miles south of Tenbury, in the county of Worcester, in 1881.

(Continued from page 149.)

A. Herbida, 6.

A. Nebulosa, 8.

H. Adusta, 1.

H. Protea, numerous.

H. Dentina, 1.

H. Pisi, 1.

X. Rhizolitha, numerous.

P. V-Aureum, 1.

P. Gamma, 3.

G. Libatrix, 5.

A. Pyramidea, 10.

A. Tragopagonis, numerous!

M. Typica, a few.

LARVÆ.

S. Ocellatus, 2, willow.

S. Populi, very numerous, poplar.

C. Caja, 9, woundwort.

O. Pudibunda, 15 hop., 1, bramble.

O. Antiqua, 7, various.

E. Lanestris, 90, hawthorn.

B. Quercus, 5, willow.

O. Potatoria, 43, grass.

O. Bidentata, 6, various.

O. Grossulariata, 5, nut and willow.

H. Defoliaria, 29, oak and elm.

C. Brumata, 6, sycamore.

(To be continued.)

FIELD CLUBS.

THE HARTLEPOOLS NATURALISTS' FIELD CLUB was formally commenced on Saturday last at a meeting held at the residence of Mr. J. E. Robson, 15, Northgate. Eight members were present, and several more are expected to join. The business was chiefly formal. Mr. J. E. Robson agreed to act as secretary *pro tem*, and it was arranged to have the first excursion to Black Hall Rocks. Mr. Hall reported that he had found the nest of the yellow bunting on March 29th with one egg hard sitting. Mr. Tritschler reported that a blackbird's nest was found on 25th March with four eggs. Mr. Dixon reported that the bird recently recorded in the Young Naturalist as the woodchat shrike was now in his possession, and proved to be the shore lark. It was shot on the North Sands, beyond the end of Hart Lane. He also reported that a specimen of the little gull had been brought him, which had been shot opposite the barracks in November last. Mr. Newbegin exhibited *L. multistrigaria* taken that day, and larvæ of *N. zanthographa* and *X. rurea*. Mr. Robson exhibited bred *T. populeti* and some Shetland lepidoptera. The next meeting of the club will be held on 15th April, at six o'clock, in the same place.

BIRMINGHAM AND MIDLAND COUNTIES NATURALISTS' FIELD CLUB AND SCIENTIFIC SOCIETY.—Mr. W. H. Bath has resigned the office of president of this society to take the more onerous one of secretary, and Dr. Hiepe has agreed to take the post so vacated. A meeting will be held in Birmingham to discuss rules, &c. All who wish to join should please send their names and addresses to the Secretary, W. H. BATH, Manor Villa, Sutton Coldfield, Birmingham.

(This last announcement ought to have appeared last week but was accidentally omitted. With reference to the woodchat shrike we are glad to have the matter put

right; our readers will remember we expressed our doubt at the time as to the correctness of the record.—Eds. Y.N.)

BRITISH BIRDS, THEIR NESTS AND EGGS.

BY S. L. MOSLEY.

19, BARN OWL.

Strix flammea, Linn.

Dylluan wen (Anct. Brit.)

FLAMMEA.—Flame-coloured, from *flamma* (L.), flame.

Size.—Male, length 1ft. 2in.; expanse, 3ft. 1in. Female slightly larger.

Plumage.—The delicate plumage of this bird is perhaps the most beautiful of all the British owls. The two sexes differ very little, if at all, and may be described as follows:—Bill, yellowish white; eyes, dark hazel brown. The whole of the upper parts are dull, the feathers tipped with blue-grey, and with a black spot including a white one. Tail buff, with slightly darker bars. The face and all the under parts are pure silken white, but sometimes in the female the breast is spotted or tinged with buff. The feet are but very barely covered with hair-like feathers. The figure is from a specimen in my own collection.

IMMATURE birds are duller and paler in colour.

YOUNG in down are white, the down similar to swan's down.

VARIETIES similar to one in Mr. Hancock's collection are not very rare, in which "the whole of the under parts, which are usually white, are of a dull tawny colour, as are the legs and thighs; the face is also tinged with the same colour, and the upper parts have a tawny richer than usual" (Birds of Northumberland and Durham). Meyer

records one pied with white, and another with the ground colour white with the markings only very faintly distinct.

Note.—The note of this species is a sort of harsh screech, hence it is often called the screech owl. The young birds, while they are in the nest, make a kind of snoring noise, which is also made by the old birds.

Flight.—This bird loves to fly in the twilight or moonlight, wheeling softly and without the slightest noise about the stack-yard, or over a certain track of ground. It generally flies low, and at intervals suddenly drops upon some unwary mouse or rat, which it clutches and bears off to its young brood.

Migration.—This is a resident bird, frequenting the same places all the year round.

Food.—The food of the Barn owl consists almost entirely of rats, mice, and their allies. It is thus a bird of very great service upon a farm, where it should always be encouraged. But give a dog a bad name and you know the consequences: and the poor Barn owl has obtained a bad name by being seen too frequently in the vicinity of the dovecote. Thompson and others record instances of this owl breeding in dovecotes, and in no one instance has it been accused of molesting the pigeons. The remains of from twelve to fifteen rats and mice have been counted as the results of a single night's repast, and in the stomach of all I have examined, I never found the remains of any birds, though Mr. Bond informs me he has found skulls of sparrows, &c., in their castings. Bishop Stanley records an instance of a person who kept pigeons and had the young ones frequently destroyed, as he thought, by a pair of owls which frequented the premises. So one moonlight night he determined to be revenged, and stationing himself near the dovecote with his gun, he awaited his victim. Presently

one of the owls came out of the pigeon-house and was flying away with something in its claws. Bang went the engine of destruction, and down came the poor bird. The man had murdered his best friend, for he found that the object it was carrying away was an old rat. This bird has also been known to feed on fish.

IN CONFINEMENT this owl is very interesting and also useful, as may be seen from the above. It is easily tamed, especially if taken from the nest when young, and becomes attached to those it knows if treated with kindness and affection. Tame ones have even been known to return after they have had their liberty given them, while others have brought wild birds to share in their fare.

Habitat.—The vicinity of old barns, churches, ruins, and ivy-clad trees seem to be the favourite haunts of this species. It is distributed more or less over all the British Isles.

ABROAD this is the most universally distributed of the British *Raptors*, being found nearly all over the world, except the extreme north, the eastern part of Asia, and the southern point of the American continent.

Nest.—The nest is placed in a hole in some old ruin, generally among ivy, or in an hollow tree. Very little material is used in its construction; a few twigs or bits of hay or straw being all the birds require, but the castings soon accumulate and form a bed.

Eggs.—The eggs seem to be laid in pairs. Two eggs will be laid and sat upon, and just before they hatch two more will be laid; when the first two are hatched, the warmth of the young birds serves to hatch the second pair, and a third pair are laid and hatched in a similar manner. Thus the time of the old birds can be employed in providing food. The eggs, like those of all the owls, are white.

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E. G. MEEK,

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Redstart, Wheatear, Lesser White-throat, Bluetit, White Wagtail, Pied Wagtail, Tree Pipit, Tree Sparrow, Rook, Jackdaw, Magpie, Jay, Lapwing, Redshank, Coot, Wild Duck, Arctic Tern, Common Tern, Black-headed Gull, 3d. each.

Fieldfare, Black Redstart, Great-sedge Warbler, Chiff Chaff, Creeper, Bunting, Goldfinch, Carrion Crow, Hooded Crow, Wryneck, Ringed Plover, Black Tern, Lesser Tern, 4d. each

Grey Shrike, Pied Flycatcher, Whinchat, Crested Lark, Crested Tit, Short-toed Lark, Swift, Oyster Catcher, Sandpiper, Ruff, Dunlin, Snipe, Night Heron, Kestrel, Teal, Merganser, Crested Grebe, 6d. each. Buzzard, Harrier, 9d. each. Black Kite, Rough-legged Buzzard, 1s. each. Postage 1d. for any quantity. Blowpipes for Eggs, 9d. each. Egg Drills, 3d.

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The YOUNG NATURALIST :

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No. 127.

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VOL. 3.

IMPOSITION.

“IT must be British,” remarked a collector to us one day, when showing us a specimen of *Niobe*, before that successful fraud had been exposed. “It must be British, I gave two pounds for it.” His idea evidently was that the high price proved its British nationality, and it is to be feared this opinion obtains rather largely among collectors, some of whom seem to be overburdened with money. There can be no doubt that that the large sums wealthy collectors are willing to pay for a rare British insect, has tempted many a one to defraud them. We were offered three specimens of *Sparganii* the other day. Now, British *Sparganii* at present, are in but few hands, and we naturally asked something of their history. “They were found in the collection of Mr. So and So, mixed with *lutosa*,” was the reply. It is quite possible that unrecognized specimens of *Sparganii* exist in some collections, as other new species have done before, so there was nothing improbable in the tale; but the insects in question were so

fine and fresh, so clear of grease, and the pins so clean and new looking that we could not fancy the account was correct, and declined the specimens with thanks. The *Niobe* fraud was, perhaps, the most successful of all that have been attempted. Mr. Doubleday, Mr. Stevens, Mr. Newman, and others, were taken in, and their names were of great use to the swindlers. A full account of the affair will be found in Volume I. page 395. Their success with this insect emboldened them to offer others, and *Daplidice* and even *Podalirius* were reported to have been freely taken. Now, undoubtedly, a genuine rarity is worth what it will bring, but high prices are a great temptation to the needy and dishonest. But it is not only by open fraud that imposition may be practised. The history of *P. alpina* would be an interesting little tale if it could all be told. The early captures of the species were but two, we believe. One in 1839, and a second in 1854. Mr. Carrington went to Perthshire to look for it, and after a long hunt he took a single specimen, which he recorded in

the magazines at the time. He had proved that it could be found. The next year others were on the look out, and it was said to have been taken again. The numbers were carefully concealed, but it oozed out that the larva had been found. Bred specimens were quietly offered at ten guineas the pair! at which price some at all events were sold. We had the honour of having a pair offered at that price. It was pointed out that Dr. Staudinger had the species at five shillings each, and some insinuated that the specimens offered were imported from Northern Europe. We do not think there was any foundation for this, but notwithstanding these doubts there were plenty of purchasers for *Alpina* at high prices. It is now so abundant that every dealer has it at five shillings, and we do not think any one should complain of that price. But it was worth no more when twenty times the money was asked, only the rich simpletons had to be supplied before the price was reduced. There are insects that are and probably always will be worth much more. Species like *Brevilinea*, *Ashworthii*, *Barrettii*, and others are never likely to be a drug in the market; and as it is not convenient for every one to go to their special localities for them, no one should grumble to pay a dealer a price that will reimburse him for his time and trouble, and we should also bear in

mind that he may have all his expense and trouble without result, and be willing to pay accordingly. But for the efforts of dealers to obtain certain species they would always be desiderata with most of us. But, surely, there is a remedy against imposition such as we have spoken of in reference to *Niobe* and *Alpina*. Our remedy is a simple one. Do not buy the ordinary form of any insect at a fancy price from any one, and do not buy at all except from dealers who are known and have a reputation. Both the species we name were foisted on collectors by persons who had not previously announced themselves as dealers. Such transactions as these, and many others we could mention, have given dealers a bad name in this country that probably few of them deserve. To beginners we would say do not be in a hurry to acquire rarities; fill up your rows of common species first, and you will have some knowledge to guide you. British specimens of many species differ considerably from the continental form of the same insect, and until you know which is which, be content to have a few blanks in your cabinet.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured

plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

We have to thank Mr. Wheeldon, of Birmingham, for the nest of the Garden Warbler for figuring.

We want a number of game and water-birds in the down (without pen) for figuring. We have the following:—pheasant, red grouse, partridge, thicknee, lapwing, com. sandpiper, dunlin, woodcock, com. snipe, landrail, moor hen, guillemot, com. tern, black-headed gull. Any other species will be useful. Send direct to S. L. MOSLEY, Beaumont Park, Huddersfield.

EXCHANGE.

DUPLICATES.—Tiger moths, flame wings, small angle shades, flame shoulders, pale brindled beauty, dark arches, scalloped hazels, buff ermines, bordered gothics, clays, cabbage, bright-lined brown-eyes, grey ladders, willow beauties, swallow-tail moths, lotted borders, brimstone, many lines, small bishops, V. moths. Butterflies:—Small whites, green-veined whites (m. and f.), small coppers, small heaths. DESIDERATA.—Numerous (only British). Please send soon with a list to H. WARWICK, Holt Hall, Trinity Road, Aston Paak, Birmingham. P.S.—Please send box and return postage.

(We would prefer if our correspondents would use scientific names; they are shorter and better understood.—Eds. Y.N.)

NOTES AND OBSERVATIONS

NOTES FROM TENBURY. March 2nd.—Sweet violet (*Viola odorata*) in flower.

March 14th.—Gooseberry (*Ribes grossularia*) and elder (*Sambucus nigra*) in leaf. Saw the first landrail.

March 6th.—Coltsfoot (*Tussilago farfara*) and opposite-leaved golden saxifrage (*Chryso-splenium oppositifolium*) and wych elm (*Ulmus montana*) in flower.

March 7th.—Wood anemone (*Anemone nemorosa*) in flower.

March 8th.—Dog rose (*Rosa canina*) in leaf.

March 9th.—Hawthorn (*Crataegus oxyacantha*) in leaf.

March 14th.—Dog violet (*Viola canina*) and daffodil (*Pseudo narcissus*) in flower.

March 15th.—Larch in flower and bramble (*Rubus fruticosus*) in leaf. Heard wood pigeons cooing.

March 18th.—Larch in leaf.

March 21st.—Wood sorrel (*Oxalis acetosella*) in flower. Hazel (*Corylus avellana*) in leaf.

March 23rd.—Cowslip (*Primula veris*) in flower. Wych elm (*Ulmus montana*) in leaf.

March 24th.—Greater stitchwort (*Stellaria holostea*), tuberous moschatell (*Adoxa moschatellina*), and green hellebore (*Helleborus viridus*) in flower.

March 25th.—Toothwort (*Lathræa squamaria*) in flower.

March 57th.—Ground ivy (*Nepeta hederacea*) in flower. Found a blackbird's nest with three eggs.

March 28th.—Found a thrush's nest with one egg.

March 29th.—Blackthorn (*Ilex spinosa*), spurge laurel (*Daphne laureola*), weasel snout (*Galeobdolon luteum*), and ivy-leaved toad-flax (*Linaria cymbalaria*) in flower.—(Miss) N. PRESCOTT DECIE, Bockleton Court.

NOTES AND CAPTURES AT BIRMINGHAM.

—Feb. 8th. *Arum maculatum* (Cuckoo Pint), in full leaf at Cannon Hill. *Hibernia progemma* (male), saw one at same locality. *Sphaerium corneum*. Dredged up between two and three dozen fair specimens of this bivalve, in a pool at Cannon Hill. *Linnæa peregra* very abundant on pieces of floating wood, in same pool.

Feb. 11th. *Phigalia pilosaria* (male). Took a perfectly black variety, and about eight of the ordinary type, at light at Edgbaston.

Feb. 17th. *L. peregra*, caught a few dozen in a small rivulet, near the Pebble Mill, Edgbaston. *L. stagnalis*, and two species of *Planorbis*, abundant in same locality.

March 1st. Chesnut (*Castanea vulgaris*) in flower at Selby Oak and Edgbaston. *Helix aspersa*. Saw several young ones, about half an inch in diameter, under dead leaves at Sellywick. *Helix nemoralis*, var. *hortensis*, one specimen. *Helix hispida*. Sixteen specimens under dead leaves at Sellywick. This last species is remarkable for the fact of having the surface of the shell thickly covered with fine short hairs or bristles, which may be seen to the best advantage under a microscope of low power.

March 8th. *Helix aspersa*. Two adult specimens, with the winter operculum still intact. *Helix nemoralis*, var. *hortensis*, ten specimens; *H. nemoralis* var. *minor*, three specimens; *H. hispida*, *H. rotundata*, and *Zonites nitidus* abundant. Found the above specimens under dead leaves at Sellywick. *Bellis perennis* (Daisy), in flower in every field. *Primula vulgaris* (Primrose), in flower, in Western Coppice, Sellywick.

Mar. 12th. *Tæniocampa gothica* out at light at Edgbaston.

March 19th. Plants observed in flower at Stechford and Yardsley. *Mercurialis perennis* (Dog's Mercury), on every bank; *Ranunculus ficaria* (Lesser Celandine); *Coryllus avellana* (Hazel); *Ænus glutinosa* (Alder); *Lamium purpureum* (Red Dead Nettle); *Lamium album* (White Dead Nettle); *Stellaria holostea* (Stichwort); *Capsella bursa-pastoris* (Shepherd's Purse); *Leontodon taraxacum* (Dandelion); *Bellis Perennis* (Daisy); *Tussilago farfara* (Colts-foot); *Anemone nemorosa* (Wood Anemone); *Potentilla fragariastrum* (Barren Strawberry); *Narcissus pseudo-narcissus* (Daffodill); *Salix caprea* (Sallow); *Ulex europæus* (Gorse); *Viola odorata* (Sweet Violet); *Lychnis diurna* (Red Campion).

Larvæ: took between 20 and 30 young

larvæ of *C. caja*, on Dog's Mercury, &c., at Saltley. Shells: *Cochlicopa lubrica*, took 6 or 7 under moss at Stechford. Birds singing: Robin, Chaffinch, Skylark and Hedgeparrow, at Yardley and Stechford.—P. T. DEAKIN, Birmingham.

MACRO LEPIDOPTERA. January 21st.—Dug for pupæ in Holly Hurst, Sutton Park. Found a number.

March 4th.—Went to Sutton Park. Took a quantity of pale brindled beauty and dotted border moths. Also dug for pupæ for a short time.

March 12th.—Found a great quantity of tiger moth larvæ feeding on various plants at Aston.

March 21st.—Dug for pupæ at Handsworth. Found several. Also took several larvæ.—F. MUNDY, Beckminster Hall, Trinity Road, Aston Park, Birmingham.

NOTES FROM CORK.—While out walking on St. Patrick's day last I saw a heron and a number of water-hens in a marsh near Glanmire. I also saw a tree creeper. Hibernated butterflies and bees were plentiful.—J. T. HOFORD, 70, Grand Parade, Cork.

DOMESTIC PIGEONS.—While you are now in the subject of pigeons, I will mention a few colours that I have bred with tumblers. Blue and red paired will bring black or bronze, very rarely the young being the same colour as their parents. Black mottled and black will bring black. Black mottled and red will bring black mottled or black. Black and red will bring young black and red, the same colour as themselves. Black and blue will bring lightish black. Blue can never be produced unless both the parents are of that colour. If any of your readers keep pigeons, and want to know anything about them I shall be very pleased to give them all the information I can, also as to the management of fowls, cage birds, guinea pigs, and mice; I may state that I have kept fowls nearly twelve years.

March 12. I have seen numbers of wild ducks lately in the neighbourhood of Spade Mill Pool. To-day I saw a few by Bracebridge Pool, they rose up high into the air, and then flew off in a line. They quacked just like the domestic duck. Coots also begin to make their presence known. In Upper Nut Hurst I saw a pair of flycatchers hawking for flies. Saw a pair of field-fares. I observed flying at a great height soaring round and round a flock of about a dozen sparrow hawks; they were going in a northerly direction. To-day there were thousands of insects of all sorts flying in the sun. Bees and wasps were very numerous. Saw great quantities of sunshine beetles flying round the cow pats. There were also a number of lady-birds with them.

BIRMINGHAM NOTES. March 14th.--Some boys brought me to-day a robin's nest containing five eggs that they had found on a bank. The eggs had an appearance of being laid several days. I was told that the old birds had deserted it on account of its being looked into so often. The nest was composed of dried leaves, grass and moss, and the inside was lined with cow and horse hair.

March 18th.—Saw several wild ducks in the park; the flaps of their wings can be heard a very long distance of. Saw a flock of lapwings on the common.

March 19th.—Saw the first grey wagtail this year; it was running along the grass after flies by a brook. Saw great numbers of skaters on the pools, and water beetles and other insects in the brooks. Bullheads and sticklebacks were very numerous. Observed a number of brown lizards sunning themselves among the heather. A very large pike was seen the other day in Bracebridge Pool spawning.

March 20th.—To-day at a Natural History Exhibition in Birmingham I saw several vipers that were caught by a gentleman in Sutton Park yesterday.

March 25th.—The railway banks are now

completely covered with the flowers of the meadow coltsfoot (*Tussilago farfara*). Daisies and dandelions are also coming out in great abundance. Saw great quantities of *L. peregra* in the Keeper's Pool, but only a very few *L. stagnalis*. Took a few other species of shells. Small trees always seem to come into leaf before larger ones of the same species. Pullets generally begin to lay earlier in the year than old hens. Stock doves (*C. œnas*)—I should have said "Turtle Doves (*C. turtur*)."—See Y.N., No. 121, p. 139, and No. 122, p. 147. Heaths (*C. vulgaris*, *E. cinerea*, and *E. tetralix*). As Mr. J. W. Carter says these heaths are very "persistent," we have had such mild weather this winter that they looked quite fresh when I saw them.—See Y.N., No. 116, p. 100, and No. 122, p. 147.—W. H. BATH, Sutton, near Birmingham.

ENTOMOLOGY IN GERMANY.

A German friend of mine says that the butterflies in Germany outnumber ours by very many, but the moths are not so numerous in proportion. One morning he caught twenty-five species of butterflies. Hawn moths are very plentiful there also: he caught fifteen one evening. They begin to appear about seven p.m., and a good look out on flower beds will sure to reveal them. *S. convolvuli*, *S. ligustri*, *D. euphorbiæ*, *D. livornica*, *C. celerio*, *C. porcellus*, and *C. elpenor*: all he has taken on flower beds; but a very rapid stroke must be made or they are off in a second. He says it is very good sport catching them. About half-a-dozen collectors would stand round a flower bed watching for them like cats. Then all on a sudden there would be a clashing of nets. Sometimes they come into contact with each other and get broken. *S. ocellatus*, *S. populi*, and *S. tilie* do not come to flowers. They are so adapted that they do not require to take any nourishment at all while they live: they do not live many days. He says that

in Germany there are far more facilities for the entomologist than in this country. There being no enclosed land, people can go into meadows and private gardens without being molested, unless they do any damage. He says that he has taken *Doritis apollo* very plentifully in Switzerland, south of the Alps. It is a very easy butterfly to catch, flying so heavily on the wing. He also further remarks that *H. humuli*, *C. caja*, and *A. grossulariata* are not common in Germany.—W. H. BATH, Sutton, near Birmingham.

CAPTURED IN THE NEIGHBOURHOOD OF BOCKLETON,

Situated five miles south of Tenbury, in the county of Worcester, in 1881.

LARVÆ (Continued from page 150.)

- L. Didymata, very numerous, primrose.
- D. Furcula, 2, willow
- D. Bifida, 5, poplar
- D. Vinula, 7, willow
- P. Bucephala, very numerous, willow
- N. Camelina, 4, willow
- N. Ziczac, 9, willow
- N. Chaonia, 1,
- T. Batis, 1, bramble
- A. Tridens, 1, laurel
- A. Psi, 10, various
- A. Leporina, 1, alder
- A. Aceris, 20, poplar
- A. Megacephala, 6, poplar
- A. Rumicis, very numerous, various
- M. Brassicæ, " various
- H. Pisi, 8, various
- P. Iota, 2, nettle
- V. C-Album, 31, hop
- V. Urticæ, very numerous, nettle.

We had a lot more larvæ of which we did not know the names. We did not see a single specimen of *V. Cardui* last summer, though in 1879 and 1880 they were very plentiful. There were very few butterflies about in August, I suppose the cold and wet prevented them coming out. We took

scarcely any moths at sugar, either in August, September, or October; *Ferruginea*, *Oxyacantha*, *Aprilina*, and *Suffusa* being conspicuous by their absence.—R. PRESCOTT DECIE.

SIGNS OF RAIN.

The following lines by Dr. Jenner are worth reproducing in the Young Naturalist.

The hollow winds begin to blow,
 The clouds look black, the glass is low,
 The soot falls down, the spaniels sleep,
 And spiders from their cobwebs creep.
 Last night the sun went pale to bed,
 The moon in halos hid her head.
 The boding shepherd heaves a sigh,
 For see! a rainbow spans the sky.
 The walls are damp, the ditches swell,
 Closed is the pink-eyed pimpernel.
 Hark! how the chairs and tables crack,
 Old Betty's joints are on the rack.
 Loud quack the ducks, the peacocks cry,
 The distant hills are looking nigh.
 How restless are the snorting swine,
 The busy flies disturb the kine.
 Low o'er the grass the swallow wings:
 The cricket, too, how loud it sings.
 Puss on the earth with velvet paws,
 Sits smoothing o'er her whisker'd jaws.
 Thro' the clear stream the fishes rise,
 And nimbly catch the incautious flies.
 The sheep were seen at early light
 Cropping the meads with eager bite.
 Tho' June, the air is cold and chill;
 The mellow blackbird's voice is still.
 The glow-worms, numerous and bright,
 Illumed the dewy dell last night.
 At dusk the squalid toad was seen
 Hopping, crawling o'er the green.
 The frog has lost its yellow vest,
 And in a dingy suit is dressed.
 The leech, disturb'd, is newly risen
 Quite to the summit of his prison.
 The whirling winds the dust ob ys,
 And in the rapid eddy plays.
 My dog, so altered in his taste,
 Quits mutton bones on grass to feast;
 And see yon rooks, how odd their flight,
 They imitate the gliding kite;
 Or seen, precipitate to fall,
 As if they felt the piercing ball.
 'Twill surely rain—I see with sorrow,
 Our jaunt must be put off to-morrow.

BRITISH ANTS—By G. C. BIGNELL.*(Continued from page 175.)*

of antennæ rather pale, entire insect covered with a fine grey pubescence, and with scattered, fine, erect hairs; head slightly narrower than the thorax; wings white; scale of the petiole somewhat truncate above and very slightly emarginate; scape of the antennæ and tibiæ with fine erect hairs.

FEMALE very much larger than the male or worker, similar in colour, but with the mandibles, legs and scape of antennæ pale testaceous brown; head much narrower than the thorax; wings white and iridescent, nervures pale; abdomen large and oval, densely covered with a fine silky pubescence, and with short, semi-erect brownish hairs. Length, 8-10 mill.

WORKER, like the female in colour and pubescence; head larger and much wider than the thorax; abdomen only slightly larger than the head; scape of the antennæ and tibiæ with fine erect hairs; extreme apex of the antennæ pale in all the sexes. Length, 2-5 mill.

HABITAT. Abundant everywhere, often found in houses during the summer, in search of sweets of any description.

3. Lasius alienus. Forst.

Very like the preceding. It is rather smaller and paler, the head longer and narrower, and the antennæ and tibiæ are *not hairy*.

HABITAT.—Deal, Bournemouth, Hayling Island, Sidmouth, &c.

"The habit of this insect is different from *L. niger*; it is usually found on exposed bare patches, on cliffs or commons, and it has a way of tunnelling under ground, and of casting up little hillocks after the manner of the mole."

Male and female appear about the end of June.

4. Lasius umbratus. Nyl.

MALE.—Brown, slightly pilose; the antennæ and legs not so dark as the body, and

the tarsi paler; the mandibles with five teeth; the basal half of the wings brown, the nervures testaceous, the stigma darker. Length 3-5 mill.

FEMALE.—Fuscous - yellow, densely covered with a fine cinereous pile; head little wider than the thorax; the antennæ and legs pale reddish yellow; the scale of the petiole widely, but not deeply emarginate above. Length 7 mill.

WORKER.—Pale yellow, and very similar to *L. flavus*, but with the eyes, scape of the antennæ and the tibiæ pubescent. Length 2-5 mill.

HABITAT.—Generally distributed, and not uncommon.

5. Lasius mixtus, Nyl.

Very like the preceding.

MALE.—Has the eyes *destitute* of hairs.

FEMALE.—Brown-black; *head narrower* than the thorax; the fuscous cloud at the base of the wing not so dark, but *extends beyond* the discoidal cell, and the discoidal cell is smaller.

WORKER.—Pale yellow.

HABITAT.—It was taken by the writer at Bickleigh on the 2nd September, 1881, who observed a family gathering on an old bramble stem, males, females, and workers. I believe, however, it is only considered a race of *L. umbrata*.

6. Lasius flavus, De Geer.

MALE.—Brownish black; the articulations of the legs and tarsi pale testaceous; wings white-hyaline, with the nervures pale testaceous; the scape and legs not pubescent; the mandibles not toothed. Length 3-5 mill.

FEMALE.—Fuscous; the palpi, antennæ and legs pale yellow testaceous; clothed with a fine yellow silky pile; head narrower than the thorax; wings hyaline, smoky at their base.

WORKER.—Pale yellow; the tibiæ and scape of the antennæ *without* the erect hairs,

(Continued on page 207.)

THE YOUNG NATURALIST.

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VOL. 3.

NEWSPAPERS AND NATURAL HISTORY.

NEWSPAPERS were always willing to chronicle, especially in the "dead season," any natural history items sufficiently out of the common to be attractive to the general reader. They had rather a leaning to the marvellous, and a paragraph that could be headed "LUSUS NATURÆ" would always ensure insertion. In fact, they were so fond of this sort of thing that enormous gooseberries and monstrous hens' eggs were a standing joke against them. A kitten with more heads or limbs than it could conveniently use, or a puppy similarly gifted was sure to find record, while the sea serpent—especially in papers circulating in seaports—commanded attention at any time. Along with paragraphs of this sort, travellers tales of what was new and strange, anything, in short, that was not plain simple natural history was always willingly inserted in the news column of the Provincial Press. But of recent years we have noticed with much pleasure that a different

tone has begun to prevail. Newspapers claim to be leaders of thought, but they probably only lead sentiment already declared, and do not do much as advanced guards or pioneers. When, however, a movement has begun to command attention, the newspaper can then do much to help it forward. The growing popularity of natural history studies may therefore be assumed from the growing favour with which the press regards it. Our correspondents frequently send us newspapers or cuttings with interesting natural history items in them, and we should be glad to receive more when they contain matters of interest.

Perhaps no paper that has come under our notice contains more valuable information on our subject than the *Newcastle Weekly Chronicle*, in which natural history has been a leading subject for a long time. Not only has it had a prominent place in the notes and queries columns, but there have been two special departments in the paper of great value. First, there have been a series of articles by able writers on the fauna of Northumber-

land and Durham. This begun some years ago with the Wild Flowers of the District, and ere this was completed "The Birds of Northumberland and Durham" was begun, and it is now drawing near a close. While this has been going on, The Mammalia and The Reptilia occurring in the same counties have been completed. Nor are these, articles of only a few words, but a full descriptive account of the various animals is given, their habits, characteristics, and their places of occurrence in these two counties. So far as we know, nothing so complete has been attempted elsewhere in the pages of a newspaper. The other department is totally different, yet is possibly of more value from one point of view. Two columns weekly are set apart for a Children's Corner, the special object being to induce children to join what is called "The Dicky Bird Society." The presiding genius of the corner and founder of this society is a genial old gentleman who calls himself "Uncle Toby," and whose guiding spirit is supposed to be a nondescript member of the feathered tribe called "Father Chirpie." The society pledges children to be kind to dumb animals and protect them by all means in their power, and nearly 60,000 members have been enrolled in it! The columns are filled with anecdotes of animals, many of them original, observations made by the members, poetry, puzzles,

&c., &c., but the aim of the society is never lost sight of for a moment. Bird-nesting is forbidden to the members, except that any one forming a collection of eggs, may take *one* out of any nest found. The young people are encouraged to put up boxes about their houses and gardens in which birds may build. These are called "Uncle Toby Boxes," and particulars of where they are erected and what birds frequent them is published. From time to time a brief account is given of some well-known animal or bird, and in every way children are encouraged to learn something about the animal world, and to be kind to such as they meet with.

We recently had sent us a copy of "The City News," a Liverpool paper that appears to desire to follow in the same steps. More than four columns are given of a paper read at the meeting of the Lancashire and Cheshire Entomological Society by Mr. E. D. Fish, of Birkenhead, on the question "Is instinct or reason the ruling principle in animal life?" To this paper and the discussion that followed it we may refer on another occasion. "The City News" has also a Notes and Queries column, but it is as yet in its infancy.

Another paper of almost world-wide repute *The Leeds Mercury*, has, we are told, placed a column weekly at the disposal of the Naturalists of that busy town. If papers circulating in large

centres of population like these, Newcastle-on-Tyne, Liverpool, and Leeds, find it worth their while to pay attention to Natural History, doubtless others would do the same. Even Ireland with all its troubles can find some little matters of interest outside of local politics and Land Leagues. A cutting was sent us from the *Cork Constitution*, of April 3rd, giving an account of a meeting for the purpose of forming a society to be called "The County Cork Bee-keepers Association." Our correspondent, who sends us the cutting, evidently thinks this an earnest of better things, and we hope it may be.

Is it not worth our readers while, to try their own local papers with similar items. Some of them are sure to be inserted, and by this means the attention of many a one would be called to the study who might become interested. It may also be the means of isolated naturalists discovering that there are others working away beside them, of whose existence they were unaware, and we are all glad of a little company at times.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

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EXCHANGE.

Ova of *N. Zonaria* and *T. opima*. DESIDERATA—Ova of many Lepidoptera.—J. W. ELLIS, 101, Everton Road, Liverpool.

DUPLICATES—Hymenoptera, *Nomada signata*, *Andrena fulva* and *Anthrophara acervorum*, Hemiptera, *Selairus biguttatus* and *Anueris lævis*, and numerous Coleoptera. DESIDERATA—British Coleoptera.—W. H. BENNETT, 11, George Street, Hastings.

DUPLICATES—Larvæ of *L. Didymata*. DESIDERATA—Numerous, larvæ preferred to imagines.—(Miss) R. PRESCOTT DECIE, Bockleton Court, Tenbury.

NOTES AND OBSERVATIONS

BIRMINGHAM NOTES.—April 10th. Saw at Stratford-on-Avon and outskirts, the following:—A pair of Greenfinches building in a hedge; Starlings also building round the church. I also observed several young rooks, in full plumage, on the tops of the highest trees. The Corncrake (*Crex pratensis*) has made its appearance, I heard one in Loxley Lane; this is very early. Saw *Vanessa Urticæ* flying along the hedge-row in great abundance. Hawthorn (*Crataegus oxyantha*) in full blossom. I noticed it had a very unusual look about it, being in full blossom and quite leafless. (Was it not Blackthorn, which always flowers before the leaves appear?—EDS.) Saw at Hatton a pair of Sand-martins.—ALEXANDER G. DAVIS, 61, Suffolk Street, Birmingham.

NOTE ON THE WATER HEN.—On the 9th inst, whilst walking by the side of a pond, I disturbed a Water Hen from the side into the water, which being quite clear, I could see its mode of swimming under water quite plain. It did not swim with its feet, which were carried out behind, but it rowed itself along with its wings.

INSECTS CAPTURED AT HARWICH.—At Sallow bloom I have taken the following *Tenioecampa*, since I wrote you on the 16th

March, see page 172. On the 20th March, I took three *Rubricosa*, one *Instabilis*, eight *Stabilis*, and one *Cruda*. On the 23rd, one *Gothica*, one *Rubricosa*, nine *Stabilis*, and four *Cruda*. On the 25th, one *Rubricosa*, ten *Stabilis*, one *Gracilis*, and one (query.) On the 27th, one *Gothica*, two *Rubricosa*, six *Stabilis*, and one *Gracilis*; *Stabilis* was a perfect pest. I have picked some nice varieties out of them. On the 5th April I caught two *C. vetusta* and one *A. æscularia*, at Sloe bloom. On the 7th, one *T. miniosa*, at rest on palings. On the 8th, Mr. C. A. Marriott and I again visited the Sloe bloom, and captured one *H. Progemmaria*, one *A. æscularia*, three *T. Gothica*, one *Rubricosa*, two *Instabilis*, eight *Stabilis*, two *Gracilis* and two *C. vetusta*. On the 9th, six *Gothica*, five *Stabilis*, two *Rubricosa*, one *Gracilis*, one *Cruda*, and one *A. æscularia*. I find Sloe bloom nearly as productive as Sallow bloom; I should like to hear of other captures, as I think Sloe bloom is not worked so much as it might be. On the 8th, I saw the first white butterfly *P. brassicæ*. On the 9th, caught one *P. rapæ*, and one *Cidaria suffumata*.—F. KERRY, Harwich.

SPRING MIGRANTS AT HARWICH.—The first swallow was seen on the 14th inst.; three sand martins and two house martins on the 15th inst.; and many yellow wagtails were seen on the 16th.—F. KERRY, Harwich.

BIRMINGHAM NOTES.—March 28th. Saw great quantities of *Helix Nemoralis*, on the banks at night. The variety *Hortensis* was very plentiful.

March 29th. To-day, I was witness to a curious fact of a cat running away from a mouse. It was the first time the cat had seen one, she was not afraid of us, but of the mouse. This does not seem like instinct. Birds build nests the first time as well as they ever can do afterwards. Why do not all cats then kill mice the first time they see them? They are their natural prey.

I will mention here that I caught seven mice, and tipped them all out of a cage together, in the presence of a cat. She did not stay to eat them, but simply gave one bite each and swallowed them wholesale. It was done like magic! Only one escaped. When dogs have more food than they want they bury what they have over.

April 1. In Sutton Park I saw a great number of Brown Linnets in a cluster upon one tree. They were having quite a concert. When I made as light noise they flew off all together on to another tree and began singing again.

April 3rd. Saw a pair of Sparrow Hawks on the look out for prey. A large dog belonging to a friend of mine has lately died from the effects of a bite received from a viper in the Park. The dog was bitten on the mouth.—W. HARCOURT BATH.

(It is doubtful whether birds build their nests as well the first time as afterwards. See very excellent essay by Mr. J. R. Wallace, in *The Intellectual Observer*, for July, 1867.—Eds. Y.N.)

BIRMINGHAM NOTES.—Plants in flower not mentioned in previous list:—Broom (*Cytisus scoparius*), Shepherd's Purse (*Capsella bursa-pastoris*), Common Bitter Cress (*Cardamine hirsuta*), and Bilberry (*Vaccinium myrtillus*) at the Lickey Hills, near Bromsgrove, on 2nd April. Marsh marigold (*Caltha palustris*), Ladies' Smock (*Cardamine pratensis*), Blackthorn (*Prunus spinosa*), on the bank of the Avon, at Stratford, on 7th April. White Dead Nettle (*Lamium album*), Black Poplar (*Populus nigra*), Garlic Mustard (*Alliaria officinalis*), Dog Violet (*Viola canina*), Chervil or Cow Parsley (*Anthriscus sylvestris*), Red Campion (*Lychnis diurni*), at Sechley on 8th April; and Wood Sorrell (*Oxalis acetosella*), Opposite-leaved Golden Saxifrage (*Chrysoplenium oppositifolium*), at Selly Oak on 9th April.

Found several mosses in fruit at the Lickeys on 2nd April, amongst them *Polypodium commune* showing the sexual organs at the apex.—G.H. WHEELDON, Birmingham.

ON LARVA HUNTING.

(From the "Naturalist's Circular," by permission of the Editor.)

Now that spring has arrived, covering the bare trees and bushes with tiny buds and leaves, and calling forth wild flowers from the earth, the entomologist will find plenty of employment abroad in rural scenes. A very interesting and profitable mode of obtaining lepidopterous insects can be practised with success,—that expressed by the term "larva-hunting." Much, we are well aware, has been written concerning this branch of the entomologist's labours; yet we imagine that many readers of our *Circular* will not feel uninterested in a few additional remarks at this season of the year, when "larva-hunting" is most necessary and most efficacious.

When preparing for an expedition in search of *lepidopterous* larvæ (to which we shall confine our present remarks), we may remind the reader that there are two principal methods of operation in vogue amongst collectors. The one is to *search* diligently and carefully the foliage of trees, bushes, and low herbage; and the other, to employ the aid of a net or umbrella, beating the vegetation over these, and thus securing the larvæ which may be concealed. In the first method, which is termed "searching," the collector depends upon a ready eye and careful manipulation to secure the specimens; in the latter, he resorts to artificial means to expedite the same result. Doubtless, much might be said on behalf of each method of "larva-hunting," but from our own individual experience, we should recommend "searching" in the generality of cases. Both, however, are good in their

separate ways, and we may briefly advert to the advantages of each.

With respect to searching, it is wonderful how quickly the eye becomes accustomed to detect the presence of a larva, even when tolerably well concealed amongst the leaves. The latter should be turned up, as most lepidopterous larvæ will be found on the *under* surface of the leaves, often stretched along the midrib at rest. One great advantage noticeable in searching is that the collector needs no additional apparatus, which is in itself a very weighty recommendation. Another, and a still more important advantage, is the certainty of knowing on what food to rear the larva captured, which is often a total impossibility with regard to captures by "beating."

And now a word or two in connection with "beating." This is usually accomplished by the aid of a stick and umbrella, or net made of stout calico, into which the contents of the trees or bushes are beaten, and the larvæ *may* tumble in with the mass of other insects. Doubtless, "beating" is a useful mode of larva-hunting, but more particularly successful, we believe, in regard to low plants, which can be more readily thrashed or beaten into a net than searched; which latter occupation would in this case prove very tedious. Of course, by beating, one may very likely secure larvæ hidden in the midst of a bush or tree, where searching would be difficult, and thus effect the capture of many a "good thing" that would otherwise have been lost. But we fear that larvæ are too often injured by the process of beating, and besides this disadvantage, there is another of considerable force. It is that some of the larger larvæ (such as those of the *Bombycina*, *Sphingina*, &c.) cannot be dislodged by beating, unless greater force be used than is advisable.

Altogether, we feel that searching will generally prove more effective than beating. A disadvantage attending the latter method

should not be considered unworthy of notice. We allude to the "*olla podrida*" of insects that fall into the receptacle employed. It is true that entomologists should not be thin-skinned, but it is also advisable that the pleasantest modes of working be adopted where they are effective. On a hot summer's day, to be covered with various spiders, flies, aphides, earwigs, &c., &c., is by no means a pleasant adjunct to the sport of larva-hunting.

Finally, let us say that we have been much amused by reading the various methods advised by entomological writers in their works. One recommends the use of a large sheet, carried by two persons, into which capacious receptacle a third beats the foliage of high trees, &c. Another has advocated the placing of pieces of flannel in hedges, amongst the bushes, and on the low herbage in the evening, assuring his readers that these "traps" will be found tenanted by larvæ in the morning. Another writer, with more reason, recommends the use of a lantern, and a nocturnal search, for the night-feeding larvæ of *Noctua*. This we have found very successful. Space prevents us entering more fully into this subject, but we hope that the few hints offered may at least serve to stimulate the entomological readers to renewed perseverance in larva-hunting during the season now commenced.

—E. J. S. CLIFFORD.

A DAY'S HOLIDAY AT LLANGOLLEN.

BY DR. JOHN W. ELLIS.

A promise of a fine day, and the fact of my not having had a holiday out of town for eighteen months, induced me to join my friend, Mr. J. H. Smedley, in a day's excursion to Llangollen on Good Friday last (April 7th), our principal object being the addition to our collections of some of the mountain coleoptera. We left Birkenhead by a Great Western excursion at 7.20 a.m.,

arriving at our destination about 9.20. The grey early morning gave promise of a fine day, and our expectations were fully realized and our spirits cheered (although the buoyancy derived from the fresh country air was sufficient for the latter) by one of the most glorious days ever seen in our changeable climate. Although for the last fortnight the weather has been cold and unpropitious, many spring flowers were noticed on the railway banks as we journeyed onwards; among them, I remember, primroses and violets in abundance, *anemone nemorosa*, broom, marsh marigold (*Caltha palustris*), and even early-flowering specimens of cowslip and "ox-eye" daisy.

On arriving at Llangollen we rejected the offers of hot water and "Sing you a song, sir, Welsh or English, for a halfpenny," and struck off for our intended collecting ground, viz., the mountains on the west of the Ruthin Road, beyond Valle Crucis Abbey. We had hardly walked a hundred yards along the road when my friend bottled the first beetle, *Chrysomela staphylea*, which was enjoying the sunshine on the bare ground. A short distance along the road, past the slate wharf on the canal bank, we turned up two fine larvæ of *Cossus ligniperda* lying beneath a stone, although a rotten tree at a short distance showed plainly where this species had been at work. Mr. Smedley found a couple of *Ocyfus compressus* under a stone close by. I noticed the two common dead-nettles, *Lamium purpureum* and *L. album*, very common in the hedges by the road, and also was pleased at seeing the cuckoo-pint (*Arum maculatum*) in abundance in similar situations. This is a plant which is so extremely local in our Liverpool neighbourhood that I had never before seen it in perfection. We commenced our ascent of the mountains by turning up through a farmyard and crossing two brooks which rushed over their rocky beds on their road to join one of the Dee tributaries, and in

the beds of these brooks we commenced work in earnest; taking *Bembidium tibiale* and *B. brunripes* under stones near the water; *Anacena limbata* on the under surface of wet stones; and the beautiful but very local *Dianous carulescens* along with its ally, which almost always accompanies it, *Stenus guynemeri*, both under stones, where they were completely immersed.

Leaving these hills we commenced the ascent of Moel-y-Gamelin by climbing (and stumbling often) among the old stems of bracken, having to be very careful how we assisted ourselves by grasping the said stems; indeed, my professional services were called into requisition to extract a "splinter" of bracken nearly an inch long from my friend's hand before we were half way up. After a good deal of muscular exertion we reached the top, where under loose stones we took *Byrrhus jasciatus*, *B. dorsalis*, *Corymbites quercus* and *holosericeus*, *Pterostichus madidus*, and *Calathus melanocephalus*. The two latter were, of course, not *desiderata*, except that they were all carefully examined, and a few doubtful specimens bottled, in order that no examples of *P. athiops* should be passed over with the former, or of the var. *nubigena* or *C. micropterus* with the latter. I had the good fortune to capture a single specimen of *Carabus arvensis*, but careful working failed to reward us with more. I can recommend these hills to any student of the *Formicidæ*, for there was hardly a stone but what had a colony of black, yellow, or red ants of various species (I am not versed in the genus) under it. Our attention was called to these ant-nests—or, rather, galleries—through a wish of finding some of the parasitic *brachelytra* among them, but in this we were unsuccessful.

Leaving Moel-y-Gamelin we crossed a steep escarpment of rock, where it required all our attention to prevent rolling down into the valley beneath, which might have crushed some of our pill boxes at least (and

I was particularly careful of the one containing *C. arvensis*.

Ascending Moel-y-faen we found quite a different vegetation, the lower slopes being heather-clad, while the upper portion, near the summit, was covered with *Sphagnum*, and here and there a patch of *Vaccinium*. Under stones on these slopes we found *Cytillus (Byrrhus) varius*, *Corymbites æneus*, *Olisthopus rotundatus*, *Philonthus politus* and *scutatus*, *Ocybus cupreus*, *Strophosomus faber*, and several species of *Quedius* and *Lathrobium*. *Notiophilus aquaticus* was also abundant: we took several perfectly black varieties. But we quite failed to find any trace of our chief desiderate, *Miscodera arctica*, *Calathus micropterus* and *Pterostichus athiops*, all of which are found on these mountains according to Dawson, although we pulled down a good portion of a cairn of stones (which we replaced) in the hope of finding them. After enjoying the splendid view from the summit of Moel-y-faen we commenced our descent by following the rills downwards, finding some small specimens of *Pterostichus nigrita*, which we hoped would turn out something better, and *P. cupreus*, of which I afterwards took another specimen on the Ruthin road. After reaching Llangollen we enjoyed a good tea at Mrs. Davies' Temperance Hotel, fitting in the time between tea and our return by a stroll back to near Valle Crucis Abbey for primrose roots. We left Llangollen about 8 p.m., thoroughly tired, and thankful for having gone in old boots and clothes. Let me here recommend any entomologist who intends visiting this district to follow our plan in this respect, to lay aside his care for "appearances," and to go to work in his oldest suit and strongest boots, and he will then feel comfortable. After several delays we reached Liverpool about 10.30, having spent one of the most enjoyable days I ever remember.—101, Everton Road, Liverpool, April 10th, 1882.

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VOL. 3.

CHARLES DARWIN.

CHARLES DARWIN has passed away. He died on Wednesday, the 19th instant, after but a few days illness. So sudden indeed was it, that probably but few knew he was indisposed, and the first intimation received was the announcement of his death. Born on the 12th February, 1809, he had already passed the allotted three score years and ten, and had entered on the 74th year of his age. Yet so early was he known as a close observer, that it is more than half a century since he was selected as Naturalist to the Beagle expedition to the Southern Seas. Both on his father's and mother's side was he descended from famous men, so that he was a personal illustration of the truth of his own doctrine with regard to descent. His grandfather was Dr. Erasmus Darwin, whose "Zoonomia" is perhaps the best known of his works. His father was a physician at Shrewsbury, of sufficient eminence to gain for him the right to style himself F.R.S. His grandfather on his mother's side was the famous Josiah

Wedgwood, who may well be called the founder of the modern English art of pottery. From Dr. Erasmus Darwin he appears to have inherited that love of natural history studies which afterwards became the labour and pleasure of his life. When the Beagle was preparing for her voyage in 1883, Captain Fitzroy offered part of his cabin for the accommodation of any naturalist who might accompany the trip. Mr. Darwin being selected for that post, he offered to go without salary and pay part of his own expenses if he might have the disposal of his collections. This voyage lasted nearly five years, and must have done much for his scientific education. On his return he published a "Journal of Researches into the Geology and Natural History" of the various countries he had visited. He had been "much struck with certain facts in the distribution of the organic beings inhabiting South America, and in the geological relations of the present to the past inhabitants of that continent." Pondering these things in his mind, it occurred to him in 1837 that "some-

thing might, perhaps, be made out" on the question of the origin of species by "patiently accumulating and reflecting on all sorts of facts which could possibly have any bearing on it." For more than twenty years he pursued this work, and was eventually hurried into publication because Mr. Alfred R. Wallace, who, after studying nature for a year or two on the river Amazon, and for a longer period in the same pursuit at the Malay Archipelago, had arrived at almost the same conclusions as Mr. Darwin with regard to the origin of species. The fact that two persons working independently and in ignorance of the others pursuits should have reached the same results is not unprecedented in science; but the manner in which these two distinguished men acted towards each other is certainly without precedent. There was no angry ebullition of "I first;" no attempt to disparage the work of the other; but it was rather which should yield precedence to the other and give him most honour. On the same night, in the year 1858, these two enquirers presented papers to the Linnæan Society, each of which promulgated the doctrine now called evolution. Mr. Darwin says "the theory of natural selection is promulgated by Mr. Wallace with admirable force and clearness." Mr. Wallace says, "Here my claims must cease. I have felt all my life, and still feel, the most sincere

satisfaction that Mr. Darwin had been at work long before me, and that it was not left for me to attempt to write "The Origin of Species." Thus, instead of bad feeling being engendered, and valuable time wasted over an idle controversy, each tried to honour the other more, to their own still greater honour. "The behaviour of Mr. Wallace in relation to this subject," writes Dr. Tyndall, "has been dignified in the highest degree." We have rather enlarged on the point because we wish to point to it as an example that our young friends should try to emulate even in small things.

In 1859 appeared the "Origin of Species," a work that changed the tone of thought on natural history. A work that was at first laughed at, then attempted to be replied to; but one that has not only held its own, but has in less than a quarter of a century conquered almost every opponent, and whose doctrine is now received as truth by almost every one whose thoughts are of value. We cannot here refer to the book at all. A few articles on "Darwinism" have lately appeared in our columns, and will be continued from time to time.

Mr. Darwin has continued to issue volume after volume on the same subject; all showing the most careful and painstaking research; all brim-full of facts and illustrations; all in the same wonderful style, by which the most

difficult subjects are made understandable even by those who have no previous knowledge on the subject. The principal works are, "The Descent of Man," "The Variation of Animals and Plants under Domestication," "The Expression of the Emotions," "The Fertilization of Orchids," "Insectivorous Plants," "The Movements and Habits of Climbing Plants," &c., &c. His last work was "The Formation of Vegetable Mould through the Action of Worms," which is as original in thought as important in its teachings, and as full of the results of painstaking investigation as any of his earlier works.

Married in 1839 to his cousin, Miss Wedgewood, he leaves five sons and two daughters. Two, at least, of his sons are already known to fame, one of them, Mr. Francis Darwin, following in his father's footsteps.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

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MISS RUTH PRESCOTT DECIE.—Your plant is *Dielytra spectabilis*, a China plant, introduced early in the present century, and now naturalised and very common in cottage gardens, whence, doubtless, it has escaped at some time to where you found it. It is easy of cultivation, but often

suffers from spring frosts, I saw bushy plants of it two feet high on Tweedside cut down by the severe frost of a fortnight ago. It is sometimes called Lyre flower, from the shape of the blossoms like an ancient lyre. The generic name, *Dielytra*,—two wings,—from their winged flowers, and *spectabilis* from its showy appearance. It belongs to the N. O. *Fumariaceæ*, represented by the fumitories of our fields—which it resembles like an enlarged copy.—J. P. SOUTTER.

EXCHANGE.

DUPLICATES.—Larvæ and pupæ of *Epunda lichenea*. DESIDERATA.—Larvæ, pupæ, or imagines of butterflies and moths.—C. J. HARRISON, 65, Haddington Road, Stoke, Devonport.

NOTES AND OBSERVATIONS

CAPTURES AT HASTINGS.—On Monday, April 3rd, I made a short excursion in search of Coleoptera, and found among the following species:—*Blechnus naurus*, darting about on clay banks in the sunshine; *Quedius impressus*, floating on a pond; *Hopatron sabulosum*, in a sunny bank, about half-a-dozen; *Dimous cæruleus*, in wet moss, at Fairlight; two *Xestobium fessulata*, in an old tree; *Hylesinus crenatus*, under ash bark. The following in a sand-pit, at Fairlight: *Calathus melanocephalus*, *Amara lunicollis*, *Mycetopus longulus*, *Staphylinus cæsaricus*, *Carcinops minima*, *Hypera plantaginis*, *polygona*, *punctata*, and *nigrirostris*; *Rhynoncus pericarpus*, and *Myrmedonia limbata*, under a stone among ants.—W. H. BENNETT, 11, George Street, Hastings.

BIRMINGHAM NOTES.—April 7th. Observed localities for the following flowers at Sutton.—On fields to the north of the town the Lesser Celandine *Ranunculus Ficaria*, was growing in great abundance. Primroses and Violets on the banks, and the Wild Narcissus very plentiful in the

neighbourhood of pools. Wood Anemone (*Anemone nemorosa*), abundant in shady places. The Marsh Marigold and Sallow were extremely plentiful in the bogs by Spade Mill Pool.

Saw several Snipe by Long Moor Pool. Note—Sometimes Snipe will not stir until the intruder is within a few yards. Grey Water Wagtails were plentiful by all the brooks. Shrew Mice.—I have observed several dead Shrew Mice lately. It seems that they die off in the spring as much as in the autumn.

April 15th.—Brake fern in leaf.

April 16th.—Saw a few hares, several flocks of brown linnets, a gold finch, heron, nettle creeper, several crows, black-capped tits, partidges, and lapwings, at Sutton. Found two nests of the common wren, one golden crested wren, one house sparrow, two thrushes, four blackbirds, one tree starling, one robin, and several hedge sparrows, at Sutton. Most of the nests were without eggs in, and were building. The sand martins came to-day in a large flock and have gone to their own banks. It is peculiar that they should all come together. Found a cocoon of the emperor moth among the heather containing a live pupa. Coleoptera were very numerous on the common, and Diptera along the banks. Found one *L. stagnalis* in the Keeper's Pool. Saw great quantities of *L. peregrina*. I have seen very few specimens of *L. stagnalis* the last few months in this pool. They were very abundant last Autumn. Discovered wild narcissus flowering plentifully on fields by the rectory. Saw very fine specimens of the marsh marigold and a few primroses in the same locality. Discovered a large rookery also. Fungi abundant still on Whitehouse Common. Lichens nearly over. Mosses plentiful everywhere. The larvæ of *C. cava* are very large for the time of year; saw numbers feeding on the stinging nettle.—W. HARCOURT BATH.

SESIA SPHECIFORMIS.—Yesterday, friend Gibb and I went to Tilgate forest for another hunt after *Sphéciformis*, and we, by dint of a hard day's work had better success than on our first visit: but we must not reckon our chickens before they are hatched. Our whole attention was devoted to the one object, so that we did nothing else, save gather a spring bouquet of wild flowers. The woods and coppices now are looking splendid. The mass of bloom of *Primula veris* and *vulgaris* were beautiful, and *elatior* not rare. We had, too, a fine "posie" of daffodils—they looked simply splendid, gowing up in the heather and in the meadows. One wood was a picture with *Viola canina* and primroses; it was quite a carpet of bloom. Sallows were nearly over; blackthorn in full flower. The birches just looking green, and even many of the oaks almost in leaf. This is very forward for oak; ash and elder were still nearly bare. *B. parthenias*, I suppose, was over, as we did not see any. *Fidonia atomaria* was on the wing, and a few hibernated *Vanessa*. A grand concert of our wild song birds contributed to make it a most enjoyable day's outing.—W. H. TUGWELL, Greenwich.

THE BIRMINGHAM NATURALISTS' FIELD CLUB.

THE first annual meeting of this society was held in Albert Chambers, Paradise Street, on Wednesday evening, 5th April, at 7.30 p.m. Dr. Hiepe in the chair. After the rules had been discussed the following were elected officers for the current year:—President, Dr. Hiepe; Secretary, Mr. W. Harcourt Bath; Treasurer, Mr. G. F. Wheelton; Curator, Mr. P. T. Deakin. The council is composed as follows:—Mr. J. W. Lapworth, Mr. A. Pimm, and Mr. A. G. Davis, besides the officers. This meeting was very well attended, there being thirteen members present, and many more are about

to join. The next meeting of the council will take place on 12th April next.—W. HARCOURT BATH, Hon. Sec.

RAMBLES ROUND STOUR-BRIDGE.

By W. H. BATH.

THE country about Stourbridge is very picturesque, being full of hills and dales, and consequently rich in vegetation. Some of the finest scenery in England may be seen here. The rocks, which are mostly of red sandstone, contain numerous fossils.

April 8th.—Took train to Stourbridge in afternoon. In evening I went for a walk with a friend to explore the natural history. Working our way through the town, we went towards Hanbury Hill, from whence a good view was obtainable looking northwards. The fields on all sides of us were brilliant with the common but pretty flowers of the daisy, dandelion, and meadow coltsfoot. Passing by the Blue Coat School we observed a large rookery and its inhabitants busily at work. In the valley beneath we saw the first swallow this season, hawking for flies. Wending our way through fields and lanes, with swarms of gnats swaying to and fro above our heads and shrew mice squeaking in the banks, we came to a coppice of firs known as Norton Cover. Here we stayed some time watching a rabbit warren, and listening to blackbirds singing as the sun was going down. We returned home again at dusk.

April 9th (Sunday afternoon).—About two o'clock we found ourselves at the Dingle, a lovely spot about two miles from Stourbridge, noted for the number of wild flowers found there. It is composed of two steep hills, with a brook running between them. They are completely covered with vegetation. Here we found the wood anemone growing in profusion. I never saw such fine flowers before. Violets, blue hyacinths, wood sorrel, and the lesser celandine were flowering

everywhere. It was a charming place with the birds singing in the trees, bees humming among the flowers, and the brook rippling over the stones beneath. Going out of the Dingle we came into full view of Hagley Park, the seat of Lord Lyttleton. On a field, the site of an old Roman encampment, I discovered cowslips growing. The hedges here were lightened up with the pretty white blossoms of the wild plum and cherry, and bees were buzzing about in all directions. Toiling up Hagley Hill we came to Wyche-Wood, where the ground was covered with flowers of the wood anemone—"they were growing in thousands." The country about here is full of places of interest. Passed the monument erected to the memory of the Prince of Wales by the late Lord Lyttleton during the last century, and in a short time we came to an old castle in ruins, overgrown with ivy and encircled in a clump of fine beech trees with a rookery. After leaving the castle we commenced the ascent of the Clent Hills. We were fairly tired when we arrived at the top, but were amply repaid by the fine view we obtained. On the highest point there are four stones which mark the boundaries of the counties of Warwick, Worcester, Stafford and Shropshire. They all happen to meet at this one point. We saw many hills in the distance and clearly over the village of Broom, noted for containing no public house. Returning home we passed through the hamlets of Clent, Hagley, Pedmore and Oldswinford. I observed the snails *H. aspera* and *nemorialis* plentiful on all the banks, and the grey water wagtail put in its appearance everywhere. In the gardens fruit trees were in one mass of white blossom, which contrasted finely with the blue sky.

April 10th.—Started at about half-past nine in the morning for a drive. Passed through the hamlets of Amblecote, Dennis Park, Coalbourn Brook, Brettle Lane and Audnam. Turning to the left we passed by

Woolaston Pool, frequented by coots, and over the river Stour, which gives its name to the town of Stourbridge. Shortly afterwards we came to the village of Woolaston, where small tortoiseshell butterflies began to be seen darting over the hedges. Rooks and jackdaws were plentiful all along the road. Rookeries are very numerous in the neighbourhood of Stourbridge. Going up a hill called Ridge Top, we arrived at the Gibbet Wood, from whence we had a good look round. In the distance we saw the Battlefield, so named as tradition says it was the site of a battle fought between the Romans and the Ancient Britons. Continuing our course, with banks covered with flowers of the white, dead, and purple nettles, and skylarks singing on high, we passed the Foley Arms Hotel and Stourton Castle, and a short time afterwards came to Enville Park, where we got out of the carriage for a short time to explore. Enville Park is a fine place for game of all sorts. We saw quantities of rabbits, squirrels, and pheasants, also a white one. Small tortoiseshells were very abundant, and we saw several small coppers and one red admiral butterfly among the heather. Pursuing our course we came in sight of Enville Hall, where fir-trees lined each side of the wood and piefinches appeared in great abundance flying out of every hedge and bush. Turning sharply to the left we went towards Kinver, and in about half an hour afterwards arrived there. Kinver is a very ancient incorporated town, and has a mayor. The town itself is only composed of one street, but it is of considerable length and contains several very good shops. Going up to the foot of the peak we got out, proposing to spend the rest of the day here and return home again on foot, so we sent the groom off back by himself. Kinver Edge, the place we had now arrived at, is a short range of hills, tremendously steep on one side and on the other a gentle slope. Passing by

some cottages that are hollowed out of a bold projecting piece of sandstone, we commenced the ascent. We managed to scramble up right, except with having a few scratches. If we had lost our footing we should have rolled all the way to the bottom and very likely killed ourselves. When we arrived at the top we obtained a fine view of the country. In the distance we saw the Wreken in Shropshire. Along the summit is the ruins of an old wall—no doubt it was one built for the purpose of defence. At one o'clock we lunched, on a rock overhanging a precipice, commanding splendid scenery. Pine-trees grew all down the slopes, each side and underneath. On the top of the hills, violets were very plentiful and ferns were just coming into leaf. We discovered two colonies of seven-spotted ladybirds: there were dozens of them running over the stones. Lapwings were continually flying round and round above our heads, while down the slopes of the hills rabbits innumerable were running about. The gorse was in full bloom, and was crowded with insects of all sorts. Going down into the valley we entered some caverns under a rock, and afterwards emerging out of a wood of pine-trees, we came to a lovely spot full of flowers, where butterflies were seen at every step. Small tortoiseshells, small whites, small coppers, and peacocks completed the list. "A good show for the time of year." After roaming here till about three o'clock we turned our steps homewards. Going through the town of Kinver we passed by a church built on a high hill, and a short time afterwards arrived at Whittington, a small hamlet on the river Stour. Here a friend, Mr. Y——, overtook us with his trap, and kindly gave us a lift. The remaining distance nothing was seen very noticeable, but we passed through fine country full of woods, and ring doves were plentiful among the trees, Altogether, we had a very good time of it.

BRITISH ANTS—By G. C. BIGNELL.*(Continued from page 191.)*as seen in the *L. umbratus*.

HABITAT.—Common everywhere. Males and females appear about the last week in August.

GENUS TAPINOMA.

This genus differs from either of the preceding, by the scale of the petiole being decumbent and forming an oblong node.

1. Tapinoma erratica, Latr.

MALE.—Black-brown; eyes situated about midway between the base of the head and the apex of the mandibles; vertex square, clypeus deeply emarginate; antennæ very long (longer than the head and thorax); ocelli prominent and glassy bright; thorax rounded in front, disk flat; wings hyaline, nervures pale; abdomen with a few scattered bristly hairs above, all the segments with a fringe of hairs beneath; tibiæ and tarsi pale, the former clouded in the middle. Length, 5.6 mill.

FEMALE.—Brown-black, smooth and shining, with a fine thin cinereous pile, frequently more or less obliterated; the scale of the petiole decumbent, hidden beneath the basal segment of the abdomen. Length, 5.6 mill.

WORKER.—Black, smooth and shining, with a slight cinereous glittering pile; the extreme base of the tibiæ and tarsi pale testaceous; clypeus deeply emarginate; mandibles with long hairs on their surface; the scale as in the female; the surface of the body above without upright hairs; abdomen beneath with long fine hairs on each segment. Length 3.5 mill.

HABITAT.—Common only in certain localities, and appears to be confined to sandy and dry heathy country. It has been taken at Bovey, Devon, Bournemouth, Chobham, &c., Male and females appear during the first week in June.

2. Tapinoma nitens, Mayr.

The worker only is known.

WORKER.—Rufo-testaceous, smooth and shining; head elongate, with a few scattered long hairs and slightly emarginate behind; the scape as long as the head; the flagellum about the same length, the two apical joints slightly thickened; thorax narrow behind, and slightly strangulated between the meso and metathorax, the latter emarginate behind, with the lateral angles rounded; the scale decumbent, rounded above; abdomen ovate, sprinkled with a few long hairs.

HABITAT.—Wales; one specimen—J. C. Dale, Esq.

3. Tapinoma gracilescens.

This species is an importation and is a native of Madeira, but, unfortunately, it has established itself in too many places to be any longer considered a stranger, it having taken up its residence in London, Kew, Sydenham, St. Leonards-on-Sea, &c., in kitchens and hot-houses. The Rev. W. F. White says, "It is many years ago since I first observed this ant in my brother's house (London). I noticed it in large numbers in the rectory kitchen in 1876." The workers are very small and of a blackish colour, with very long thin legs and antennæ.

GENUS PONERA, Latr.

This genus is easily recognised by the thick, large, single scale or node and short clavate antennæ.

1. Poner contracta, Latr.

MALE.—Brown, somewhat shining; head dull, strongly punctured; mandibles testaceous-red; thorax shining, rather remotely punctured; abdomen covered with somewhat decumbent pale hairs; apex of the abdomen paler, with a strong reflexed spine; legs testaceous.

FEMALE.—Paler in colour, but with the same strong punctuation; the maxillary palpi of two joints, the second ending in a hair; abdomen covered with pale hairs; wings with one radical cell, two submar-

(Continued on page 223.)

F. G. MEEK,
NATURALIST,

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The YOUNG NATURALIST :

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VOL. 3.

HOW TO TEACH SCIENCE.

SCENE.—DOTHBOYS HALL.

“THIS is the first class in English spelling and philosophy, Nickleby,” said Squeers, beckoning Nicholas to stand beside him. “We’ll get up a Latin one, and hand that over to you. Now, then, where’s the first boy?”

“Please, sir, he’s cleaning the back parlour window,” said the temporary head of the philosophical class.

“So he is, to be sure,” replied Squeers; “we go upon the practical mode of teaching, Nickleby; the regular education system. C-l-e-a-n, clean, verb active, to make bright, to scour; w-i-n, win, d-e-r, der, winder, a case-nent. When the boy knows this out of book, he goes and does it. It’s just the same principle as the use of the globes. Where’s the second boy.”

“Please, sir, he’s weeding the garden,” replied a small voice.

“To be sure,” said Squeers, by no means disconcerted, “so he is. B-o-t, bot, t-i-n, tin, bottin, n-e-y, ney, bot-

tinney, noun substantive, a knowledge of plants. When he has learned that bottinney means a knowledge of plants, he goes and knows ’em. That’s our system, Nickleby; what do you think of it?”

Without attempting to penetrate further into the mysteries of the system of tuition pursued at Dotheboys Hall, we would submit that what Mr. Squeers calls the “practical mode of teaching” is not without its advantages, and having learned that botany means a knowledge of plants, you must, if you want to acquire that knowledge, “go and know ’em. We have seen it stated that Oliver Goldsmith, who wrote a Natural History for the Booksellers, did not know a goose from a turkey unless it was cooked for the table; and though it could not be expected that the knowledge of Goldsmith’s day could equal that of our own in any respect, his book is full of the grossest errors that anyone going through the world with his eyes open would have avoided. But the system of tuition that is pursued in board and middle class schools is not likely to be very

successful in its scientific teaching even now. Our schoolmasters, as a rule, are too ignorant to be able to help others in scientific matters. They have got into a groove or rut that they cannot get out of. The teaching of to-day differs but little from the teaching of forty or fifty years ago. To read and write are, of course, necessary preliminaries; then follow grammar, geography, and arithmetic, just as they did when the writer was a boy, only these are taught now a little more fully. In grammar, for instance, the course of tuition appears to have made it incumbent on every one to have what may be called a scientific knowledge of it. To this we would find no fault, if it could be done without excluding other things; but we are of opinion that lads could learn to express themselves properly and write grammatically without that minute technical knowledge that only seems needed for teachers. In arithmetic, too, the fault we find is the attention to routine and round-about methods of working. A sum must be done by rule, and we have known one of our own boys "sent down" for doing in three lines of figures what ought to have been done in twenty! The History of England becomes a mere "dictionary of dates." In short, the desire seems to be to cram into the pupil in the shortest possible time, and in the driest style, the greatest amount of information on

the subjects which are considered worthy. No doubt, historical knowledge is of considerable value to the possessor, but what shall we think of the youth who can tell when King John reigned, or Anna Boleyn was beheaded, but who calls a whale, a fish, and a cockroach a black beetle. No doubt we will get out of this groove some time or other, and the sooner the better; but the time is sadly delayed by routine and red tape. Of course, we are writing with our own particular ideas in our head, but let other people do the same and the desired end will be the sooner reached. Every boy, now-a-days, has to go over the same unvarying track, whatever his tastes and inclinations may be. The lad who has no head for figures has to trudge through the arithmetic just the same; while he to whom mathematical problems are a pleasure, but who cannot learn by rote, has to plod on at his geography as if he could not get on in the world without knowing the height of every mountain and the length of every river in it.

It is only a few weeks since we said something on this subject before, but spring and summer are the seasons when the "practical mode of teaching" can be adopted for natural history. Classes can then be taken out into the lanes and fields, and under the guidance of an experienced teacher, young people can be shown, what many home lessons

would not teach them so well. More botanical knowledge could be imparted while pulling a buttercup to pieces than by many lessons at school. Nor need these teachings be confined to botany, or to the animal world. Geology could be studied in the quarries or mines (if any such are in the neighbourhood), in the nature of the surface soil, by the action of water as shown by the courses of streams, by the differences between the material composing the hills and the valleys or plains, and so on. The intelligent teacher would never want for matter to discourse upon, and those instructed would find benefit from such instructions, if it were only in the enlargement of mind, that always characterises those who study nature and her ways.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

E.A.P., Cheshire.—We cannot name Noctua pupæ with any certainty. If that you send was got at oak, it is probably *A. aprilina*. If you do not know them when they emerge send us an imago, the pupa forwarded has been injured, and will not produce a moth.

A. DAVIS, Jun., Marlow.—Thanks for the nest of the Bulfinch; you shall have a

figure when it is published. We are also obliged for your endeavours to obtain nests of other species; we now particularly want that of the Spotted Flycatcher. We have recently figured a large number of very extraordinary varieties of eggs from Mr. C. S. Gregson's collection.

How many of our readers have seen Cuckoo's eggs in Hedgesparrows' nests, and what colour were they?

EXCHANGE.

DUPLICATES—Imagines of *O. Fascelina*.
DESIDERATA—Pupæ or Imagines of *Bombyx rubi*.—R. WILDING, 40, Downing Street, Liverpool.

DUPLICATES.—*H. humuli*, *A. lubricipeda*, *E. jacobæ*, *L. auriflua*, *L. monacha*, *O. potatoria*, *S. illunaria*, *L. pallens*, *N. c-nigrum*, *A. herbida*, *H. thalassina*, *A. tragopogonis*, *N. rubi*, *M. maura*. DESIDERATA.—*L. sinapis*, *M. artemis*, *T. rubi*, *L. alsus*, *L. argiolus*, *C. porcellus*, *O. fascelina*, *H. hispidaria*, *B. cinctaria*, &c., &c.—THOS. W. KING, 3, The Terrace, Camberwell.

Wanted, to exchange eggs, butterflies, and stamps. Send list of duplicates and desiderata.—A. DAVIS, Jun., High Street, Great Marlow, Bucks.

BIRMINGHAM NATURALISTS FIELD CLUB.

A Council Meeting was held in Broad Street, on Wednesday Evening, 12th April, to draw up a programme for the summer season. Dr. Hiepe presided. The members present were Dr. Hiepe, Mr. W. Harcourt Bath, Mr. G. F. Wheeldon, Mr. P. T. Deakin, Mr. W. J. Lapworth, Mr. A. R. Pimm and Mr. A. G. Davis. The following excursions were arranged for the ensuing season:—April 22, Sutton Park; May 6, Lickey; May 20, Sutton Park; June 3, Knowle; June 17, Clent; July 1, Bewdley; July 15, Sutton Park; August 5, Stratford-on-Avon; August 19, Knowle; Sept. 2, Bewdley; Sept. 16, Kniver. The proposed excursion to Sutton Park on Saturday, 22nd

April, was put off on account of wet weather. The society now numbers nearly twenty members.—W. HARCOURT BATH, Hon. Sec.

NOTES AND OBSERVATIONS

BIRMINGHAM NOTES.—April 10th. *Corvus frugileus*.—Saw about half-a-dozen crows following the plough and picking up bits, in a field near Pennis, as the men were ploughing. *Parus caudatus*.—Found a nest of the long-tailed tit with five eggs in, at Sutton Park. The bird had evidently not finished laying, as the usual number is ten or twelve.

April 23rd. *Hirundo rustica*.—Saw half-a-dozen swallows in Oak Tree Lane, Selly Oak. The farmer informed me they arrived exactly a week ago. *Erythaca rubecula*.—Heard a Robin singing in the rain.

Took the following:—*Vanessa Urticæ*, one, and *Anticlea badiata*, one, at Sutton Park, on the 10th April; *T. instabilis* and one *progemmaria* on lamps, at Edgbaston, on 14th April. *T. stabilis*, *A. æscularia*, one, and one *Ophion obscurus* on lamps at Selly Oak, on 21st April; *M. fluctuata* in garden and *P. rapæ* bred on 25th April.

Plants in flower not mentioned in previous lists:—Ivy ranunculus (*Ranunculus hederaceus*), alternate leaved golden Saxifrage (*Chrysosplenium alternifolium*), together with *oppositifolium*, Wild heartsease (*Viola tricolor*), Mountain Ash (*Pyrus aucuparia*) and Common Horsetail (*Equisetum arvense*) at Sutton Park, on 10th April; Hairy Chickweed (*Cerastium vulgatum*), Bluebell (*Hyacinthus non-scriptus*), Tuberous Moschatel (*Adoxa moschatellina*), Ground Ivy (*Glechoma hederacea*) and Ladies Mantle (*Alchemilla arvensis*), at Northfield, on 11th April; Bulbous Buttercup (*Ranunculus bulbosus*), and Ribwort Plantain (*Plantago lanceolata*, at Selly Oak, on 16th April. Sycamore (*Acer pseudo-platanus*), Spring Vetch (*Vicia lathroides*) and Yellow Weasel Snout (*Galeobdolin luteum*), at Selly Oak, on 23rd April. *Pteris aquilina*, the Common

Bracken was up nearly two feet in height in a wood at Selly Oak on the 23rd April.

Saw innumerable small light green larvae hanging suspended from the hedges (White-thorn), after a heavy shower at Selly Oak, on 23rd April.—GEO. F. WHEELDON, 6, Newhall Street, Birmingham.

DATE OF EMERGENCE OF BUTTERFLIES AS COMPARED WITH 1881.—

| | 1882. | 1881. |
|------------------------|----------|--------------|
| V. Urticæ (hybernated) | Feb. 14 | .. March 6. |
| V. So do. | .. 22 | .. April 23. |
| G. Rhamni do. | March 12 | .. March 11. |
| T. Polychorus do. | March 13 | .. April 14. |
| C. Cardui do. | .. 12 | .. ———— |
| V. Atalanta do. | ————— | .. April 15. |
| P. Napi | April 3 | .. April 9. |
| P. Rapæ | .. 7 | .. 9. |
| S. Egeria | .. 8 | .. 23. |
| P. Brassicæ | .. 20 | .. 28. |
| E. Cardamines | .. 21 | .. 30. |

OUR SUMMER VISITORS.—Date of arrival. Martins, April 14th; landrail, April 20th; cuckoo, April 20th.—A. DAVIS, Jun., High Street, Great Marlow, Bucks.

NEWSPAPER CUTTINGS.

INTERESTING TO NATURALISTS.—On Good Friday last, as a party of gentlemen were taking lunch on the Braun Island, Killarney Lakes, they remarked a fine mallard resting on the water close to the shore, and presently a duck was observed taking flight from a tree close by; one of the party climbed the tree, and in a bunch of brushwood was a nest with six eggs, on which the duck had been nesting. After a short time the bird again returned to the nest. As we have never known a duck to nest in a tree before, the information may be of use to naturalists.—*Cork Constitution*.

CURIOUS FISHING INCIDENT.—On Friday, 14th April, two Cork gentlemen were fishing on the river, near Rathduff, for trout. Early in the day rain put a stop to their amusement, and they sought the friendly

shelter of a farmer's house, leaving their rods outside the door. On coming away one of the rods was found lying on the ground a dozen yards away from the residence, and the line had run out completely and was jerking violently. The owner searched to see what had occurred, and to his great surprise he found that a ravenous hen had devoured the worm impaled on the hook, and then proceeded to "play itself." The bird was captured, and the line was cut as near the hook as possible, but the hook itself could not be removed. It did not, however, appear to inconvenience the hen, which devoured Indian meal after the occurrence.—*Cork Constitution.*

BRITISH MOTHS.

By JOHN E. ROBSON.

SPHINGINA.

The British species of this family are divided into five genera by Dr. Staudinger, but there appears to be sufficient distinction between *Deilephila* and *Chærocampa*, to warrant both being retained. Mr. Stainton includes *Macroglossa* and *Sesia* with the next family. Mr. Doubleday's arrangement, which includes both in this, as *Macroglossa*, seems more natural and is followed here. The following table is partly taken from Stainton's Manual, which is not easy to improve upon.

1. Antennæ not terminating in a minute bristle; hind margin of forewings angulated. I. SMERINTHUS.
2. Antennæ terminating in a minute bristle; hind margin of forewings not angulated.
 - A. Antennæ and tongue short; abdomen very thick. II. ACHERONTIA.
 - B. Antennæ moderately long, tongue very long, hind wings rounded at anal angle. III. SPHINX.
 - C. Antennæ and tongue moderately long; hind wings with projection at anal angle. IV. DEILEPHILA.

D. Imago as in *Deilephila*; larvæ with the anterior segments retractile, and with two or more ocellated spots on the sides.

V. CHÆROCAMPA.

E. Abdomen with a broad tuft; wings sometimes only partially scaled.

VI. MACROGLOSSA.

GENUS I.—SMERINTHUS.

"SMERINTHUS, Lat., *Smerinthus*, a thread, or fishing line; perhaps from the lateral stripes on the larvæ."—A.L.

This genus contains only three British species, and only one or two more occur in Europe. The British species are all of large size, expanding three inches or more. They may be easily recognized from each other by the following table.

I. Forewings irregularly mottled.

a. Hind wings with a distinct eyed spot at the anal angle. 1. *Ocellatus*.

b. Hind wings with brick red patch at the base. 2. *Populi*.

II. Fore wings with a distinct olive green central fascia. 3. *Tilia*.

The larvæ are green, roughened with raised spots or warts, which are generally lighter in colour than the ground; there are seven oblique pale stripes on each side, and a horn on the twelfth segment, pointing backwards.

The pupa are all subterranean, and without any cocoon.

I. OCELLATUS.

The Eyed Hawk-Moth.

"OCELLATUS, L., *Ocellatus*, ocellus, an eye; from the eye-like spots on the wings."—A.L.

Imago.—Pinkish brown, clouded and mottled with darker brown. Hind wing rosy at the base, fading into yellowish brown at the hind margin. At the anal angle is a large eyed spot, with black centre, surrounded by silvery blue, and enclosed in a black ring.

Larva.—Pale bluish green, and covered with small whitish warts. There are seven

oblique streaks connecting rows of these warts, commencing on the fifth segment in front of the spiracle, each streak extending over two segments. The seventh streak is larger and more distinct than the others, and continues along the tail. A streak also extends lengthwise along the second, third, and fourth segment. The head is triangular, rather deeper green in colour, a pale line runs up what may be called the face angles. The front of the head is also triangular in shape, and quite flat. At the crown of the head are two small horns close together. These horns, the jaws, legs, and spiracles are reddish in colour. (The description is from larvæ supplied by Miss Hinchliffe, of Worlington House, Nr. Instow, So. Devon.)

Pupa.—Dark reddish brown, not so rough as that of the next species, and redder.

Food Plants.—Apple, Pear, Willows, Poplar, and Lime.

Times of Appearance.—The imago emerges in May or June and continues out till July. The eggs hatch in about ten days and the larva are full fed in September.

Habitat.—Common in the South of England, but less abundant further North. In the most Northern of the English counties it is only of occasional occurrence, and it is not found in Scotland. It seems to have become rather commoner in the North of England during the last twenty years as if it were gradually extending in that direction. It occurs all over Europe, excepting Italy, Turkey, and Greece. It is also found throughout Northern Asia.

BRITISH BIRDS, THEIR NESTS AND EGGS.

By S. L. MOSLEY.

ORDER II.—INCESSORES.

This is the largest division of birds we have represented in Britain, and contains

all the smaller perching birds, both insectivorous and graminivorous, and some of the larger kind—as the crows. It contains most of those comprised under the older Linnean order "Passeres." Most of the members of this order are insect feeders, and those which feed on grain feed also on insects during the greater portion of the year. Most of them are migratory, and principally come here in the spring to breed, and depart in autumn, though some are winter visitors. It is in this order that we find the voice reach its highest perfection; and, perhaps, no country in the world is richer in song-birds than Britain. The architecture of the nest is generally more perfect in this than in any other class of birds, and for this the reason figures of the nests will be given of all obtainable species. Throughout this order the immature bird is remarkable for the barred or mottled appearance. The very young are hatched naked or nearly so.

FAMILY I. LANIADÆ.

This family comprises the Shrikes or Butcher birds. They form a natural connection between the birds of prey and the insectivorous birds. The beak has a notch or tooth on the upper mandible, similar to that in the hawks, but they have not the sharp curved talons of the latter class. They live on large insects, *small* birds, and mice, chiefly the voles and shrews, which they impale upon thorns.

Genus I. *Lanius*.

LANIUS, a butcher, from *Lanio*, I tear.

Only one species is a native of Britain, though three others have occurred as occasional visitors.

20. RED-BACKED SHRIKE.

Lanius collurio.

COLLURIO (Gr.) A name given by Aristotle to a bird, probably of the thrush kind.

Size.—Length about 7in., expanse 12in.

Plumage.—Male. Bill black; eyes brown. Crown of head, nape, part of back,

and upper tail coverts bluish grey, a band across the centre of the back and wing coverts, chestnut brown. Primaries and secondaries blackish, the latter edged with lighter. Ear coverts black. The whole of the under parts pinkish white, lighter on the throat and under tail coverts. Legs brown; tail, two centre feathers black, the rest white at the base, each succeeding feather having more white than the preceeding one.

FEMALE, bill lighter at the base. The whole of the upper parts reddish brown, primaries and tail rather darker, and the nape in old birds tinged with grey. Under parts white, barred with brown; tail brown, outside feathers partly white. Old females occasionally assume the plumage of the male.

IMMATURE BIRDS resemble the female, but are more barred, and rather darker in colour, both on the under parts and on the back.

A **VARIETY** of an uniform pale fawn-colour is recorded as having been killed at Lewes (*Zool.*, 2698). Cream and fawn-coloured ones have also occurred.

Note.—A friend who took a nest last season (1881), describes the old birds as being very noisy, something like the male sparrows, when two or three are clamouring over a female. But it makes little noise except when the young are in the nest.

Flight.—The flight is strong and direct, but sometimes rather wavering.

Migration.—A summer visitor, arriving towards the end of April, and departing at the end of September.

Food.—The food of this Shrike consists of the larger insects and small birds, and young mice, field voles and shrews principally. They seem to have a partiality for bees. Mr. James Varley records having found a large number of dead humble bees under a tree that was in flower at Woodsome, near Huddersfield. Specimens were

sent to the late Mr. F. Smith, of the British Museum, and he gave it as his opinion that it was the work of Shrikes: After this, I had the satisfaction of discovering that a pair of Red-backed Shrikes had bred in the neighbourhood where Mr. Varley found the bees. These birds have the peculiar habit of fixing their prey upon a thorn or upon a forked branch, which has given to them the name of Butcher-birds. The fur or feathers is cast up in pellets, after the manner of the hawks and owls.

IN **CONFINEMENT** they soon become tame, and twist their food in the wires of the cage when they tear it to pieces.

Habitat.—This is a common bird in most of the Southern counties of England, but it is rarely found further north than Yorkshire, and seems to be still rarer in Scotland, and unknown in Ireland. Formerly it bred frequently in the neighbourhood of Huddersfield, and still does so occasionally. It frequents hedgerows and thickets.

ABROAD it is found over the greater part of Europe, Africa, and Western Asia.

Nest.—The nest is generally built in a thorn-hedge or some such situation. It is very large for the size of the bird. The one figured was kindly supplied by Mr. C. A. Marriott, and is composed of grass, moss, and catkins of sallow, lined with grass roots, and an inner lining of horsehair.

Eggs.—The eggs vary so much in colour, that it is difficult to describe the various shades. Some are rich rosy cream colour, with the spots nearly blood red; others pale salmon with dark spots and markings; others stone-colour, with brownish spots or markings, or whitish with pale brown marks. Most of the spots are in a zone round the larger end, but sometimes they are situated round the thickest part, or at the point.

VARIETIES occur pure white, but are rare.

E. G. MEEK,
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VOL. 3.

THE CUCKOO-PINT

(*Arum maculatum*).

By J. P. SOUTTER, Bishop Auckland.

IN the whole range of the British Flora there is no more singularly curious and interesting plant than the *Arum*,—whether we look at the strange and fantastic shape of the flowers, the complexity of its structure, or the abnormal character of its functions. In England the *Arum* is so abundant in every shady lane and dry open wood, that it is familiar to every schoolboy, under its popular name of “lords and ladies.” It is, however, very rare in Scotland, so much so that I only once saw it growing north of the Tweed, and even then doubtfully indigenous. The white, hard, solid corm, as big as a pigeon’s egg, is buried deep in the soil, and serves as a store house of reserve food for the plant. It throws out numerous thread-like roots which absorb the nutriment from the soil, the raw material which is elaborated or manufactured into the peculiar secretions of the plant and then stored away as reserve supplies, exactly as in

the corms of the crocus, or the bulbs of the lilies, hyacinths, and tulips, which simply differ in being scaly and not solid; the tuber, the edible part of the potato, is exactly analogous. All these lie dormant for a certain part of the year, when they can be taken and stored away the same as seeds, and ready under suitable conditions to start into renewed activity. In the *Arum* the new corm is produced at the side of the old one; hence, it is removed by at least the breadth of itself into fresh earth: a provision of nature to ensure that the newly formed roots shall have unexhausted soil to burrow in, and also to aid in the dispersion of the plant over a wider area. A similar end is attained by the creeping stems of various plants, as in the well-known strawberry. The leaves of the *Arum* appear very early in spring. In mild winters, such as the present, they may be seen peeping through the soil in January. They push through the earth curiously rolled up like a cigar, botanically called convolute. If at this period the whole plant is carefully dug up, and the bundles of leaves

slit open lengthwise with a sharp knife. The whole embryo of the future plant to its minutest detail may be traced snugly encased in its numerous coverings. This is an interesting floral dissection for a beginner. When fully developed the leaves are arrow-shaped, of a vivid dark green, often beautifully blotched with purple spots, whence it gets its specific name of *maculatum* (spotted). The Arum is one of the rare exceptions to one of the primary rules in the natural classification of plants, and which is often of great use to a young botanist in identifying a species, viz:—that plants with two seed-leaves (*Dicotyledons*) have the veins of the leaves reticulated, whilst plants with one seed-leaf (*Monocotyledons*) have the veins running parallel with the margins, and never interlacing, as in grasses and lilies. Although the Arum belongs to this division, its leaves are beautifully reticulated, the veins forming a network, branching and running into each other, although ultimately coalescing and running parallel to the margin without touching it. But it is in the structure and arrangement of the flowers that the Arum is so singular and unique. Many who may never have seen or recognized the Arum as a wild plant may yet be familiar with its general appearance from its closely-allied congener so popular as a window plant, the Calla or lily of the Nile, the typical belauded

lily of the present absurd æsthetic craze. Although less gaudy, the flowers of its British representative are equally interesting. From between the four or five leaves, a stalk arises a span high, bearing a large membranous leaf at the top (the spathe). Ultimately this partly expands, leaving a hollow cylindrical portion, from the centre of which protrudes a violet or purple-hued, club-shaped, fleshy stalk about four inches in height, extending about two inches above the flowers which are seated on it, and though they are comparatively inconspicuous and imperfect, they are yet essentially effective. At the mouth of the tube formed by the enveloping leaf, and where the throat is slightly contracted, is a row of projecting hairs, forming a fringe to the orifice, and all pointing downwards, allowing to insects a ready entrance into the enlarged cavity below, but effectually barring their egress. We have here then a large overhanging leaf like a hood and an attractively coloured projecting stalk to allure unwary insects who, from curiosity or in search of food or shelter, enter this inviting chamber, and are then effectually immured in its, to them, cavernous depths. This elaborate contrivance for entrapping heedless prisoners was until recently overlooked, or, at least, not understood; but recent research has revealed the fact, that their visits are essential to the fertili-

zation of the flowers. Below the fringe of hairs already mentioned there is a ring of stamens surrounding the central pillar; a little further down is a circle of abortive carpels, which, when mature, become the bright scarlet berries so attractive to birds in Autumn. At first sight, nothing could seem easier than for the essential pollen to drop on the receptive stigmas below, and so self-fertilization be accomplished. But, as if to guard against such a contingency, the flowers are *protogynous*, that is, the stigmas arrive at maturity and have ceased to be susceptible of impregnation by the pollen, before the stamens, the pollen-producing bodies, in the same flower have sufficiently developed to emit their pollen. Hence, it is obvious that the pollen, the fertilizing agent, must be brought from some other flower at the proper time. In the *Arum* the stigmas reach maturity almost immediately after the spathe unfolds, during which time it is visited by swarms of insects. As many as one hundred have been observed entrapped at one time in a single flower. These unwilling captives whose exit is prevented by the blockade of hairs at the mouth of the tube, having previously visited some other flower will have had their bodies dusted with pollen, and now roaming about within the encircling walls of their prison they fecundate the ripe stigmas, and for this service to the

plant they are rewarded by a drop of nectar, which is secreted at the base of each ovary. In a few days the stamens mature, the anthers open and discharge their pollen, which covers the bodies of the captives. The hairs which have hitherto barred the road to freedom now shrivel up, and the imprisoned "suspects" are liberated. But as they have evidently not learned wisdom by their incarceration, they soon visit some adjacent flower and the whole cycle is gone round again.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

EXCHANGE.

DUPLICATES.—Bred imagines of *P. rapæ*, *P. brassicæ*, *V. urticæ*, *E. lanestræ*, and *L. didymata*; imagines of *E. cardamines*, *C. pampophilus*, *L. icarus*, *H. proteus*, *P. chi*, *T. pronuba*, *X. rurea*, *Z. filipendulæ*. Desiderata numerous, larvæ preferred to imagines.—N. PRESCOTT DECIE (Miss), Bockleton Court, Tenbury.

NOTES AND OBSERVATIONS

BOTANICAL DIARY (continued from Natural History Notes, page 147, No. 122).—Lesser celandine flowers (*Ranunculus ficaria*) Feb. 14; Coltsfoot flowers (*Tussilago farfara*), 19th; ground Ivy (*Nepeta glechoma*),

19th; strawberry-leaved potentil (*Potentilla fragariastrum*), 19th; elm flowers (*Ulmus campestris*), 22nd; dog rose (*Rosa canina*) leaves, 22nd; elder (*Sambucus nigra*) leaves, 22nd; yew flowers (*Saxus baccata*) March 5th; wood anemone flowers (*Anemone nemorosa*), 5th; dog violet flowers (*Viola canina*), 5th; Hawthorn leaf (*Crataegus Oxyacanthus*) 5th; blackthorn leaves (*Prunus spinosa*), 8th; elm leaves (*Ulmus campestris*), 8th; privet leaves (*Ligustrum vulgare*), 8th; blackthorn flowers (*Prunus spinosa*), 11th; horse chesnut leaves (*Aesculus Hippocastarum*) 11th; ivy-leaved snapdragon flowers (*Linaria cymbalaria*), 12th; cowslip flowers (*Primula veris*), 12th; field forget-me-not flowers (*Myosotis arvensis*), 17th; marsh marigold flowers (*Caltha palustris*), 19th; bird cherry flowers (*Prunus Padus*), 20th; lady smock flowers (*Cardamine pratensis*), 29th; jack-by-the-hedge flowers (*Sisymbrium alliaria*), April 3rd; Wood sorrell flowers (*Oxalis acetosella*), 3rd.—A. DAVIS, Junr., High Street, Great Marlow, Bucks.

I found the Sycamore leaves were already attacked by the Green Apides. This insect exudes a kind of sweet clammy fluid from its body, called by some honey-dew, which covering the leaves, causes the dust to stick to them, giving them that dirty look always seen towards autumn, especially near large manufacturing towns, where the smoke is added to the dust.

ANSER CANADENSIS.—A splendid specimen of the Canadian goose was shot on the 30th April at Elmden Hall, Solihull, near here. I had the pleasure of seeing the bird the next day at Mr. Spicer's, Taxidermist of this town. We had a very severe storm the day before the bird was shot, which very likely accounts for its being seen so far inland.—GEO. F. WHEELDON, Birmingham.

BIRMINGHAM NOTES.—April 17th. Discovered daffodils growing on banks by Gravelly Hill. A fox has lately been making great havoc with poultry and eggs at

Sutton; he has even been running away with chalk eggs.

April 22nd.—Took one *Lycena argiolus* (male) and one *Lobophora viretata* in Lower Nut Hurst.

April 23rd.—Saw great numbers of birds to-day. Among them, pheasants, partridges, lapwings, a magpie, missel thrush, gold finch, coot, yellow wagtail, grey wagtail, jackstraw, bullfinch, and nettle creepers were very abundant. Also saw quantities of hares and rabbits, and heard shrew mice in the banks. Found about a dozen nests of the chaffinch almost completed. Several contained eggs. Found nests of hedge accenter and brown linnet containing eggs. Bullfinch, sparrow hawk, and magpie building. Cowslips were very plentiful on fields by Middleton. Very fine specimens of marsh marigold by a brook in same locality. Hop growing in hedges by Ashfurlong. Wood violets were growing in thousands everywhere; they presented a mass of bloom.

April 26th.—Two hedgehogs found by Middleton. One which was put in a box with a quantity of bricks on managed to escape in the night. They can lift a tremendous weight with their snout.—W. HARCOURT BATH, Sutton

DIARY OF OBSERVATIONS AT TENBURY.

April 3rd.—Found a wood pigeon's nest with two eggs.

April 4th.—Alder (*Alnus glutinosa*) in leaf.

April 5th.—Cuckoo flower (*Cardamine pratensis*), alternate-leaved golden saxifrage (*Chryso-splenium alternifolium*), and wood spurge (*Euphorbia amygdaloides*) in flower; birch (*Betula alba*) in leaf,

April 6th.—Mugwort (*Artemisia vulgaris*), in flower. First chiffchaff heard.

April 8th.—Garlic hedge mustard (*Alliaria officinalis*) in flower. Saw the first swallow.

April 9th.—Found a robin's nest with young birds.

April 10th.—Bluebells (*Hyacinthus non-scriptus*), lesser stitchwort (*Stellaria graminis*), and dwarf red rattle (*Pedicularis sylvatica*) in flower.

April 12th.—Tuberous bitter vetch (*Orobis tuberosus*) and wild cherry (*Prunus arium*) in flower. Found a linnet's nest without eggs, and a chaffinches also without eggs, and a magpie's with seven eggs.

April 13th.—Found a jackdaw's nest without eggs and a dipper's with two eggs.

April 14th.—Wood crowfoot (*Ranunculus auricomus*) in flower. Found a jay's nest and a cole-tit's, both without eggs.

April 15th.—Upright hedge parsley (*Tbrilis anthriscus*) in flower.

April 17th.—Early purple orchis (*Orchis mascula*) in flower.

April 18th.—Germander speedwell (*Veronica chamaedrys*) in flower. Found a marsh tit's nest.

April 19th.—Herb Robert (*Geranium robertianum*) in flower.

April 20th.—Butter-bur (*Petasites vulgaris*), hairy cardamine (*Cardamine hirsuta*), and chervil (*Cherophyllum anthriscus*) in flower. Oak in leaf. Found a blue-tit's nest without eggs, a long-tailed tit's with twelve eggs, and a missel thrush's with four eggs. Saw the first martin.

April 21st.—Lady's mantle (*Alchemilla vulgaris*) and ribwort plantain (*Plantago lanceolata*) in flower. Bracken (*I teris aquilina*) in leaf. Saw a kestrel's nest and a nuthatch's. Saw a grasshopper warbler.

April 22nd.—Sycamore (*Pseudo platanus*) in flower. Found a great tit's nest with five eggs.

April 24th.—First Cuckoo heard.

April 25th.—Found a moor hen's nest with seven eggs and a starling's nest with the bird sitting.

April 26th.—Beech (*Fagus sylvatica*) in leaf.

April 28th.—Lime-tree (*Tilia Europaea*) in leaf.—N. PRESCOTT DECIE, Bocleton Court, Tenbury, Worcestershire.

A RAMBLE NEAR DROITWICH.

By GEO. W. WHEELDON.

ON Friday, the 28th April, having occasion to go to Ombersly, a small country village near Droitwich, I took the 10.5 train for the latter place; arrived there at 11.15, and after enquiring my way to Ombersley, started off for a four mile walk. I had not left the town many minutes before the banks began to look quite lively with the flowers of the chervil or cow parsley (*Anthriscus sylvestris*), the ground ivy (*Glechoma hederacea*), and the garlic mustard (*Alliaria officinalis*). A little further on the yellow weasel snout (*Galeobdolin luteum*), the white and red dead nettles (*Lamium album* and *purpureum*), and the chickweed and stitchwort (*Stellaria media* and *holostea*), began to appear. A mile or so brought me to a small coppice, where I saw the cuckoo pint (*arum maculatum*) in flower as I thought, so not seeing the notice, "Trespassers will be prosecuted," I got over to see and found about a dozen in flower, together with the blue bell (*Hyacinthus non-scriptus*), the lesser celandine or pilewort (*Ranunculus ficaria*), the wood anemone (*anemone nemorosa*), and the lovely wood sorrell (*Oxalis acetosella*), the first in profusion, but the three latter were nearly over. By the side of an old wall, over which the black berries of the ivy (*Hedera helix*), were hanging in profusion, I noticed what I thought to be a large caterpillar on one of the common stinging nettles, but on going nearer, I found it was one of the fungi commonly known as cluster cups. It was in the shape of a crescent, a light yellow colour with two dark brown stripes along the back and was about two inches long. Opposite here was a small wood, where the birds

were fluttering about and singing joyously as though to welcome the return of spring, and certainly enough to make one forget his worldly cares for a time. While I stood listening for some twenty minutes or more I recognised the song of the Black-bird and thrush (*Turdus merula* and *musicus*) the robin (*Erythaca rubecula*), the hedge sparrow (*accentor modularis*), the chaffinch (*Fringilla cœlebs*), the chiffchaff and garden warbler (*Sylvia rufa* and *hortensis*), and the blue tit (*Parus cœruleus*). Here I found some very large specimens of the red campion (*Lychnis diurni*) at the edge, and inside the broom (*Cytisus scoparius*) and the marsh and dog violets (*Viola palustris* and *canina*). A few yards past the wood a field on the opposite side was quite gay with the yellow flowers of the cowslip (*Primula veris*), and while I stood admiring the splendid view seen from here, a green-veined white butterfly (*Pieris napi*), went floating by. Another half mile brought me to a bank resplendant with the flowers of the primrose (*Primula vulgaris*), with a few cowslips (*P. veris*) interspersed; the dog violet (*V. canina*), and the germander speedwell (*Veronica chamædryis*) were also abundant, with a few flowers of the lesser clover (*Trifolium minus*), here and there. While gathering a few primroses I disturbed a pair of the greater whitethroats (*Sylvia cinerea*), in the hedge above, and on looking there found their nearly completed nest; here I saw a common white (*P. rapæ*) skipping about from flower to flower. Near Ombersley, on a dry sunny bank, I found half-a-dozen flowers of the alkanet (*Anchusa officinalis*), this is rather a rare plant, and is the first time I have met with it. The banks along the road were smothered in some places with the flowers of the dogs mercury (*Mercurialis perennis*), the barren strawberry (*Potentilla fragariastrum*), and the crosswort (*Galium cruciatum*), and occasionally a few flowers of the mouse-ear (*Ceras-*

tium vulgatum) and the common shepherds purse (*capsella bursa-pastoris*), and on the sides of ditches the common bitter cress (*Cardamine hirsuta*). Most of the fields along the roadside were covered with the Ladies smock (*C. pratensis*), three of the buttercups, the bulbous, creeping and meadow (*Ranunculus bulbosus, repens* and *acris*), the daisy (*bellis perennis*), and the dandelion (*Leontodon taraxacum*), while the lesser wood rush (*Luzula campestris*) abounded everywhere. At Ombersley, the horse chestnuts (*Aesculus hippocastanum*) and lilacs were smothered with blossoms, and the whitethorn (*Cratægus oxyacantha*) was covered with buds just opening. About a mile past Ombersley brought me to a small hill, up which I started, half-way up stood a large rookery, containing upwards of fifty nests, close to a stile leading to a farmhouse. While I was sitting on the stile a farmer came across the fields and when he opened the gate nearly all the rooks got off their nests, fluttered about and cawed very loudly until the gate was shut, when they all settled down. As I was sitting here I heard the welcome note of the cuckoo (*Cuculus canorus*) some half-dozen times, this was the first I have heard this season, but later on in the day I heard one or two more and saw a swift (*Hirundo apus*) fly past. In a field near the stile I found a few plants of the sheep sorrell (*Rumex acetosella*) in flower. After concluding my business at Ombersley, I started to walk to Worcester, some six miles distant. As I got near there, I noticed the whitethorn in full flower in several places, and also a few flowers of the cuckoo in the hedgerows. When I got to Worcester I felt a little tired, but after "refreshing the inner man," and a wash, I felt quite fresh again; had a stroll round the town, caught the 5.30 express back to Birmingham, and arrived there at half-past six, feeling a great deal better for my day's outing in the green lanes and fields.

BRITISH ANTS—By G. C. BIGNELL.

(Continued from page 207.)

ginals and one discoidal.

WORKER.—Without eyes, and same colour as the female. Length, 3-4 mill.

HABITAT.—Rare. Brighton, Weybridge, Exeter, Plymouth. I believe I am correct in saying that only single specimens have been taken at the two last-named places.

2. *Ponera punctatissima*, Rog.

Very like *contracta*, but darker; the punctuation of the head is much finer, so fine indeed as to be hardly discernible, and the pubescence of the abdomen adpressed, not mixed with semi-prominent hairs, as in the above-named species; *maxillary palpi one-jointed*. Length, 3-4 mill.

HABITAT.—Occasionally in houses. This species was recorded as new to the British fauna in the *Entomologist's Annual* for 1861, it having been taken in a bakehouse near Burton Crescent, London; and also in Robert Street, Hampstead Road.

FAMILY MYRMICIDÆ.

May be easily distinguished from the preceding by the petiole of the abdomen having two nodes.

Introductory diagram of *Myrmica*, plate 7, fig. 1:—

- 1.—Flagellum of antennæ.
- 2.—Scape of antennæ, showing the acute angular lobe of *scabrinodis*.
- 3.—Mandibles.
- 4.—Eyes.
- 5.—Ocelli, three. (In the workers of the *formicidæ* they are very small; the workers of the *myrmicidæ* have quite lost them.)
- 6.—Prothorax
- 7.—Mesothorax
- 8.—Metathorax with spines
- 9.—Nodes of the petiole.
- 10.—Abdomen.
- 11.—Coxa.
- 12.—Trochanter.
- 13.—Femur.
- 14.—Tibia.

} Thorax.

15.—Tarsus (consisting of five joints).

GENUS MYRMICA, Lat.

This genus consists of five species, which very closely resemble each other. The latest authorities, Messrs. Emery and Forel, believe them to be races of one species. The writer is of the same opinion; he found it a great difficulty at first to separate them.

1. *Myrmica ruginodis*, Nyl.

MALE.—Dark brown, shining surface with scattered, short, semi-erect hairs; mesothorax in front, metathorax and abdomen polished and shining; wings dusky at the base; head, frontal area not sulcate, vertex somewhat longitudinally rugose; antennæ with the scape curved towards the base, and thickened towards the apex, as long as the first six joints of the flagellum; metathorax with two very blunt spines, (*in the males of all the species the spines are blunt*); both nodes of the petiole smooth and shining; abdomen about the same width as the thorax; legs with fine short semi-adpressed hairs. Length, 6 mill.

FEMALE.—Testaceous, covered with long pale hairs; head and thorax deeply and longitudinally rugose; head wider than the thorax, frontal area smooth and shining; scape of the antennæ slightly and regularly curved at the base; metathorax with two strong, slightly curved spines, which are longer than they are wide at the base, space between them transversely rugose; nodes of the petiole rugose; abdomen shortly oval, with a darker cloud towards the base; legs covered with short, somewhat adpressed hairs. Length, 6-7 mill.

WORKER.—Differs from the female in the shape of the thorax, which is wider in front than behind, and constricted near the middle; it is also generally much more rugose, with the rugosities deep and longitudinal. The metathorax is as high as the mesothorax, and the spines project above its level.

(To be continued on page 239.)

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VOL. 3.

THE CUCKOO-PINT

(*Arum maculatum*).

By J. P. SOUTTER, Bishop Auckland.

(Concluded from page 219.)

AFTER fertilization, the enveloping leaf and the column above the pistil decays and drops off, the foliage leaves also wither, and by the end of summer the naked fruit stalk stands gaunt and solitary, crowned with a cluster of coral berries, which remain conspicuous throughout autumn until destroyed by frost—except they have been previously devoured by birds, to whom they seem attractive and innocuous, but to man they are very poisonous. Children allured by their brilliant colour have sometimes succumbed to the effects of eating them. The leaves and fresh corms are also very acrid and pungent, biting and smarting for a considerable time the tongue that has incautiously tasted them. And yet, this irritating principle can be entirely removed by drying, grinding, and repeated washings in cold water. The resulting starchy residuum being very bland and palatable, it was at one time rather extensively manufactured

and sold as British sago. The ordinary arrowroot of commerce is a similar instance of a change produced by judicious manipulation. The fresh juice of the *Manihot* is a most virulent and deadly poison; it is, however, very volatile, and is entirely disipated by heat, so by repeated washings and dryings the most delicate and digestible of foods can be obtained from the most unpromising raw material. In the days of good Queen Bess, when the ladies' ruffs and frills were fearfully and wonderfully got up, the Arum was highly valued as producing an excellent clear starch, but cheaper, if not better, ingredients have long since ousted it from our boundaries. Another singular phenomenon in the Arum is the remarkable development of heat during the period of flowering. This is best observed just when the spathe has begun to unfold, when the difference in temperature from the surrounding air is quite appreciable to the hand. Repeated and careful experiments have shown that the evolution of heat continues with varying intensity for several hours or even days, attaining a

maximum at its greatest intensity of about 20° F. above the surrounding air. Some observers have even noted a difference of from 25° to 27°. But even this is only a feeble heat compared to that of another member of the same natural order, a native of the Mauritius, where the heat of a single spadix was found to be 129°, whilst the neighbouring air was only 79°, a difference of 50°. A thermometer placed in the centre of five spadices showed an increase of 56°, and in the centre of twelve spadices of 67° above the adjacent air. This evolution of heat, like all combustion, is accompanied with a consumption of oxygen and a liberation of carbonic acid gas. Whilst the starchy constituents of the plant are converted into glucose or grape sugar, it is the same process which is seen in the germination of seeds, and it is very evident in the manufacture of malt from barley. A similar phenomenon in a modified degree takes place in all plants during the formation and emission of the pollen, but it is more marked and easily observed in the Arum because the flowers are closely clustered together, and shielded from external influences by the projecting and enveloping hood of the spathe. The generic name of Arum is of very doubtful etymology. Some say it is the Greek "aron," derived from the Hebrew "jaron"—a dart, and of which the familiar name

of "Aaron" is a form. I have heard the boys in this locality call it "ear-ring," doubtless a corruption of "Aaron," although they say they make earrings of the spadix. The common names of the Arum are legion, many of them given in allusion to its fancied aphrodisical powers. One name "bloody man's finger," doubtless refers to the lurid hue of the spadix; and "Starchwort" is evidently from its economic use. Like all acrid and poisonous plants, the Arum had at one time a high medicinal reputation, especially in rheumatism and gout, but it has now fallen into disuse if not disrepute.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

W.H.—Thanks, but we do not care to publish such paragraphs. That you send looks very like a hoax. We should have been glad to print that recording the occurrence of the Bittern had you sent it.

J.J.D.—Your *Helix* is *nemorialis* var. *hortensis*, and small enough to be called *hortensis* var. *minor*.

Wanted, the present address of Charles Roland, Esq., late Hemel Hempstead.

EXCHANGE.

DUPLICATES.—Larvæ of *B. trifolii*. DESIDERATA.—*Iris*, *Sibylla*, *Cassiope*, *Hyale*, *Argio-lus*, *Populeti*, *Munda*, and many others.—R. A. FRASER, Seafield, Abbotsford Road, Crosby, near Liverpool.

DUPLICATES.—Eggs of *S. populi*.—JOHN E. ROBSON, 15, Northgate, Hartlepool.

BIRMINGHAM NATURALISTS' FIELD CLUB.

An excursion was made to the Lickey Hills on Saturday, 6th May. We took several ornithological, entomological, and botanical specimens, and returned home well pleased with the outing.—W. HARCOURT BATH, Hon. Sec.

NOTES AND OBSERVATIONS

BIRMINGHAM NOTES.—April 26th.—BRACKEN FERN.—I have noticed that bracken growing in the midst of a bush attains to a very great height. Some old stalks that I saw to-day were quite ten feet high. The reason I expect is that the bracken is smothered, and tries to find a vent by growing as high as the surrounding objects. Daisies growing in a field where the grass is high have very long stalks.

GREASE.—I have cured a female of *Liparis dispar* that had the grease badly by giving it good soakings in benzine with a brush.

"A DOG IN THE MANGER."—A friend of mine has a little black terrier who, when he has more food than he can eat, sits by it for hours and snaps at anybody who comes near him.

April 29th.—Lilac in flower at Sutton. Discovered a few cowslips on railway banks at Erdington, and daffodils by Gravelly Hill. Hemlock (*Conium maculatum*) plentiful everywhere: it has been in flower some

time.

HEDGEHOGS.—A gentleman remarks that he has seen hedgehogs running about very lively at night. He once ran after one and clapped his hands round it, thinking it to be a hare or rabbit, but he was soon mistaken.

April 30th.—Found nests and eggs of wren, chaffinch, hedge sparrow, and linnet very abundantly. Found two nests of ring dove containing eggs, and a magpie's on a high tree. Saw two dead young rooks lying on the ground that had been blown out of their nest during the recent gale. Found cowslips growing in great abundance in certain localities near Sutton. Heard numbers of chiffchaffs in Sutton Park: they were all singing while perched high up in some oak-tree. Oak in full leaf.

May 1st.—The meadow flowers are now out in full. Some fields near Chestri Road Station look like a cloth of gold.

May 3rd.—*Saturnia carpini* (male), emerged from pupa; is not this very late?

May 5th.—Small white butterflies beginning to appear in numbers on the railway banks. Mountain Ash in flower at Edgbaston. Almond in flower, it has been so for some time. The trees are now in their full splendour, they are of every shade of green.

May 7th.—Saw a number of partridges, on fields to the north of Sutton. Found a magpie's nest on a high tree, containing eight eggs. A gentleman who was with me climbed up and brought some of them down. Found several other nests. Saw a few holly blue butterflies in Four Oaks Park, flying about the holly bushes. Took several *Tephrosia Consonaria* and *Crepuscularia* on trunks of trees in Pool Hollies Wood. *P. rapæ* and *V. Urticæ* plentiful to-day. On the railway I saw a hen run over by a train. It cut her head and one of her wings com-

pletely off yet she moved a long time afterwards; it was her muscles that were at work. Saw a number of wild ducks swimming on Brace Bridge Pool, one gave a dive and came up over sixty yards away. I heard the cuckoo all day long, there were two or three of them in every wood.

May 10th. Saw several turtle doves by Wyld Green Station.

ORNITHOLOGICAL NOTES.—Dates of arrival of summer visitors:—19th March, grey wagtail; 8th April, swallow; 16th April, sand martin; 16th April, nettle creeper; 23rd April, yellow wagtail; 25th April, cuckoo; 30th April, chiffchaff; 1st May, reed sparrow; 6th May, corncrake; 10th May, turtle dove. Note.—They may have arrived earlier, but these are the dates on which I first observed them.—W. HARCOURT BATH, Sutton Coldfield.

BIRMINGHAM NOTES.—I regret to call the attention of our readers to an incident which happened on the 2nd of May. A beautiful specimen of the nightingale was heard singing at Hagley. The bird was unfortunately caught in a trap with a meal worm, of which this bird is very fond. The man, who did his best to make this beautiful songster still more rare, took it home and kept it alive in a cage for a week. The bird, he informs me, got quite tame, and would eat off the table. It has since died, and has been sent for preservation to Mr. Spicer, the taxidermist, Birmingham, where it may be seen by those interested.

Three young foxes were dug out of a sand hole at Stourbridge, amongst them was the wing of a wild duck and some feathers. I suppose they had been having a nice feed. They have been sent for preservation, and are the property of H. Cochrane, Esq., of Stourbridge.

Cinclus aquaticus.—A beautiful and per-nest and four young of the Dipper or Water Ouzel was taken on the 2nd of May, at

Carlisle, by Mr. Watson, verger of the Cathedral of that town. This nest is the most perfect I ever saw. It may often be found between the green damp stones of a rude bridge, or in some low jutting crag, overhanging the rushing current, and is most artfully concealed. The structure is composed of intertwined mosses, and is very large, and domed with a small lateral aperture leading to the interior chamber, which is lined with a few dried leaves, and wherever it is situated it blends with the rest of the moss and lichen which fills up every crevice, and unless the bird be watched to its retreat would never be detected. The eggs of the Dipper are five in number and white. As soon as the young are fledged they accompany their parents, flitting from stone to stone, and performing the most amusing evolutions. The skipper is rather plentiful in Wales and Scotland, but it is very seldom seen here, although a splendid specimen was shot at Handsworth, near here, a few weeks ago, but it must have got out of its latitude by some means or other.

An Oyster Catcher (*Hæmalopus ostralegus*) was seen at the Edgbaston Reservoir, a few days ago.—ALEXANDER G. DAVIS, B.N.F.C., Birmingham.

LARVÆ OF *S. OCELLATUS* AND *POPULI*.—In the *Young Naturalist*, of May 6th, I think the distinguishing characteristic of an *Ocellatus* larva has been accidentally omitted, that of the horn being invariably tipped with blue, instead of pink or yellow, this is the only unfailing distinction I have ever been able to find between it and the larva of *Populi*; for though some of the latter are utterly unlike *Ocellatus*, others resemble that larva so completely in hue and markings, as to make it otherwise difficult to distinguish between them. The pupa of *Populi* is rough and dull, and always looks as if it were dusty, that of *Ocellatus* is bright and smooth, and usually larger than that of *Populi*. I thought, perhaps, you

might like to have these remarks for the sake of your young readers, who may be as much puzzled, as I was when beginning to collect, to distinguish between these two *Sphinxæ* larvæ. Mrs. BATTERSBY, Cromlyn, Ireland.

CUCKOO'S EGGS.—With reference to your enquiry in No. 130 of the *Young Nat*, p. 211, I have a cuckoo's egg I found in a song-thrush's nest in Sherwood Forest in 1871. Besides the cuckoo's were four of the thrush's eggs, and, I suppose, according to the theory of some ornithologists the colour of the cuckoo's egg should to some extent have assimilated with that of the thrush's. But the egg has not a tint of blue about it; indeed the ground colour has not even the faint bluish tinge which the only other cuckoo's eggs I have possesses, and which, if I remember rightly, was found in a meadow pipit's nest. I have also two yellow-hammer's eggs which are perfectly white, without spot or streak of any colour. The nest, which I found at Grimescar, near here, contained four eggs, all equally white. They were perfectly fresh, and strange as it may appear, it is nevertheless a fact, that on blowing them, the purplish streaky colouring matter came out of the interior, no doubt from the lining of the shell. If you would like to see any of these eggs, they are, of course, at your service.—GEO. T. PORRITT, Huddersfield, May 9th, 1882.

C. VINULA.—In No. 6 of the Y.N. (Orders of Insects) it is stated that the ichneumon which infests *C. vinula* does not deposit its eggs until after the larva has cast its last skin, when the tentacles apparently lose their power. I may say that on July last I found a larva of the above moth which, though not in its last skin, had ichneumon eggs attached to it. The larva was just about to change, so I was curious to see what would become of the eggs, expecting them to be cast off with the old coat. On the contrary, however, the skin was cast leaving the eggs as firmly

attached to the larva as ever. The tentacles had not been of much use in this instance in protecting the larva from the attacks of the parasite. I did not succeed in breeding the ichneumons as the larva was unfortunately lost when changing the food.—T. T. DOUBLEDAY, Team Villas, Gateshead.

NOTES ON TINEINA.

(Continued from page 60.)

THE LONG-HORNS.—Most of the long-horns are comprised under the two genera *Nemophora* and *Adela*, and nearly all the species may be found during this and next month. I will now speak of the first genus, leaving the second for next week or the first convenient opportunity. All the species have very long antennæ, greyish ochreous fore wings, and are found in woods. *N. Swammerdamella* is perhaps the most common. Go to the nearest wood, beat the bush, and you will be almost sure to dislodge it. It is the largest species, measuring ten lines. *Schwarzziella* is rather smaller, and differs in having the fringes of the hind wings *pale grey* instead of *pale ochreous*. *Pilella* is rarer, but may be looked for in the north of England and Scotland; it has *dark grey* fringes to the hind wings. *Metaxella* is rather smaller still, and has the fringes *ochreous*.

LARVÆ.—Go to some ash-tree, an old stump, or one with young shoots springing from the bottom of the stem. See if the terminal leaves of any of the stems present a withered appearance, if so, examine it more closely at the place where the new growth joins the old, and if you see some excrement protruding from a hole, rest assured it is the work of the larva of *Peplia Curtisella*, which is a very pretty black and white moth. The shoots containing the larvæ had better be placed in a pickle bottle and be corked up, and the imagines should appear about the end of June.

BRITISH MOTHS.

BY JOHN E. ROBSON.

2. POPULI.

The Poplar Hawk-moth.

"POPULI, L., *Po'puli*, feeds on poplar (*Populus alba*)."—A.L.

Imago.—Grey, clouded and mottled with darker grey and olive brown; veins yellowish brown; hind wing brick-red at the base, then clouded grey.

Larva.—Pale apple green, covered with lighter coloured warts. Seven oblique greenish yellow streaks as in the last species. The head is small and green; the horn is rough, yellow, sometimes orange at the tip; the legs reddish, and there are often one or two rows of reddish spots. A variety is not uncommon of a pale bluish green colour, but it may always be readily known from *ocellatus* by the following:—*populi* has no trace of the lateral stripe extending in *ocellatus* from the first oblique streak to the head. The face of *ocellatus* is also larger and flatter, pointed at the top, and with a reddish marginal ridge terminating at the top in two little points which stand above the crown. The horn of *ocellatus* is blue at the tip, *populi* always yellow or orange.

Pupa.—Dull dark brown, rough and dirty looking, not bright and smooth like most of subterranean pupæ.

Food Plant.—Willows and poplars, but has been found on a few other trees also.

Times of Appearance.—The imago emerges at the end of May or in June, and continues on the wing till July. The egg, which is laid singly on the upper side of the poplar or willow leaf, hatches in about fourteen days. The larvæ are full fed in September and October, but they may be found even in November at times, though these are probably ichneumonated. The pupa remains over the winter.

Habitat.—Common throughout Britain,

perhaps the most abundant of all the hawk moths. It sits on tree trunks and on palings, and has a habit of placing its wings so that the central portion of the hind wing appears beyond the costa of the fore wing. When sitting in this position the brick-red patch at the base of the hind wing is covered, and the whole insect appears bluish grey. This may be protective, as it is thus much of the colour of a lichen-covered tree trunk or a weather-beaten paling. It is found all over Europe except the polar regions, Southern Italy and Greece, also in Northern and Western Asia.

Varieties.—*S. populi* varies greatly in the depth of shade of the darker markings. Sometimes it is almost unicolourous, and at others the darker and lighter shades are well contrasted. The bluish grey of the wings is sometimes changed to yellowish grey, or even to light reddish brown, forming a very distinct looking insect. Hybrids between this species and the last have often been obtained. They are generally unsatisfactory looking things, dingy and characterless; but one in my cabinet, while bearing a general resemblance to *populi*, has the eye of *ocellatus* on the hind wing curiously blended with the brick-red patch of the present species. This specimen is figured in Mosley's illustrations. *Smerinthus*, pl. 1, fig. 3.

ECONOMIC ENTOMOLOGY.

BY S. L. MOSLEY.

2. Insects Injurious to Live Stock.

The insects injurious to our live stock are principally in the form of parasites which infest our domestic animals, and live by sucking their blood. These in many cases do no real positive injury, but it is much more pleasant to be without them if possible. We will take them again in alphabetical order.

Bees.—The hive bee is subject to the attack of certain insects which not only destroy the comb but also the honey itself, thus starving the bees and impoverishing the supply. One of these is called *Meliphora alveariella* and another *Galleria cerella*; both belong to the lepidoptera, and are very destructive when once fairly established, making long galleries among the combs. The first is brown with a yellow head, and the second, which is larger, has the fore wings as if abruptly cut off at the end.

REMEDIES.—The wooden frame hives seem to be a means of prevention, as the combs can be taken out and examined.

Cow.—Three species of parasites at least infest cattle, viz., *Trichodectes scalaris*, *Hamatopinus eurytarnus*, and *H. vituli*. The first eats the hair of the animal, and the others are blood-suckers.

Dog.—The common dog-tick (*Hamatopinus piliferus*) is sometimes very troublesome, being very difficult to remove when once fairly established.

REMEDIES.—The precipitate before mentioned is recommended as the best means of cure. It must be well rubbed among the fur and washed off again in the course of a few days with soap and water, and the dog must be muzzled in the meantime to prevent it swallowing some of the poison.

Horse.—The parasite which infests the horse is *Trichodectes equi*. It also infests the ass.

Pigeon.—*Lipeurus stellaris* and *Nirmus claviformis* infest pigeons, sometimes to a very considerable extent.

Sheep.—The greatest pest to the sheep is a fly which deposits its eggs about the sheep's nostrils, and the larvæ penetrate into the interior, sometimes as far as the brain. This animal is also infested by a louse or tick, and we frequently see starlings perched upon a sheep's back picking them off.

THE LICKEY HILLS.

May 6th (Saturday afternoon).—Took train to King's Norton, where we got out to walk to the Lickey Hills, a distance of about six miles. The banks on each side of the road were gaily lit up with wild flowers of all colours and forms, the wood violet, dog's mercury, and fine specimens of the wild forget-me-not in some places flourished, and whole fields of cowslips. After passing through the hamlet of Northfield we came into more open country with furze-trees. On one of the banks I found the first large ermine moth this season. About an hour's further walking we came to the village at the foot of the Lickey Hills, and in one of the cottages we procured refreshments and rested for a short time. At half-past five o'clock we commenced the ascent. It did not take us long to get up. On our way I found a skylark's nest on the ground containing four eggs. When we arrived at the top we saw the Clent Hills plainly, which belong to the same range. They are rather higher than the Lickey. Some of the hills were completely covered with bilberries, which grew to the height of four or five feet. Down the slopes ash-trees were flourishing well, and the ground was all covered over with moss, which took the place of grass. The soil of the Lickey is much richer than that of Clent, and accordingly richer in vegetation. We saw numerous rabbits running about and heard pheasants and cuckoos in the woods. We also observed several kestrels, bullfinches, bats, shrew mice. Heard the corn crake and noted two large rookeries. Coming down the hills to the south-east we beheld a magnificent sight. In one corner of a vale a mass of broom and gorse was in flower; it completely dazzled our eyesight with its lustre. Half-an-hour's walking through pleasant lanes brought us to Burnt Green station, where we caught the 8.39 p.m. train back to Birmingham.—
W. HARCOURT BATH.

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E. G. MEEK,
NATURALIST,

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The YOUNG NATURALIST :

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No. 133.

MAY 27TH, 1882.

VOL. 3.

THE WREN'S NEST, DUDLEY.

BY P. T. DEAKIN AND G. F. WHEELDON,
Birmingham.

ON Saturday, the 6th April, we went with a party of between twenty and thirty naturalists by the 2.50 p.m. train to Dudley. Arrived there by about half-past three, and started off for the Wren's Nest (which is a well-known geological locality of the Silurian period) through the market, the noise from which was almost deafening, being market day, from the cries of crock and fruit vendors and the shouting of a Salvation Army preacher standing on a high stool in the middle of an open-mouthed crowd. Pushing our way through all this, and turning off to the right, down a side street, a walk of about ten minutes brought us to the meadows at the foot of the Wren's Nest Hill, where we heard the cornerake (*Crex pratensis*). A little farther on was a pond, and there nearly half the party stopped for a few minutes fishing with the gravy strainers, as the wag of the party

politely called our nets. In the pond we found *Limnæa stagnalis* and *peregra* in abundance, accompanied in smaller quantities by *Planorbis vortex*. We also drew in a miscellaneous collection of water beetles, dragon-fly larvæ, ephemeræ, water scorpions, leeches, and different kinds of daphnia, &c. As this was an old pond it was very prolific in the usual specimens of pond life.

We next made a move on the Wren's nest, and in a sheltered valley about half way up stayed with a few members to hunt for land shells, &c., whilst the rest went towards the top. Our first capture was two or three *Clausilia rugosa*, under a piece of limestone rock; under another piece we found *Helix hispida* and *H. rotundata*; then a couple of *H. arbustorum* on stems of grass. Whilst boxing the latter we disturbed a shrew, which disappeared down a hole amongst some loose rocks. We next came across *Bulimus obscurus* and one or two *Cochlicopa lubrica*; then we boxed a couple of *Helix nemoralis* var. *hortensis* off a piece of dog's mercury (*Mercurialis perennis*); *Zonites nitidus* and *cellarius* next made

their appearance under pieces of limestone. Whilst searching for shells we disturbed no end of nests of red ants (*Formica rufa*) under the stones. When the nest was uncovered the ants would each seize a pupa and hurry it off down the chinks among the grass roots. The searching was enlivened every now and then by one of the party shouting out "Where's the spider fellow," "Where's the fossil man," or "Which is the one that collects black-bats," if anything turned up that they thought out of the common, and which the finders did not collect themselves. Sometimes when the party called for made his appearance a toad or something equally absurd was handed him amidst the laughter of all around.

We next moved on towards the top, and soon had our hammers and chisels at work among the limestone blocks near the caverns. Here one of the party found the tail of a fossil trilobite, while we, after about a quarter of an hour's work, found ourselves in possession of a good series of *Atrypa reticularis*, *A. affinis*, *Rhynconella*, plenty of encrinite stems, small cup corals, and several pieces of coral fragments and protozoa. We also came across a couple of fine cup corals weighing about twenty pounds each, but these were rather too heavy for us to carry away. These cup corals are frequently to be met with there weighing several

hundredweight (rather too heavy for a cabinet we should imagine). Others in the party found *T. depressa* and *Meristella tumida*. Whilst on the top of the hill some one proposed that we should go into one of the caverns, and as the result of the proposal, seven assembled at the bottom of the mouth of the largest, when we found we had no candles or lanterns to light our way; but as two of the party had some newspapers and another a large sheet of brown paper (we all had matches), we decided to make torches of them, so twisted up two or three large ones, lighted one of them and started off, single file, into the yawning depths of the earth. At a distance of about two hundred yards from the mouth we came upon a tramway with an empty truck standing there. One of the party gave it a push, and off it went down the incline, rumbling along till the noise was lost in the distance. We started off to follow the line, and after two or three stoppages in total darkness while they were lighting a fresh torch, came up with the truck, which had gone nearly half a mile from where it had started, until it was stopped by another truck standing on a cross line which led to a perpendicular shaft with a blow-george on the top. We thought it was raining down the shaft at first, as it was like a shower bath, but on examining it more minutely found it was only the water

oozing from the sides and dripping down. We next explored a little further, but as the torches were going out we retraced our steps and soon emerged again in daylight. We found some good crystals of carbonate of lime sticking out from the sides of the cavern which looked very pretty when the light shone on them. About the first thing we heard on emerging was the cry of the cuckoo (*Cuculus canorus*) from a tree a short distance away. Plenty of sand martins (*Hirundo riparia*) were also flying about, but we saw no signs of nests anywhere. We sat down to rest ourselves and enjoy the scenery from the hill. The country could be seen for miles round; but look which way you might, shafts of pits were always included in the view, dotted about here and there. One or two of the party, as soon as we sat down, commenced to turn over the stones and clumps of grass within reach for shells, &c. We, seeing their success, followed their example, and soon the whole party was scattered about hard at work. The captures here were *Cochlicopa lubrica*, *Clausilia rugosa*, *Helix hispida* and *rotundata* in abundance, and a few *Zonites nitidus*. Two of the party found *Achatina acicula* and *Carychium minimum*, a single specimen of each. The former is very rare in the district, so I am told; only one capture has been recorded for several years: so it was rather a good

find. We gradually extended our range into a small valley on the side of the hill, where on several patches of dog's mercury and cow parsley we found abundance of *Helix arbustorum*, accompanied by a few *H. nemoralis* var. *hortensis* and several of the type. The variety *hortensis* we think is a distinct species to *nemoralis* as it is not often we find this and the type together; and we have also known *nemoralis* occurring in abundance on one side of a bridge for a considerable distance along the road, whilst on the other side only the variety *hortensis* was to be found. It is also said that the type and the variety will not pair. The following plants were very poorly represented:—We only saw *Arum maculatum* (cuckoo pint), *Agraphis nutans* (bluebell hyacinth), and a fading patch of *Ficaria ranunculoides* (pilewort) on the top of the hill; and *Tussilago farfara* (coltsfoot), *Lathræa squamaria* (toothwort), *Glechoma hederacea* (ground ivy), *Lamium album* (white dead nettle), *Anthriscus sylvestris* (cow parsley) in a few other places.

As the time was getting on, and hunger could not be appeased with limestone blocks, we made our way to the town, and after refreshing ourselves at the coffee house, marched off towards the railway station to catch the return train. The weather had been delightful all afternoon, and every one enjoyed himself immensely.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due.

Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

Miss R. P.-D.—We believe there are but two British rats, the brown and black. The former is said to be a recent immigrant, and is sometimes called the Hanoverian rat. The latter is sometimes called the Old English rat, but it is also or used to be called the Norman rat, implying that it came at the time of the Norman Conquest. The black rat is rather darker and smaller than the common species. There are also three Voles, the common water vole or water rat, the field vole, and the bank vole. Of Mice there is the long-tailed field mouse, the common, the harvest mouse, and the dormouse. There are also four Shrews inhabiting Britain. We are unable to recommend a handbook on British Mammals, one is much wanted, but if you send us a specimen or a description, we may be able to name yours for you.

A. DAVIS, Jun., Gt. Marlow, must accept our thanks for the nest and a beautiful egg of the Lesser Whitethroat, sent for figuring. The same is also tendered to Miss Angelina Kerry, and to Mr. F. Kerry, for the nest of the Nightingale.

A. G. D.—Yes, quality is of much more importance than quantity, and we have frequently to leave out, as unsuitable or not interesting, items of news sent us. What we want is matter of *general* interest.

Several Field Clubs are joining for a collecting enterprize to the South of England,

other Clubs wishing to join should communicate with F. Ellis, 32, Swallow Street, Huddersfield; or J. J. Dixon, Alliance Street, Hartlepool. The shares will be 6s. each.

CHANGE OF ADDRESS.

J. W. BALDWIN, *from* 143, Toppings Turton, near Bolton, *to* 38, Dunscair Road, near Bolton.

NOTES AND OBSERVATIONS

BIRMINGHAM NOTES.—May 13th. Found a sparrow hawk's nest, containing three eggs. Saw several *L. argiolus* in Holly Hurst.

May 14th.—Found numerous nests of the nettle creeper containing eggs, thrush and greenfinch with eggs and young, and greater spotted woodpecker building. Found several nests of the ring dove. Note.—A ring dove built a nest in a hedge and laid two eggs in it, everything completed with six days. Their nest is nothing but a few twigs placed one upon another, yet they are almost strong enough to bear the weight of a man. The eggs can often be seen in the nest while standing underneath. The old pigeon makes a great noise when she flies off her nest, which immediately leads to its discovery; I believe not half their nests would be found if they sat as closely as many other birds. Took *L. viretata*, *T. Consonaria* and *Crepuscularia* and *O. Bidentata*, on trunks of trunks, in Upper and Lower Nut Hursts. *L. argiolus* plentiful in Holly Hurst; the males generally outnumber the females considerably. Found several larvæ of *O. potatoria* feeding on grass on banks. The holly trees are now full flower which attract many butterflies, especially the *Argiolus*. Saw a number of fresh red berries still on a holly bush. Saw the first *Pieris napi* and *brassicæ* in Holly Hurst this season. Micro-lepidoptera very plentiful, there are a number of moths with long antennæ of an

olive green colour, flying about in the woods; they glitter like gems. Found a viper's egg in Upper Nut Hurst, it was just underneath the ground, I unluckily trod on it.

A friend and I have introduced several white rats into the Park, to try and naturalise them. We put them up a hole in a hollow tree. There are a great quantity about in the town, having escaped out of a friend's pen, and we know that some of them will soon have young. It will be quite a novelty if they thrive.

"THE ELEPHANT AND THE TAILOR."—On bringing the rats into the park, a friend who was with me pinched one of their tails for fun (he was no naturalist). After putting the rats in the tree, he just put his hand in to widen the hole when the injured gentleman flew at it and nearly bit the end of one of his fingers off. He says that he will not meddle with rats again!

SAND MARTINS.—By the Midland Railway banks, close to Black Root Pool, there were thousands of sand martins. They were so numerous that they almost darkened the sky. On a sudden the whole flock would disappear, and again in half a minute they would appear like a whirlwind. Their nests are situated about half way down the embankment, and are very difficult to get at.

A. CARDAMINES AT SUTTON.—On the 18th May a friend brought me a specimen of *A. cardamines* that he had caught at Middleton, about a couple of miles from here. He says that he saw dozens flying about. I was not aware before that it occurred so close.—W. HARCOURT BATH, Sutton Coldfield.

BIRMINGHAM NOTES.—(*Asio otus*.) A man whilst taking a walk through a large, thick wood near here was very much surprised at finding a young long-eared owl half down and half feathers at the foot of a very large tree. He picked the bird up and brought it home and sold it to a naturalist of this town. I saw the bird exposed in his window, standing on an old stump, quite erect, with

the head turning a little and slightly blinking the eyes. There was quite a crowd of people looking at it. A discussion arose between two men as to whether it was alive or mechanical, one contending it was alive and the other mechanical. It terminated in a friendly bet, which was decided by each going inside and asking the owner. The loser could not be persuaded until the owl was taken out of the window and placed on his hand. At last they both joined in a hearty laugh and went away wiser men.—ALEXANDER GEORGE DAVIS, B.N.F.C.

WEASEL TAKING TO THE WATER.—On the 29th ult., as my brother and I were strolling along the Mardyke, he saw a weasel suddenly run across the walk. We gave chase, but it ran through a hole in the wall and dived into a swiftly running stream which flowed under and across the dyke. We waited for some time, but could not see it again.—J. T. HOSFORD, 71, Grand Parade, Cork.

DATES OF EMERGENCE OF BUTTERFLIES AS COMPARED WITH 1881:—

(Continued from No. 130, p. 212.)

| | 1882. | 1881. |
|---------------|-------------|-----------|
| C. Pamphilus | April 27th. | May 21st. |
| T. Tages | May 5th. | May 30th. |
| A. Euphrosyne | May 8th. | May 14th. |
| C. Phlæas | May 13th. | May 21st. |
| L. Megæra | May 17th. | ———— |
| T. Alveolus | May 17th. | ———— |
| P. Alexis | May 17th. | May 24th. |
| A. Cratægi | ———— | May 30th. |

—A. DAVIS, Jun., High Street, Gt. Marlow, Bucks.

THE COUNTY CORK BEE-KEEPERS ASSOCIATION gave their first exhibition at the Corn Exchange, Cork, on Saturday, the 29th ult. Owing to the inclemency of the weather the attendance of the general public was not very large, those present being enthusiasts in the keeping of bees. Two very interesting lectures were delivered by the Rev. Mr. Lindsay, of Limerick, explaining the nature

and disposition of the bees, as well as the mode of treatment which should be adopted by bee-keepers. An experienced expert and bee-master also contributed some valuable information, while several novel descriptions of hives were exhibited and explained to the audience. Amongst the hives shown were the "Ardmore" and "Woodville" invented by Mr. Lonsdale, of Lurgan. Mr. W. Lane, Vernon Mount, Cork, showed one of the Stewarton hives built up in stories like a tower, which he has found very successful, and a lady exhibitor showed another with a colony of Ligurian bees. The hon. sec., Mr. J. Crosbie Smith, exhibited a hive made by himself on Abbott's longitudinal pattern, and fitted up with "close ended" frames, which are said to keep the natural heat of the bees better in the hive than the "open ended" sort. Altogether the exhibition was very pleasing and instructive, and augurs well for the success of the association, which is only a month in existence.—
J. T. HOSFORD, Cork.

A CHILD'S RAMBLE.

The subjoined is the unaided production (except in the names of some of the flowers) of a little girl seven and a half years old. It was not sent to us for publication, but we are so pleased with it that we have no hesitation in giving it to our readers.—EDS. Y.N.

On Wednesday afternoon, May 10th, it being fine and warm, my mother and I, along with my father and my brother Charles, had a naturalist ramble. We went to Hey Wood. We got on at Lockwood station, and met Mr. and Mrs. Heeley at Berry Brow station, and went forward to Honley. There we went to the woods. First we went into the west wood. First my brother found some beetles, and the wood is full of bluebells, and a few celandines too. Then we saw some rabbits and rabbit's burrows. Then we went forward

and found a blackbird's nest. Now we have two fields. In these fields we found violets, purple orchis, primroses, and my brother Charles caught a frog. Then my father found some lungwort, and then we went forward into Hey Wood. There we found some white bluebells, and marsh marygold, and garlicks, yellow archangel, wood sanicle, and as we went forward we heard a pheasant crowing, and then going forward we heard a chaffinch sing. When we got to the top we got over the wall into the road. Following the road we past many fields containing flowers till we arrived at Berry Brow station. Then we waited a few minutes for the train. Then we rode home, and we felt quite refreshed after our good ramble.

BIRMINGHAM NATURALISTS' FIELD CLUB.

An excursion was made to Sutton Park on Saturday afternoon, 20th May. The trees were in their full foliage, and the park looks to its best advantage, but the ferns have not yet unfolded their leaves. The holly, mountain ash, and hawthorn in flower, with swarms of insects gathering honey from them, and all day long may be heard the notes of the cuckoos as they call to each other among the trees.

NOTES.—Saw a wild duck by the Keeper's Pool, turtle dove in Lower Nut Hurst, two crows in Darnel Hurst, and found two nests of missel thrush with young. Water crow-foot flowering plentifully on Keeper's Pool. Lepidoptera captures.—(Gum Slade) one *Thecla rubi*, (Holly Hurst) *Lycæna argiolus*, also distributed all over the park where there are holly bushes. On trunks of trees: *Bidentata* (several), *T. consonaria* and *crepuscularia* (very plentiful), *viretata* (very plentiful), *M. fluctuata* (plentiful), one *A. remutata* and several pugs.—W. HARCOURT BATH, Sutton Coldfield.

BRITISH ANTS—By G. C. BIGNELL.*(Continued from page 223.)*

Length, 5-6 mill.

HABITAT.—Generally distributed and common.

2. Myrmica lævinodis, Nyl.Extremely like *ruginodis*.

MALE.—Differs by being smaller, antennæ much shorter, the scape slightly shorter in comparison with the flagellum, and the legs covered with long erect hairs. Length, 5-6 mill.

FEMALE.—Differs by the metathoracic spines being much shorter and wider, each spine being wider at the base than it is long and quite straight, the space between the spines being smooth and shining; the nodes of the petiole also are rather smoother. Length, 6-7 mill.

WORKER.—Differs as in the female, also the thorax less deeply rugose and the rugosities not longitudinal. Length, 5-6 mill.

HABITAT.—Common, but not so plentiful as the preceding.

3. Myrmica sulcinodis, Nyl.

MALE differs from both the preceding in being darker (nearly black); head not shining, with the frontal area longitudinal-sulcate; mesothorax in front dull, more or less transversely wrinkled, rather deeply and longitudinally rugose behind the converging lines; scutellum and base of the metathorax also rugose; first node of the petiole dull and more or less rugose, second polished and shining; abdomen and legs much as in the preceding. Length, 6 mill.

FEMALE may be known by being darker redder brown colour, the head more deeply rugose and reticulated behind the eyes at the sides, the scape of the antennæ curved suddenly near the base, the frontal area sulcate, the thorax and nodes of the petiole deeply, longitudinally and rugosely sulcate. Length, 6-7 mill.

WORKER like the female. Length, 5-6 mill.

HABITAT.—Rare. Wales, Hampshire, Chobham.

4. Myrmica scabrinodis, Nyl.

MALE may be distinguished from the preceding by the short scape of the antennæ, which is not longer than the first two or three joints of the flagellum, and by having the legs very densely covered with long erect hairs. Length, 6 mill.

FEMALE very like *sulcinodis*, but with the scape of the antennæ thicker and rather shorter, distinctly geniculated near the base; it also appears to be flattened at the turn: this appearance is given by a sort of angular dilatation on its upper side. The thorax and nodes of the petiole are less rugose. Length, 6-7 mill.WORKER like the female. The colour is testaceous, as in *ruginodis* and *lævinodis*. The geniculated scape of the antennæ distinguishes it at once. Length, 5-6 mill.

HABITAT.—Generally distributed and common.

5. Myrmica lobicornis, Nyl.MALE differs from *scabrinodis* in the long scape of the antennæ, which is half as long as the flagellum, and from the other species in the scape being angularly bent at the base.FEMALE in colour as dark as *sulcinodis*, the scape of the antennæ geniculated as in *scabrinodis*, but not flattened at the bend, the bend having a distinct spine. Length, 6-7 mill.

WORKER like the female. Length, 5-6 mill.

HABITAT.—Rare. Chobham, South Shields, Whitley, Lowestoft, Seaford, &c.

GENUS STENAMMA, Westw.

This genus may be known from *Myrmica* by having only three joints to the labial palpi and four to the maxillary, and by the female and worker having only eleven joints in the antennæ. The smooth polished surface of the head and thorax, and the spine under the second node of the petiole in the*(To be continued on page 255.)*

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E. G. MEEK,

NATURALIST,

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VOL. 3.

A FEW DAYS ABOUT LIVERPOOL.

By S. L. MOSLEY.

ON April 28th I started for a few days collecting on the Lancashire and Cheshire coasts. The weather had not been very promising during the previous week, but as I had made all arrangements I determined to risk the future. I was met at Liverpool by my friend, Dr. Ellis, to whom, along with Miss Ellis and Mr. C. S. Gregson, I am greatly indebted for their kindness and hospitality.

Our first "out" was to Crosby, where we hoped to find larvæ of *Fascelina*. However, we were disappointed, for it was very cold and blowing fearfully from the sea. We sought long, but only met with one larva of *Fascelina*, two very small *Trifolii*, and two *Quercus*, the latter falling to Dr. Ellis's lot. The bitter cold wind had evidently driven the larvæ into the bottom of the herbage, so we employed our time by lying down behind a sandhill and scratching among the herbage for anything we could find. In this way we

collected a few beetles, including *Leis-tus ferrugineus* pretty commonly. We also found a single small larva of *Præcox* and an imago of *T. gracilis*, but the latter managed to escape in the night, we having left the box a little open in the hopes of obtaining eggs.

The next day we determined to try the Cheshire side, so having arranged with Mr. C. S. Gregson and Lieutenant Mason to meet us, we started out. The day was warmer, but the wind blew strong from the sea. On arriving at the Wallasey sandhills we found that *Zonaria* was still out and obtained a few specimens of both sexes, it having been out fully two months. Following the sandhills brought us to a place where *B. rubi* was evidently common, judging from the number of cocoons which had been pulled out by the rooks. By careful searching we managed to find a few, and also a few *Arctia fuliginosa*, but the tufts of grass all being intergrown with *Rosa spinosissima* it was not a very pleasant task searching among them with the bare hands. A few batches of eggs of

Opima rewarded a search upon the old heads of ragwort.

The following day we went over the same ground, obtaining many batches of the eggs of *Opima* and one specimen of *E. lineolata*. Altogether, taking into consideration the early state of the season and the unfavourable state of the weather, I think the journey was very successful. Had it been warmer and the weather less strong we had determined to spend a day at Delemere, but the above causes, together with the statement that the accounts of it were exaggerated, made us decide not to go.

One of the most interesting things I noticed during my stay was a fine male specimen of the Lapland Bunting which Mr. Gregson had in his aviary, and which had been caught upon his warren. A pair had visited the same place some time ago, and had built a nest of straw, which had been laid down for the rabbits. The nest Mr. Gregson described as being large, something like a rough sparrow's nest, and placed in a whin bush. He had killed the female and obtained two eggs, one of which he kindly allowed me to figure.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained

through the booksellers, but any one can have their plates coloured on application to the Editors.

A. Davis, Jun., Great Marlow, sends us the nest of the Common Bunting for figuring, for which we are extremely obliged.

W.H.P.—Your parody is very good, but why do you not send us something we could publish?

EXCHANGE.

DUPLICATES—*D. carphophaga*, *P. geryon*, *M. albicolon*, &c. DESIDERATA—Birds eggs. —J. J. CAMBRIDGE, Alliance Street, Hartlepool.

THE HARTLEPOOLS FIELD CLUB.

The usual meeting of this Club was held on Saturday last, to arrange for an excursion to Castle Eden Dene, should permission be granted by the owner. This, however, was refused, because the party were Entomologists and the owner objected to the rare butterflies being taken. Several interesting exhibits were made, among which were—a brown variety of the common Starling, by Mr. J. J. Dixon. A specimen of the Long-eared Bat, by Mr. T. Tritzler, that had been taken in Hezledon Dene, under a piece of bark on a tree. It had lived several days in confinement, devouring eagerly the insect food given it. The discovery of the nest of the Goldfinch was also recorded. This is a rare bird in the Hartlepool district. Mr. Robson also exhibited specimens and pointed out the differences between British and Foreign examples of such rare species as *D. caesa*, *P. nigrocincta*, &c.

NOTES AND OBSERVATIONS

BOTANICAL DIARY (Continued from No. 131, p. 219).—Beech leaves (*Fagus sylvatica*), April 8th; maple leaves (*Acer campestre*), 8th; germander speedwell flowers (*Veronica chamaedrys*), 11th; yellow nettle flowers

(*Lamium galcabodon*), 11th; bluebell flowers (*Hyacinthus non-scriptus*), 11th; cow parsnip flowers (*Heracleum sphondylium*), 11th; common avens flowers (*Geum urbanum*), 11th; herb robert flowers (*Geranium robertianum*), 14th; sweet woodruff flowers (*Asperula odorata*), 18th; oak leafs (*Quercus pedunculata*), 21st; ox-eye daisy flowers (*Chrysanthemum leucanthemum*), 21st; way-faring tree flowers (*Viburnum lantana*), 26th; common fumitory flowers (*Fumaria officinalis*), 30th; yellow clover flowers (*Trifolium procumbens*), 30th; maple flowers (*Acer campestre*), 30th; purple clover flowers (*Trifolium pratense*), May 2nd; early purple orchid flowers (*Orchis mascula*), 4th; milk-wort flowers (*Polygala vulgaris*), 5th; common tormentil flowers (*Potentilla tormentilla*), 5th; salad burnet flowers (*Poterium sanguisorba*), 5th; yellow rattle flowers (*Rhisanthus crista-galli*), 7th; common bugle flowers (*Ajuga reptans*), 7th; tufted vetch flowers (*Vicia cracca*), 7th; tall red nettle flowers (*Pedicularis palustris*), 7th; common poppy flowers (*Papaver rhæas*), 8th; white campion flowers (*Lychnis vespertina*), 8th; sanfoin flowers (*Onobrychis saliva*), 8th; common thistle flowers (*Carduus nutans*), 8th; silver-weed flowers (*Potentilla anserina*), 8th.—A. DAVIS, Jun., High Street, Gt. Marlow, Bucks.

THE BLACK TERN AT BIRMINGHAM.—A beautiful specimen of the black tern (*Hydrochelidon nigra*) was shot on one of the pools in Sutton Park on the 20th. This bird is extremely rare. The gentleman that shot it saw it swimming about for some time, now and again taking to the wing. The flight of this bird is very swift and graceful, and it takes a good shot to fetch one down. A young bird of the same species was shot at the Egbaston reservoir last year. The recent Bird Act does not seem to have much protection for our rare birds.

May 22nd (Note).—On dissecting a cuckoo this afternoon I found inside the stomach

several caterpillars of *Chelonia caja*.—ALEXANDER GEORGE DAVIS, B.N.F.C.

THE PLEASURES OF COLLECTING.

By J. OSBORNE.

No doubt you know a great deal better than I do, what is best for the beginner, who wishes to have a scientific knowledge of that branch of Natural History to which he turns his attention. But I venture to think that I know better than you what I like myself. I have no great ambition to be a "leading Entomologist"; I am not very desirous of knowing the personal history of every moth and butterfly "from the cradle to the grave"; nor am I even in a great hurry to complete my collection. I am quite content to jog along as best I can, and pick up what falls in my way, either of insects or knowledge, without grumbling if my captures are common things, or my discoveries are not new. I love collecting for its own sake, and take considerably more pleasure in the capture of a common insect, than in obtaining a rare one by purchase or exchange. It is all very well to hunt larvæ, and I sometimes do a little at it myself, but the larvæ have to be interesting themselves, for I cannot learn to care for them for the sake of what they produce. I once had some *Agrotis* larvæ, dull, dirty looking things they were; but they buried themselves at once, and I saw no more of them till the imagines appeared. What pleasure could there be in attending to them I would ask? Whereas, a larva like that of the puss moth, is always interesting; and I have often wished to possess a larva of the lobster for the sake of watching its movements. I have never been able to conceive what use its long forelegs can be. But I took pen in hand more particularly to write about the pleasures of collecting insects in their perfect state. In day collecting, to see the beautiful things on the wing, to watch the

different modes of flight, to observe the various flowers they frequent, all give great enjoyment to me. I like to see a little pugnacious butterfly drive off another big fellow that seemed to be coming too near its domain. I like to observe their courtship or their play. All these things give me much more pleasure than the mere possession of the specimen could do. Then in night collecting there are some of the same pleasures to be found mixed with others peculiar to itself. I like collecting at flowers best. How one insect flies boldly to the topmost bloom, almost inviting capture, while another seems to be trying to reach the flowers unobserved. One species flies straight to the flower or bush, alights at once, and goes to work on the nectar with a will. Another hovers about ever so long, tries one flower and then flies away, tries another, and another, before it meets one quite to its taste. Then sometimes a hawk moth will come. Someone has most appropriately likened a hawk at flowers to a flying shadow. It does not alight at all, but hovers like a kestrel, perfectly motionless in the air, poised over the flower from which its long proboscis is extracting the nectar. You move and it is gone. You need to be quick with the eye and quick with the hand to secure a hawk on the wing, but is not the pleasure a thousand times greater than picking the same specimens off a wall or a tree trunk could give. Then, again, there is the glorious uncertainty of not knowing what you have got. Some species one may recognize on the wing in the dusk of evening, but we cannot know them all; and what pleasure there is on reaching home in finding that the insect whose flight you failed to recognise is something you have not taken before. I could enlarge on this theme to any extent, but must not trespass too much in your space, especially as I know I am uttering sentiments that may not meet with your approval.

A RAMBLE TO GRASSINGTON.

By H. T. SOPPITT, Saltaire.

ON the 17th May, two of us, Mr. T. Walsh, of Frizinghall, and myself, left Saltaire for a day's ramble in the neighbourhood of Grassington, for the purpose of investigating the flora of the district, also to collect specimens of Conchology. In the former respect we were very successful, in the latter on the contrary, very few species fell to our lot, which I believe was entirely due to the weather. Rain had not fallen for upwards of a week, and I noticed when on the mountain limestone, a circumstance with which I have often been struck, namely, the sensitiveness to moisture which many of the land molluscs exhibit, especially such species as *Helix lapicida*, and the genera *Pupa* and *Vertigo*, &c. To visit the same district when it is raining or just after, these shells may be collected with little difficulty. On the occasion of our visit, none of the above were noticed, the only species collected were *Cochlicopa tridens*, *Helix nemoralis*, var. *hortensis*, *Helix ericetorum*, *Clausilia laminata*, *Ancylus flaviatites*, and *Planorbis vortex*.

Grassington is a rather out of the way place, being situated on the wharf, ten miles from Skipton, yet it is well worth visiting by the botanist, for the many botanical treasures that occur in the neighbourhood. Passing through the villages of Rilstone and Cracoe we found ourselves fairly on the mountain limestone. Here we noticed exceedingly fine specimens of the Bird Cherry (*Prunus padus*), *Saxifraga tridactylites*, *hypnodes* and *granulata*, *Viola hirta* and *lutea*. We eventually arrived at Grassington, and followed the river for several miles up to Kilnsey, where we had the pleasure of seeing a great many uncommon Yorkshire plants. Amongst these were *Hippocrepis comosa*, *Primula farinosa*,

Potentilla alpestre, *Convallaria majalis*, *Actea spicata*, *Geranium sanguineum*, *Paris quadrifolia*, *Primula vulgaris* var. *caulescens*, a plant I believe frequently mistaken for *P. elatior* (the Oxlip.)

Arriving at Kilnsey, time would not permit us to visit the only habitat in the West Riding for *Dryas octopetala*, which occurs a few miles higher up the valley. After lingering a short time at Kilnsey Crag, the mail cart took us back again to Skipton. On the way back we were somewhat surprised at seeing *Plantago maritima*, occurring in profusion on the road.

BRITISH MOTHS.

By JOHN E. ROBSON.

3. TILIÆ.

The Lime Hawk-moth.

"TILIÆ, L., Tili'æ, feeds on the Lime (*Tilia Europæa*)."—A.L.

Imago.—Fore-wings brownish pink or greenish grey, with an olive green hind margin, and interrupted central band, a whitish patch at the tip. Hind-wings similar in colour, with a blackish band across the wings from the anal angle.

Larva.—Yellowish green, the ground colour green, covered all over, except at the segmental divisions, by yellowish spots in regular rows; seven oblique yellow side stripes, sometimes edged with red; spiracles red. In a variety a red spot appears on the side of each segment. Head bluish and bi-lobed; horn rough, blue above, and red below. Pro-legs yellow, legs red; a red spot behind the anal angle.

Pupa.—Dark reddish brown, generally smaller than that of *Ocellatus*, but more like it than *Populi*.

Food Plants.—Elm and Lime; it was once found by Mr. Bond feeding on Sycamore.

Times of Appearance.—The imago emerges at the end of May or in June, the

eggs are laid singly and hatch in about a fortnight. The earliest larvæ are full fed by the end of August, but some continue feeding even into October. The pupa remains over the winter.

Habitat.—Not uncommon in the South and in the Midlands, but it does not occur in the more Northern counties of England nor in Scotland. It is widely spread over Europe.

Varieties.—Besides the variation in the ground colour, that of the central band and hind margin vary considerably. In a specimen in my collection these are deep purplish red, much darker than the ground colour. This specimen is figured in Mosley's Illustrations, Smerinthus, pl. 2, fig. 3. The central band is also subject to great variation. It is frequently interrupted in the middle and forms irregular patches on the costa and inner margin, sometimes there is but one patch in the middle of the wing, till in fig. 2 of the above plate, a specimen is depicted in which it is reduced to a small spot. On the same plate another specimen is shown (fig. 1.), in which there is no trace of it, and the hind margin is beautifully mottled or marbled. The hind wings are also distinctly streaked through the darker basal portion.

ON THE MEANS OF DEFENCE OF INSECTS.

By E. L. RAGONOT.

(From the Naturalist's Circular, by permission of the Editor.)

THE CATERPILLAR STATE.

THE larval or caterpillar state is the most important part in the life of an insect, for it is in this state that many insects pass the greater portion of their lives, the larva merely passing through the pupal state to perfect itself, and ultimately assuming the imago or perfect form for the purpose of

reproducing its kind; therefore, this duty accomplished, it dies very shortly afterwards. The means of defence of larvæ vary according as they feed in the daytime or at night, and also according as they are sociable or solitary.

Many larvæ are sociable during part of their existence, others during the whole larval state. Among the latter I may mention the small ermine moths (*Yponomeuta*, *Cognatella*, *Padella*, &c.); these, on being excluded from the eggs, at once begin spinning a web on the branches of their food-plants, large enough to contain the whole brood, and in this they feed in security, free from attacks of parasites; and when their increasing size necessitates more accommodation, they merely spin the web larger.

The small egger (*Erioga ter lanestris*) and the lackey (*Bombyx neustria*), also, upon leaving the egg spin a large web in common among their food, extending it from time to time when they find it necessary, but as they approach their last moult they spread about their food-plant and cease to be sociable. The larvæ of the tortoiseshell (*Vanessa urticae*) have somewhat similar habits to those of *lanestris* and *neustria*, but instead of immediately making a web, they content themselves with tying the edges of a nettle leaf together and feed inside, merely beginning with their web when their habitation ceases to be large enough to contain the whole brood.

The *Tortrices*, or "leaf-rollers," are so named on account of the habits of many of them of rolling, curling, twisting, or attaching together the leaves of their food-plants, in which they pass the greater part of their larval state. The larvæ of *Tortrices*, however, are not the only ones that feed between leaves; those of the genera *Clostera*, *Tethea*, and *Comia* do the same, but they use the leaves more as a protecting case than as a convenient provision store, for they leave it at night, and feed on the leaves in their

vicinity, returning when their appetite is appeased.

The larva of *Hydrocampa nymphæalis*, which feeds on the underside of the water-lily, and other aquatic plants beneath the water, attaches with silk a piece of leaf to its food-plant, and feeds in the case so formed, as do other *Hydrocampidæ*.

The larvæ of the *Eudoreidæ*, &c., make galleries, lined with silk, through the moss and lichens on which they feed; whilst those of the *Galleridæ* do the same through the wax in beehives, &c.

Many larvæ feed in the interior of stems and roots of plants, and in the solid wood of trees, and thus are generally effectually protected from ichneumons. I say generally, for certain species—such as *Dasypolia templi*, which feeds in the roots of cow-parsley. *Heracleum sphondylium*, and *Gortyna flavago*, which feeds in the stems of thistles, ragwort, &c., and some others—are very subject to them.

Certain larvæ, again, find partial protection from their feeding in the interior of seeds, seed vessels, fruit, &c., such as *Eupithecia linariata* and *E. venosata*, which feed respectively in the seed-vessels of toadflax and *Silene*. Several *Dianthæcia* larvæ feed in the seed capsules of various species of *Lychnis* and *Silene*; and the larvæ of the genus *Carpocapsa* (tortrix) find "board and lodging" in acorns, apples, &c. Both the *Eupithecia* and *Dianthæcia*, however, are frequently stung by ichneumons.

The habits of the larvæ of the *Tineidæ*, an extensive group of lepidopterous insects, are very various; many species can be distinguished from other species of the same genus, whilst feeding on the same plant, by their different habits; some, such as *Tinea biselliella*, construct cases out of the cloth on which they feed, and move about with them as they wish; the cases of the true case-bearers (*Coleophora*) differ very much in shape.

Others, such as the larvæ of those pretty little moths, *Dasycera sulphurella*, *Argyresthia Brockeella*, *Chrysoclista Linnella*, &c., feed under or within the bark of tree, posts, &c.

Many *Tinea* larvæ feed in seeds; others, such as those of some of the *Cecophora*, feed on decaying matter; but one species, besides eating almost anything that comes in its way, is a regular pest to collectors, for this species (*C. pseudo-spritella*) finds a nice fat pupa a "bonne bouche."

A great number of *Tinea* larvæ make mines in leaves of trees and grass, and some remain between the two cuticles until they are ready to assume the perfect state. The genera *Elachista*, *Lithocolletis*, and *Nepticula* are exclusively leaf-miners.

A great source of protection to larvæ is that they very frequently resemble in shape and colour the plant on which they feed or repose. Indeed, the resemblance some of the larvæ of the *Geometra*, when at rest, bear to twigs and sticks is most wonderful, and might sometimes deceive the eye of any but a most experienced entomologist. The deception is much heightened by the larva generally reposing on the part of the plant or tree to which they bear most analogy in colouring: for instance, we find that the larvæ of *Thera variata* and *T. firmaria*, which are green with whitish lines, are often found clinging to the pinnæ of the firs; whilst the larvæ of *Ellopija fasciaria* (another fir feeder), which resemble bark in colour, markings, and form, reposes on the branches.

Again, the larvæ of *Agrotis porphyrea* and *Anarta myrtilli* are rather difficult to distinguish among their food-plant (heath), and it requires a very experienced eye to distinguish the larva of appropriately named insect, *C. lichenaria*, from its food.

Generally night-feeding larvæ are naked as they require less protection than diurnal kinds, far they are not so liable to attack

from ichneumon, since these are generally day-fliers: their means of defence lie principally in their being of obscure colours and in their burrowing habits. Then, again, as collectors well know, they are have a knack, when disturbed during the time they are engaged at their repast, of suddenly curling their bodies, and dropping among the grass, and so eluding the box prepared for them. Many others trust to their power of quick locomotion for escaping from their enemies.

The day-feeding larvæ being more exposed to danger from birds, ichneumons, *cum multis aliis*, require more protection than the nocturnal feeding species, hence we often find that the day-loving species are clothed with hair, and it is remarkable that hairy caterpillar, apparently considering their coat a sufficient protection, rarely attempt to hide themselves, but seem to love to bask in the sunshine; and we also find that as a rule these larvæ are seldom attacked, either by birds or by parasites, although some species, such as the "Tiger" (*Chelonia caja*), the Tortoiseshell (*V. Urticæ*), the Cinnabar (*Euchelixa Jacobæa*), &c., are particularly subject to the latter infliction. The caterpillar of the "Fox" (*Bombyx rubi*) is rarely attacked by birds, though the cuckoo appears to be fond of them; yet as soon as these larvæ have spun their cocoons among the grass tufts, and have turned into pupæ, the birds (crows in particular) flock to the place and very quickly root out the cocoons and swallow the pupæ. Sometimes they do not trouble themselves to pull out the cocoon, but merely take the pupæ out of it. Should, however, the larva not have changed, they pull it out of its cocoon, but do not eat it. When disturbed, hairy larvæ generally drop from the food-plant and curl their bodies into a ring; they rigidly retain that position until their confidence is restored. Besides preserving themselves from foes, their habit of coiling their bodies serves to break their fall.

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NATURALIST,

56, BROMPTON ROAD, LONDON, S.W.

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 135.

JUNE 10TH, 1882.

VOL. 3.

MY LIBRARY.

I.

STAINTON'S MANUAL.

IT has been suggested that we should give an occasional article descriptive of books useful to students, and in adopting the suggestion, we begin with the first entomological book we ever had, "A Manual of British Butterflies and Moths," by H. T. Stainton.

Stainton's Manual is now more than twenty years old, but no book has yet been published on the same subject that makes any approach to it in usefulness, either to the young student or the mere collector. It seems to contain all that is needed, but no more than is needed; and it is a relief to turn from the superfluous verbiage of other works to the brief yet all sufficient descriptions of this book. Its excellencies are so many that we scarcely know where to begin, but we may quote from the preface, as follows:—"The object of this work is to supply, in a small compass and for a low price, the greatest possible amount of information likely to be useful to beginners in the pursuit of butterflies and moths.

For this purpose the descriptions have been made from actual specimens, regard being paid only to the most prominent characters of the insects. English names are given only where they are in general use. To have raked up all the fantastic name, by which some have thought to facilitate the study of 'Mothology made Easy,' would have been to have pandered to a prejudice and perpetuated a 'popular superstition.' Those who collect insects, and who do not wish to be utterly isolated, must learn to call them by names by which *other people* will know them. With the view of compressing information, a number of abbreviations have been used, but a little patience and trouble will soon enable any one to interpret them with ease. At the commencement of each family some general observations on the habits of the species and the localities they frequent are given, and the most abundant species are indicated as those likely to fall into the hands of the young collector."

Stainton's Manual is in two volumes, which may be had separately at 4s. 6d.

for vol. i. and 5s. 6d. for vol. ii., or 10s. the two. Volume i. contains the Butterflies, Sphinges, Bombyces, and Noctuæ; volume ii. the Geometers, Pyralites, Crambites, Tortrices, Tinea, and Plumes. Every species is separately described, as well as all larvæ known at the time of its publication. The descriptions are not so minute as to give a detailed account of every line and spot, but are sufficient to enable any one to distinguish the species from all others occurring in this country. We quote the description of the two Clouded Yellows that our readers may understand how it is done:—"C. EDUSA, 2" to 2" 3". *Deep rich yellow with a broad black margin*, which is spotted in the female, veined in the male.—viii. e—x. m. C. HYALE, 1" 10" to 2" 1" *Pale yellow. H-w., tip blackish, spotted with pale yellow, blackish hind margin scarcely extend- ing to anal angle. H-w., hind margin with a narrow blackish border near the outer angle.—viii."*

The figures following the name give the expanse of wings in inches and lines. The Roman numerals at the end of the description refer to the time of appearance; thus Edusa is said to be on the wing from the end of August to the middle of October. Both these particulars are given with every species throughout. By the use of italics and small capitals, the more striking characteristics are pointed out. The larvæ

are described in the same way, the food-plant and date of appearance given, and an occasional note added. That to *Edusa* is "Fond of clover fields and railway banks. Commoner in some years than others." To *Hyale*, "Generally scarce, common sometimes (in 1842 very common). Frequents lucerne fields." Then follows contractions for the localities in which it has occurred. A detailed list of these localities is given in the introduction. They are in various parts of the country, and by the same places always being referred to, a better idea is given of the range of the species, its abundance or rarity, than is done by any number of chance references. When the species occurs regularly at the locality the contraction is printed in Roman letters, if it occurs commonly they are followed by !, if abundantly by !! When the species *has* occurred but is not now found, the abbreviations are given in *italics*. Our readers will see from the above what a great amount of information has been compressed into half-a-dozen lines.

The genera are characterized in the same way, and generally a table of the species given, showing how each may be recognized, and (to work backwards) each family is treated in a similar manner. After the family characteristics have been given, there follows a popular account of its members, their times of appearance, habitat, &c., with

notes as to their abundance or scarcity, and an intimation as to which are likely to fall in the beginner's way in their first or second season. Perhaps the collectors of twenty-five years ago were a harder working race than they are now, for we fear the hopes held out in these parts of the work are rather too bright. We know many species that we were told there ought to fall to our net our first season have never yet gladdened our eyes alive; but these passages, if too hopeful, are pleasant reading, and contain much useful instruction.

Taking it altogether, it is the most valuable entomological work we have ever seen, and we do not know where it could be improved. We would rather part with any other book in our library than these unpretending looking volumes. They contain about 300 woodcuts of various species, but the special value of the book is the enormous amount of information it contains in the most acceptable manner, while there is nothing unnecessary, and you do not need to wade through many pages to find what you want, but can turn to it at once. Very complete indices accompany each volume.

There is a great need of a supplement to this book. A large number of species have been discovered since it was written, and it would be a great boon if they were described in the same style in the form of a supplement.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 16, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the Editors.

EXCHANGE.

I have a quantity of *Agrotis* larvæ I would like to exchange for butterflies. I do not know them well, but have reared *Valligera*, *tritici*, and *cursoria* in past years.—T. TRITSCHLER, Alliance Street, Hartlepool.

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NOTES AND OBSERVATIONS

I have just had a living *Mygale* brought in, caught in the town among logwood. It is black, with red hairs upon the body, and measures five inches across its outstretched legs.—S. L. MOSLEY, Huddersfield, June 3.

BIRMINGHAM NOTES.—May 13th. Found the following shells at Hamstead:—*Planorbis complanatus*, abundant; a friend found one *P. cornuus*; *Limnæa pereger* abundant; *L. stagnalis*, only one, all in River Tame. *Helix rotundata* abundant; *Zonites cellarius* and *nitidus* not uncommon; *Cochlicopa lubrica* and *tridens* a few, and one dead *Vitrina pellucida*, under moss and stones in Park.

The following plants in flower, not previously mentioned:—Lesser stitchwort (*Stellaria graminea*); broad leaved garlic (*Allium ursinum*) and comfrey (*Symphytum officinale*), at Hamstead, on 13th May. Oak (*Quercus pedunculata*) and strawberry headed clover (*Trifolium fragiferum*, at Nortfield, on 14th May.—G. F. WHEELDON, Birmingham.

A DAY'S RAMBLE IN UPPER WHARFEDALE.

By E. P. P. BUTTERFIELD, Wilsden.

PERHAPS few, if any, places of similar extent, possess such a combination of attractions as Upper Wharfedale. The historian and the antiquary may here find ample material with which to busy their brains; the æsthetic, their sense of the beautiful satiated amongst its most charming scenery; whilst to the naturalist, employing the term in its most extensive sense, it is a perfect paradise, its high hills enclosing narrow valleys, in most places well wooded, coupled with an abundance of water, and a pure atmosphere, make it particularly productive to cryptogamic plants.

On the 7th May, taking advantage of the earliest train from Keighley, I soon found myself at Skipton, which is a distance of about six miles from Upper Wharfedale. The town is chiefly noted for its old castle. On the walls which surround the grounds grow *Linaria cymbalaria*, *A. Ruta-muraria*, *Sedum acre*, and *S. tridactylites*. Leaving the castle at our left, we walked along the highway leading to Bardon Tower. To the right are Skipton rocks, a low range of limestone hills extending from Skipton to Bolton Abbey; on the opposite side of the valley, is a still higher range of heather-clad hills, which are continuous with Bardon Moor. About an hour's walk from Skipton and we arrive at the top of Bardon Moor, where we first got a fine view of Upper Wharfedale.

Here the prospect is really magnificent. In front, at the bottom of the valley, are the famous woods known as Bolton Woods, which belong to the Duke of Devonshire, over top of which is distinctly seen his extensive deer park. Another prominent feature in the landscape is the stupendous mass of rocks known as "Simon's Leap," which is situate on the east side of the Wharfe, about two miles north of the deer park, and appears at this distance as if it beetles towards the basin of the Wharfe, the intervening sides of the valley, more particularly in its middle and upper portions, being clothed for the most part with plantations of fir and larch, which at this season of the year give it a most impressive and lively appearance, whilst at the bottom meanders the pellucid waters of the Wharfe. The different geological formations are also most marked. The limestone hills about Appleywick are clothed with green verdure to their summits, on which can be distinctly seen traces of a once higher state of agriculture having obtained; the demand for milk and mutton, from the great worsted centres such as Bradford and Leeds, having contributed in no small degree to the bringing about this result in the condition of land, combined with the pressure which has, of late years, being brought to bear by the importations of foreign cereals. The gritstones which underlie the tops of the hills lower down the valley, on both sides of the Wharfe, near Barden, being covered with "withered moorland." Another half-an-hour's walk from the top of Bardon Moor—an extensive tract of undulating moorland—in the foreground of which is Barden reservoir (which belongs to Bradford Corporation), which we leave to the left, and we are at Bardon Tower, around which cluster associations of great historic interest, but with which we shall not trouble the readers of this paper. We may here add that it is this locality which supplies the inspiration

to" some of the philosophic poet Wordsworth's finest poems. The ruins are the habitation of immense numbers of swifts, which here breed in safety, occupying every available crevice about the upper part of the old ruins. Not one, however, had come at the above date, but later in the summer I have often been interested in watching their movements as they dash and wheel about in the air with astonishing velocity. As soon as I had entered the woods, which surround the tower, I heard the garden warbler for the first time this year, and several wood warblers, of which I had heard only once before this year, that being the previous year in Cottingley wood. This species seems somewhat local, preferring with us the more exposed parts of the woods, particularly where the beach abounds. But I heard another species which to me is more interesting than any other bird I have yet heard in Wharfedale, I mean the pied fly-catcher; whose unassuming appearance, chaste plumage, and above all its confiding disposition, makes it a great favourite with me, and its song to my mind being always invested with charm, throwing a glamour of interest over every physical object, as if in fact—

"All the sounds of Nature borrowed sweetness,
From the music of its singing."

After passing through the woods about Burden Tower, on my way to Burden Moor, I was struck with the regularity with which some of our spring migrants return annually to nest in the same locality, particularly Ray's wagtail, redstart, wheatear, and swallow, the last species has already begun to build. On Burden Moor I heard the grasshopper warbler, and apparently there were only one pair of curlews, where there were a few years since four or five pairs breeding. The only insects observed were one *Thucela rubi*, a species which I had never taken before; one *S. carpini*; *F. atomnaria* was abundant; *Bombus terrestris* was very common, feeding upon bilberry bloom, and was the only hymenopterous insect I saw at this

flower. About the marshy places the snipe breeds not uncommonly, while the golden plover is scarcer than it was a few years since, at least about the particular part of the moor I visited this year. I was watching a pair of plovers for the purpose of trying to find their nest—the weather up to mid-day had been delightfully fine—when the clouds began to gather and assume a very menacing aspect, but with a rising barometer I still hoped would "blow over." It, however, began to rain, at first gently, which I disregarded in my ardour to find their nest, but before long a thunder-storm broke out and the rain came down in torrents. I set off running for shelter to a barn about half-a-mile away, but what with the rain, and the nature of the ground, it being in some places very steep, and up to my knees in heather, and in some parts considerable higher, I found it a very herculean task. When I got inside the barn I found myself thoroughly drenched, and turning round saw, written in large characters, a piece of of doggrel I thought very appropriate to my condition. It ran thus—

"Peep, fool peep, look at thy brother,
As one fool looks at another."

The weather, however, soon cleared up and I made my way to a gamekeeper's house, which I arrived after a few minutes walk, a companion here joined me, and we took, in a larch plantation, behind the house, a ring-dove's nest with two eggs, and was built in a magpie's nest, which had been forsaken only about a fortnight. In these plantations the gold-crest breeds plentifully, my brother being here the day previously, told me he saw or heard about a dozen pairs. Crossing the highway, after leaving this plantation, we entered another wood, called "Hag Wood," in some parts nearly impenetrable from a thick undergrowth of hazel and honeysuckle, a retreat very suitable to the warblers. Blackcaps here were very common, pouring forth their delightfully wild notes, but which are performed in a somewhat

hurried manner. We flushed a missel-thrush off its nest, soon after which a kestrel came hovering about, when the thrush made a dash at it, and it was evident that the falcon thought "discretion the better part of valour." About this time the tree pipit was exceedingly abundant, never having been seen in such large numbers; they were singing in all directions. The willow warbler I noticed building its nest; I had seen another building as I was coming over Harden Moor in the morning. I only mention this circumstance as showing the considerable time that elapses, after their arrival, before commencing the cares of the "house and the household." Possibly the male bird precedes the female a week or perhaps more. Some magpies were chattering further on in the wood; the gamekeeper at the same time was hatching a plot to compass their destruction on the following day, by laying a bait in the shape of a hen's egg, with a smack of strichnine in it. From this wood we followed the course of the river Wharf, to the southward, for about two miles. Botanically, the chief feature is the profusion of primroses, cowslips, and forget-me-nots, with which the banks (especially the right bank) abound. The bird-cherry, which at this season is in full bloom, forms a conspicuous object in the line of trees which fringe the river side. The pied flycatcher about here was the commonest bird seen, but had scarcely begun incubation; we found one nest, however, in a hole of a tree (I have never found its nest in any other situation yet), but which contained no eggs. The dipper was also very common all along the river side. I found one nest placed against the side of a rock, which was thickly covered with moss, and with which it so closely assimilated, that I could not but express my admiration at the protective instinct which taught the birds thus to conceal their enemies. The common sandpiper is another characteristic bird which breeds

abundantly on the banks of this part of the Wharfe, its shrill piping notes and comical gestures, bobbing its tail up and down, as it is seen perched upon some boulder in the river's course, cannot fail to attract the attention even of a casual observer. The European globe flower here grows in profusion on the banks of the river, and may be seen to perfection a little later on in the year, when many flower together they may be seen nodding their heads to every passing breeze. Within a quarter of a mile north of Barden Tower, a moorland stream empties itself into the Wharfe. A small colony of sand martins have established themselves here within recent years. Leaving the river side we follow the course of the beck till we came to a beautiful waterfall, known as "Gillbeck Waterfall," situate in a romantic dell, so characteristic of the dales in this part of Yorkshire. The dipper was breeding near this waterfall, although we did not search for its nest. There were two grey wagtails nests, both built on the ledges of rocks, by the side of the stream, one nest contained young, the other with eggs hard set. It was in this wood that I had the pleasure of first seeing the pied flycatcher alive, about the year 1874. My brother had run into the wood chasing a squirrel, when I called out at the top of my voice "A Pied Flycatcher," but as he thought I was *quizzing* him, to get him out of the wood, he took no notice. Nature seems to have had all her own way in this "Gill." Some of the trees wear a venerable aspect, all the branches covered to their extremities with moss and lichens. In this wood the oak and beech fern grow abundantly, as does the tway blade. We find now that we have only sufficient time in which to catch the last train from Skipton, which we reach in due time for the train, and are whirled away, amidst music on all sides from the Salvation Army, to the quiet and secluded town of Bingley.

BRITISH ANTS—By G. O. BIGNELL.

(Continued from page 239.)

female and worker, as well as the keeled clypeus of the male, will distinguish it from all its allies.

1. Stenamma Westwoodii, Westw.

MALE.—Brownish black; antennæ, mandibles, sides of prothorax, and legs pale, slightly hairy; head and thorax dull, abdomen smooth and shining; wings with one submarginal and one discoidal cell, the marginal cell incomplete. Length, 5 mill.

FEMALE.—Testaceous, smooth and shining, with short scattered hairs; antennæ rather densely clothed with short hairs, basal joint of the flagellum as long as the next three together; metathorax with two rather short, triangular spines, second node of the petiole beneath produced in front into a strong spine; abdomen more or less brown across the middle; wings white. Length, 5 mill.

WORKER.—Very much like the female. Length, 3-4 mill.

HABITAT.—Rare, have been found in the nests of *Formica rufa*.

GENUS ASEMRHOPTRUM, *Mayr*.

1. Asemorhoptum lippula, Nyl.

MALE.—Brown, the antennæ and legs paler, sparsely clothed with long fine pale hairs; antennæ with thirteen joints, the scape as long as the first three joints of the flagellum; wings ciliated, somewhat opaque, nervures very pale; metathorax nearly smooth, with a tooth on each side at the apex; abdomen smooth and shining; *first joint of the petiole very long*; apex of the abdomen densely covered with slightly curled whitish hairs. Length, 4 mill.

FEMALE.—Reddish brown, mandibles, antennæ, and legs paler; head rather elongate and narrow; thorax irregularly, longitudinally rugose; metathorax with two short spines; first joint of the petiole elongate, with a rather small apical node, second

node nearly round, first segment of abdomen beyond the petiole very long, at least three times as long as the remainder. Length, 5-6 mill.

WORKER like the female, but only half the size. Length, 3 mill.

HABITAT.—Have been found in the nests of *Formica fusca* and *Lasius fuliginosus*.

GENUS TETRAMORIUM, *Mayr*.

1. Tetramorium cæspitum, Linn.

MALE.—Brown-black, shining; head much narrower than thorax; antennæ and legs paler, antennæ with ten joints; thorax clothed with scattered hairs; nodes of the petiole short, the second widely transverse; abdomen polished and shining, with a few pale hairs; wings white, with one marginal, one submarginal, and one discoidal cell, nervures pale. Length, 6-7 mill.

FEMALE.—Head as wide as thorax, or nearly so; antennæ with twelve joints; mesothorax irregularly punctured; apex of the metathorax emarginate and spined at each side; abdomen oval, with pale scattered hairs; wings as in the male. Length, 7-8 mill.

WORKER.—Dark brown; thorax, sides of head, antennæ, mandibles, and legs not so dark; head large, wider than the thorax; thorax longitudinally striate, widest in front; metathorax with two sharp spines; nodes of the petiole much elevated, smooth; looked at sideways almost as high as long; looked at from above, not quite so wide as long; second node, looked at sideways, nearly round; looked at from above, transverse; abdomen shining and polished; entire insect clothed with scattered long hairs. Length, 2-4 mill.

HABITAT.—Common in certain sandy localities; abundant at Whitsand bay, near Plymouth, found under stones, also forming small earth mounds. Saw young larvæ on the 6th May.

(To be continued on page 271.)

H. G. MEEK,
NATURALIST,

56, BROMPTON ROAD, LONDON, S.W.

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VOL. 3.

A DAY AT GRANGE AND WITHERSLACK.

By J. W. CARTER, Bradford.

FOR some time past—it matters not, dear reader, how long—we have been looking anxiously for the approach of Whitsuntide, that festive season, when naturalists, as a rule, leave their own immediate districts and migrate for a day or two in search of “fresh fields and pastures new.” Just twelve months ago we decided to spend one day at least in the neighbourhood of Grange and Witherslack, that famous resort for entomologists of the north of England, which will stand out prominently in entomological literature in time to come, as being the scene of many a rare capture by Messrs. Hodgkinson, Threlfall, Murray, and others. On Tuesday morning, May 30th, at 5.45 a.m., eight or nine members of the Bradford Naturalists’ Society started from the midland railway station by excursion train, and after a brisk run of two hours and a half, *i.e.* at 8.15, we arrived at Grange. On the road beyond Skipton we noticed large patches of that lovely little plant, the

bird’s-eye primrose (*Primula farinosa*), their beautiful lilac-coloured flowers standing out very conspicuously, and in grand contrast to the golden flowers of the furze (*Ulex europæus*) and the broom (*Cytisus scoparius*), which fairly glittered as we flashed past them. After waiting for a few minutes at Grange we were joined by a valued correspondent, Mr. H. Murray, of Carnforth, to whose kindness we are indebted, not only on this occasion, but on a previous time for acting as guide and showing us the best collecting ground in the district for species obtainable on our respective visits.

On going out of the station yard we turned to the right, on a road parallel to the railway, which we kept for a short distance, then took the first turn to the left, where we commenced operations in earnest. The first insect observed was *A. remutata*, which we disturbed from the hedge bank. *A. fuliginosa*, the ruby tiger, was next found at rest under—or, rather, at the base of—a small limestone rock; and later on in the day a single specimen of the larva of this species was found, which

was considered very late. Under stones we found several species of beetles including *Pterostichus atriola*, *Cychnus rostratus*, and a number of shells, including *Helix hispida*, *H. aspersa*, &c., but owing to the dryness of the season few species of Mollusca were obtained. Passing along this road we ultimately came to a hill side plantation which consisted chiefly of young firs, &c., with a fair sprinkling of older juniper (*Juniperus communis*), which was covered with green berries. Of herbaceous plants we found this piece of ground extremely rich, especially in Orchidaceous plants. Amongst our gatherings were the Purple Orchis (*Orchis mascula*), the Marsh Orchis (*Orchis latifolia*), the Butterfly Orchids (*Habenaria bifolia* and *clorantha*), the Fly Orchis (*Ophrys muscifera*). This latter plant we found rather uncommon, and its beautiful fly-like flowers attracted the attention of all present, whether botanists or not, none of us having had the pleasure of seeing it growing in its native habitat before. The Tway Blade (*Listera ovata*) some large and fine specimens, *Alsine verna*, *Galium sylvestre*, *Viola hirta*, *Hypericum montanum*, the Rock Rose (*Helianthemum vulgare*), &c., but to enumerate all the plants found here would take up too much space. Here we found insects more abundant than in any other locality visited during the day, but owing to the sun being for the most

part obscured by the clouds and only appearing in all its brightness for a few minutes occasionally, they did not fly much. Of the Diurni *Nemeobius lucina* was pretty common during the gleams of sunshine, as was also *A. euphrosyne*, *L. alsus*, the smallest of British butterflies, obtained both on the wing; and by sweeping, the Common Blue (*L. alexis*), the Dingy Skipper (*H. tages*), common, flying both in the sunshine and the gloom; the Small Heath (*C. pamphilus*) abundant, including one extremely light specimen. Amongst the moths were *E. palumbaria* common, *E. mi*, *P. aenea*, *E. octomaculalis* flying very rapidly in the hot sun, *P. purpuralis*, *B. fuscalis*, &c.

After spending two or three hours here we again took the road for a mile or so, and after crossing one or two fields were soon on the "Mosses" at Witherslack. A few insects were picked up on the road, such as *P. napi*, *A. cardamines*, *L. marginata*, *C. rusata*, *P. bucephala*, and other common species. The most characteristic plants of these "Mosses" were Birch (*Betula*), Buckthorn (*Rhamnus frangula*), Heath (*Erica*), Wild Rosemary (*Andromeda polifolia*), Sweet Gale (*Myrica gale*), Cranberry (*Vaccinium oxycoccus*), Sundew (*Drosera rotundifolia*), Bog Asphodel (*Nartheicum ossifragum*), &c. Few insects were observed here, the most noteworthy being *F. piniaria* and *T. variata*, amongst pine, together with

a few beetles. Several specimens of the common lizard (*Jacerta vivipara*) were seen here, but they defied all attempts to capture them; and under a large stone a fine specimen of the slowworm or blindworm (*Anguis fragilis*) was seen, and after a good deal of poking about with my friends' sticks I managed to get it into my hand, and it was held up to some of our party who were in advance of us as a "fine larva of the Death's Head moth," much to the disgust of some of them who regarded all these "tapeworm things" with superstitious dread. The animal is here before me as I write, and an interesting creature it is.

We now hurried on to the "Derby Arms," where we intended to dine, and while refreshments were being provided Mr. Murray took us out to show us a locality for the larvæ of *N. mundana*, which we found very common in the interior of an old limestone wall, where they evidently conceal themselves during the day and come out to feed at night on the lichens which grow on the top of the wall. Mr. Murray informed us that he visited the same place a day or two previous, in the day-time, after a shower of rain, and found them exposed on the wall in hundreds. An odd specimen of *L. salicata* was found near the same place (close to the "Derby"); and on the trunk of a tree, sitting head downwards, a fine fresh specimen of *N. cristulalis*.

After refreshing ourselves, we commenced our journey back by the road, calling for an hour or so at the little hill-side plantation mentioned above, and while looking about for "something fresh," two of the party sighted a fine specimen of the viper or adder (*Vipera berus*) on a piece of rock basking in the sun, and on their approach it made a spring—to get out of the road, I suppose,—but before it got far Mr. Murray's stick came in contact with it and put an end to its wanderings. It was afterwards duly "bottled" and brought home for preservation. Nothing more of particular interest was noticed, and after each gathering a bouquet of wild flowers, which consisted chiefly of Columbine (*Aquilegia vulgaris*)—which here grew in luxuriant abundance,—we began to retrace our steps towards the station, where in due course we landed all safely, tired, but every one well pleased with our day's out into the country, where we had breathed the air "pure and free," a most necessary element to we dwellers in the smoke-begrimed town.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

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through the booksellers, but any one can have their plates coloured on application to the Editors.

EXCHANGE.

DUPLICATES.—*Edusa*, *Paphia*, *Dispar*, *Sambucata*, *Herbida*, *Diluta*, *Oxyacanthæ*, *Vacciniæ*. DESIDERATA.—*Polychloros*, *Sibylla*, *Galathea*, *Davus*, *Porcellus*, *Æsculi*, *Ligniperda*, *Russula*, *Plantaginis*, *Fuliginosa*, &c.—W. F. CHAMBERS, 22, Elmwood Road, Fishergate, York.

The Editors are in want of the following for figuring:—Nest of spotted fly-catcher, dipper, redstart, black redstart, stonechat, wheatear, grasshopper warbler, blackcap, Dartford warbler (and eggs), wood wren, any of the tits or wagtails except pied, any of the pipits or larks except meadow pipit and skylark, ciril bunting, hawfinch, goldfinch, mealy redpole, lesser redpole or linnet. Also the following birds, *full-feathered*, in their nest plumage:—Spotted fly-catcher, pied fly-catcher, redwing, fieldfare, nightingale, redstart, black redstart, Dartford warbler, blackcap, and garden warbler. Also the following young birds *in the downy state*: Capercallie, black grouse, ptarmigan, red-legged partridge, quail, golden plover, grey plover, dotterell, ringed plover, turnstone, oyster-catcher, redshank, ruft, knot, any sandpipers except common, any of the waders, geese, ducks, or gulls. Also the following in *adult summer dress*:—black redstart ♂, Dartford warbler ♂, lesser white-throat, garden warbler, wood wren, chiffchaff, bearded tit, grey wagtail ♂, carrion crow, rock dove, scoter, crested grebe, razorbill, guillemot, shag, lesser tern, or black-headed gull. They will either return them when done with and send the part in which the figure appears when published, or make any suitable exchange in their power.—Address—S. L. MOSLEY, Beaumont Park, Huddersfield.

NOTES AND OBSERVATIONS

MOUSE EATING APHIDES.—Is this a well-known fact in natural history? Yesterday I noticed a common house mouse running up the creepers on the house, eating the Aphides off the roses. It did not seem at all disconcerted by our presence, though we watched it quite close for a long time. I have never heard before of mice being useful in cleaning roses.—E. A. B., Whitehall, Sandback.

CAPTURES AT DARENTH.—On Whit Monday, 29th ult., I and my brother, Mr. T. Marriott, had an entomologising ramble through Darenth Wood, Dartford. It was a beautiful day, and insects were fairly plentiful. The following list is the result of our captures:—*G. rhamnii*, 3; *P. napi*, 4; *P. rapæ*, 1; *A. cardamines*, 3; *A. euphrosyne*, 19; *H. alveolus*, 5; *H. tages*, 1; *P. phleas*, 1. This latter is a variety new to me: it has four or five blue spots above the copper band in the hind wings. 11 *V. maculata*. Beating the underwood yielded *C. pusaria*, 1; *A. remutata*, 8; *A. candidata*, 2; *I. lactearia*, 1; *P. petrararia*, 5. On searching the oak trunks we obtained *C. corylata*, 2; *T. biundulata*, 5; and *T. punctulata*, 10. *A. euphrosyne* and *V. maculata* were in great numbers flying all over the wood, and had we been disposed we could have taken many more.—C. A. MARRIOTT, 11, George Lane, Lewisham, Kent.

BRITISH BIRDS, THEIR NESTS AND EGGS.

By S. L. MOSLEY.

Genus II. Musicapa.

MUSICAPA, *Musca* (L), a fly; *Capio* (L), I seize.

Only two species are native of Britain, and two or three others have occurred as visitors from the Continent. The bill is rather stouter than in the warblers. They live almost entirely upon flies, which they

capture on the wing, and will sit for hours together upon one particular branch, sallying forth every time a fly comes in sight, and returning again to the same branch.

20. PIED FLYCATCHER.

Muscicapa atricapilla, L.

ATRICAPILLA.

Size.—Length, 5 in. ; expanse, 8 in.

Plumage.—The adult male, during the breeding season, has the bill, feet, and upper parts black ; a white band across the forehead ; part of the secondaries and the outer tail feathers white. Eyes brown. After the autumn moult the black assumes a slaty brown tint, and in this state closely resembles the female, and as such is figured in Gould's great work ; but it may easily be distinguished by the white band on the forehead. This state of plumage only lasts five or six weeks, when it becomes like the female bird.

The ADULT female has the dark parts slaty grey, the white duller, and the band on the forehead wanting.

The IMMATURE bird is described as having the upper parts grey as in the female, but the feathers are slightly edged with darker colour. Those on the rump, sides of head and wing coverts, have each a pale spot near the extremity ; under parts as in the female.

Note.—The note is described as a low warble, commencing " zic, zic, zic," very like that of the Lesser Whitethroat.

Migration.—The Pied Flycatcher is a summer visitor to these Islands, though rarely observed breeding. It regularly breeds in the North of England.

Food.—The food consists of insects, principally flies captured on the wing ; it is also stated to eat berries, such as currants, elders, and cherries.

Habitat.—Found sparingly in various parts of England, more particularly in the North-west. Rare in the Eastern and middle

counties of Scotland, and very rare in Orkney. In Ireland it seems unknown.

ABROAD it is common in most parts of Europe, but only a summer visitor to the extreme north, though occurring as far as Lapland.

Nest.—The nest figured, as well as the bird and eggs, is one taken by Mr. J. Varley, on the river Ghelt, in Cumberland, in 1880. It was built in a wall, and is composed of dry grass blades and withered leaves, lined with a very few horse hairs and woody fibres. They will also build in hollow trees, and an instance is copied into almost every book on nesting, of a pair having taken forcible possession of an aperture occupied by a colony of bees.

Eggs.—The eggs are four or five, very rarely six in number, pale blue-green, much lighter than those of the Redstart, which builds in like situations.

BRITISH MOTHS.

BY JOHN E. ROBSON.

GENUS II.—ACHERONTIA.

"ACHERONTIA, Och., *Acherontia*, Acheron a river in Hades ; alluding to the symbols of death, the scull and cross bones, upon the thorax of the insect."—A. L.

This genus has but one British, or, indeed, but one European species,—the well-known and formerly much dreaded Death's Head moth. This is the largest British, and, with one exception (*Saturnia pyri*), the largest European lepidopterous insect. The insects are characterized by short, thick antennæ, terminating in a fine bristle ; the head is large, the proboscis short, and the abdomen very thick and rather flattened.

ATROPOS.

The Death's Head Moth.

"ATROPOS, L., *Atropos*, one of the Fates, the destroyer of life."—A. L.

Imago.—This insect expands from over four to fully five inches. The fore-wings

are very dark blackish brown, with several black wavy lines, and irregular paler mottlings. There is always a small yellow spot at the disc. Hind-wings tawny yellow, a broadish black band close to the hind margin, and a narrower one nearer the base. The thorax is very dark brown with a curious tawny mark, representing very accurately a scull and cross bones. The abdomen is tawny yellow, dark brown next the thorax, and a dark brown ring at each segment; down the centre is a bluish black band, narrowest near the thorax, and gradually widening until it reaches the anus which it encircles.

Larva.—Yellow, greenish towards the head, with seven oblique violet side streaks, as in the last genus; horn yellow and warty, not curving and tapering to a fine point as those of *Smerinthus* do. Sometimes a variety occurs of an olive brown colour, but it is very rare. Kirby states that this variety obtains when the larva feeds on buckthorn.

Pupa.—Dark reddish brown, about two inches and a half long, and terminating in a very fine point.

Food Plants.—Potato, Jasmine, Tea-tree (*Lycium barbarum*), Buckthorn, Deadly Nightshade, &c.

Times of Appearance.—The insect is exceedingly irregular in its appearance, and authorities differ greatly; but it would seem either to emerge in October and hibernates, or remain in pupa over the winter and emerge in June. The larva is found from July to the beginning of October, and the pupa to the following June.

Habitat.—Widely distributed throughout Britain, but very uncertain in its appearance. It is found all over Europe, Africa, and Western Asia.

Note.—The ominous mark on the thorax, and the power possessed by this insect of uttering a sound, have invested it with an unusual amount of interest, and many

superstitious notions have gathered round it. The cry of the insect is a distinct shrill squeak, as loud as that of a mouse. It is always uttered when it is disturbed, and many suggestions have been made as to how it is produced. That it is caused by rubbing the proboscis against the antennæ or part of the head has been suggested, a more likely suggestion being that it is rubbed against the palpi, or that it is produced by the motion of the abdomen against the thorax; but the very fact that there are several suggestions shows that the cause is not known with any certainty. It has occurred to me that it might be produced by the motion of the proboscis on itself, but I have no evidence to offer in support of the idea. Newman confirms Fuessly that a snapping noise is made by the caterpillar, but I have never heard it, nor do I know any one who has heard it. Newman also states that the noise is produced by the pupa when the insect is about to emerge. This seems incredible, unless it be merely the sound of the cracking of the pupa case that is heard, as the insect forces it open.

GENUS III. SPHINX.

"SPHINX, L., *Sphinx*; so named from the fancied resemblance of the larva, when in repose, to the Egyptian Sphinx.

This genus contains two undoubted, and one rather doubtful British species. The antennæ are longer and not so stout as in the last genus; the wings are more lanceolate, the tongue is very long, and the abdomen stout and rounder than in *Acherontia*.

The following table of the species is from Stainton's Manual.

- A. Hind-wings with dark bands.
- B. Ground-colour of hind-wings pale grey. *S. convolvuli*.
- B.B. Ground colour of hind-wings rosy. *S. Ligustri*.
- A.A. Hind-wings with no dark band. *S. Pinastri*.

DIARY AT TENBURY, HERFORDSHIRE.

May 1st.—Buttercup (*Ranunculus bulbosus*) and Bush Vetch (*Vicia sepium*) in flower.

May 2nd.—Creeping Crowfoot (*Ranunculus repens*), Chickweed (*Stellaria media*), Field Sherardia (*Sherardia arvensis*), Tuberosus Bitter-vetch (*Orobis tuberosus* var. *tenuifolius*), Heart's-ease (*Viola tricolor*), Herb Paris (*Paris quadrifolia*), Sweet Woodruff (*Asperula odorata*), Hemlock Stork's-bill (*Erodium cicutarium*), and Common Speedwell (*Veronica officinalis*) in flower.

May 4th.—Hawthorn (*Cratægus oxyacantha*), Clover (*Trifolium pratense*), and Great Wild Valerian (*Valeriana officinalis*) in flower. Black Poplar (*Populus nigra*) in leaf.

May 5th.—Chestnut (*Castanea vulgaris*) in flower.

May 6th.—Cow Parsnip (*Heracleum sphondylium*) in flower.

May 7th.—Upright Meadow Crowfoot (*Ranunculus eu-acris*), Buxbaum's Speedwell (*Veronica buxbaumii*) and *Veronica serpyllifolia* in flower.

May 8th.—Maple (*Acer campestre*) in leaf.

May 10th.—White Dead Nettle (*Lamium album*) and Sow Thistle (*Sonchus oleraceus*) in flower.

May 11th.—Wood Loose-strife (*Lysimachia nemorum*) in flower.

May 12th.—Creeping Cinquefoil (*Potentilla reptans*) in flower. Ash (*Fraxinus excelsior*) in leaf.

May 14th.—Spotted Palmate Orchis (*Orchis maculata*) and Petty Whin (*Genista anglica*) in flower.

May 20th.—Maple (*Acer campestre*) in flower.

May 23rd.—Holly (*Ilex aquifolium*) in flower.

May 25th.—Brooklime Speedwell (*Veronica beccabunga*) and Common Avens (*Geum urbanum*) in flower.

May 26th.—Bird's-foot Trefoil (*Lotus corniculatus*) in flower.

May 28th.—Silver-weed (*Potentilla argentea*) in flower.

May 29th.—Yellow Cow-wheat (*Melantherum pratense*) and Milkwort (*Polygala vulgaris*) in flower.

May 30th.—Ragged Robin (*Lychnis flos-cuculi*) and Dog Rose (*Rosa canina*) in flower.

May 31st.—Honeysuckle (*Lonicera periclymenum*), Cathartic Flax (*Linum catharticum*), and Tway-blade (*Listera ovata*) in flower.—N. PRESCOTT DECIE, Bockleton Court, Tenbury.

NOTES ON TINEINA.

By S. L. MOSLEY.

(Continued from page 229.)

THE genus *Adela*, the second division of the long-horned species, comprise six kinds, and differ from those last described by having the fore wings metallic. *Viridella* is the commonest species; the fore wings are bronze green. The male differs from the female in the palpi of the former being clothed with long black hairs. It may be found in most oak woods during June. *Rufimitrella* differs in having the back of the head greyish ochreous. *Degeerella* and *Sulzella* have the fore wings brown with yellow markings, one forming a broad streak across the middle.

LARVÆ.—In beating honeysuckle some small wriggling larvæ will now be found, green, with a brown stripe along the back, something like a miniature *Sybilla*. When they spin up they will make a boat-shaped cocoon. These are the larvæ of *Cerostoma xylostella*, a very pretty moth with brown fore wings, a light stripe along the hind margin, and a hooked tip.

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VOL. 3.

HELIX NEMORALIS.

PLATE 8.

THIS most beautiful and abundant shell appears to be rather a puzzling one to many of our correspondents who are just beginning with conchology. Its forms are so various, the ground colour differing greatly, and the markings being even more variable, there is no wonder that beginners get lost among the protean forms. To answer a number of enquiries at once, we have had a plate prepared of some of the commoner forms the shell assumes. We thought it was no use figuring the rarer varieties as our present object is merely to help the beginner, and our remarks must refer chiefly to those forms that are likely to fall in the way of the young collector. Let us first premise that the ordinary varieties of the shell have not been honoured with separate names. To have named every variety would have hindered instead of helped. Thus, then, whether the shell be yellow, pink, brown, or any other of the many hues it assumes, these colours are all considered to belong to the type of the shell. The want of bands or their

presence is equally unimportant. Some are entirely without them; others have one, two, or even six or seven of them, but these are all considered to belong to the type, or the variety as it may be. The points that appear to have been taken into consideration in naming varieties have been the size of the shell and the colour of the lip. Now, as both these depend entirely upon the shell being mature, it is necessary for the young conchologist to know when a shell reaches its full growth. With *Nemoralis* this is very easily ascertained. All shells of this form grow by additions to the outer edge of the whorl. When first formed the new shell appears horny, not calcareous, and is then transparent, comparatively soft, and without markings. By layers of calcareous matter underneath this horny substance, the shell gradually becomes more solid, and acquires the usual markings. When it reaches maturity, the edge of this last whorl is slightly turned outwards, forming what is called a lip; and along the edge of the lip, generally on both sides of it, is a band of colour,

against which those bands that run round with the whorls terminate. When the shell has not acquired this lip, it is immature, and only those with the lip, are mature. Our plate represents eight of the common forms, and we think is sufficiently clear, even when uncoloured, to explain itself. They are all shown with the lip dark, and are specimens of what are called *Helix nemoralis*. If, however, the lip be white instead of black, the shell is called *Helix nemoralis* var. *hortensis*. Of this variety every ground colour and every variety of markings may be found as in the type. If the lip be pink instead of black or white, it is then called var. *hybrida*, and again every variety of ground and markings may be found. The shells figured on the plate are of the ordinary size of the species. Sometimes it grows to a considerably larger size, and is then called var. *major*; and on the other hand, when it acquires the lip of maturity without reaching the normal size of the species it is called var. *minor*. It will be seen, therefore, that even the varieties may have varieties or sub-varieties; thus, a small white-lipped shell would be called *hortensis* var. *minor*.

These are the ordinary forms and varieties, but there are many others that are not so likely to be met with. We have some specimens of a beautiful clear yellow colour with white bands, scarcely opaque. This form has been

called *pellucida alba-lineata*. We have other pellucid shells with reddish bands as transparent as the shells. This form we believe is exceedingly rare. But enough has been said. Our young readers will now have a general idea of the various forms it assumes. How many distinct varieties might be collected, we have no idea. We have over one hundred in our own collection that are recognisably distinct from each other, and we are continually adding to the number.

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E.P.P.B.—The errors do not seem important, though we are sorry for them. We cannot pretend to correct the spelling of local place-names. Kindly write on one side of the paper in future.

We are obliged to H. ANDREWS, Aldboro', for a nest of the sedge warbler, and also for a very pretty pied variety of the house sparrow for figuring, for which we tender our thanks. Figures of these shall be sent when published.

J. W. CARTER, Bradford, has our thanks also for larvæ of *N. mundana* sent for the same purpose.

EXCHANGE.

Full-fed larvæ of *Salicis*. DESIDERATA.— Preserved or living larvæ of many other species.—E. F. NICHOLLS, 2, Summerland Row, Butts, Coventry.

DUPLICATES.—Larvæ of *Z. filipendulæ*, *H. defoliaria*, and *Y. elutata*. DESIDERATA.— Larvæ or pupæ.—(Miss) R. PRESCOTT DECIE, Bockleton Court, Tenbury.

NOTES AND OBSERVATIONS

ACRONYCTA ALNI AT BIRMINGHAM.—I am informed by a friend that he caught on the 27th May, in Gum Slade Valley, Sutton, *Acronycta alni* whilst at rest on the trunk of an oak-tree.—WM. SHAKESPEARE, 61, Suffolk Street, Birmingham.

BIRMINGHAM NOTES.—June 5th.—The long-eared owl (*Asia otus*) is breeding at Sutton, and are rather plentiful around that district. The great crested grebe (*Podiceps cristatus*) is also breeding at Sutton.

June 15th.—A splendid specimen of the lesser black-backed gull was shot at the Edgbaston reservoir. This bird is very interesting, as it is just on the point of changing its nest feather into the adult plumage.

Saw a pair of the spotted flycatcher (*Muscicapa grisola*) at Aston park grounds on the 16th. The lesser whitethroat (*Sylvia corruca*) very plentiful at the Lickeys this season.—ALEXANDER GEO. DAVIS, Birmingham.

BRITISH MOTHS.

By JOHN E. ROBSON.

I. CONVULVULI.

The Convolvulus Hawk-Moth.

"CONVOLVULI, L., *Convolvuli*, feeds on Bindweed (*Convolvulus arvensis*)."—A.L.

Imago.—This species expands from nearly four inches to nearly five. The forewings are dark grey, with dark streaks and

lighter mottlings. The hind-wings are pale grey at the base, gradually becoming darker at the hind margin; there are three blackish bands, the central one being rather broad in the middle, and paler there. The thorax is dark grey with black lines, the abdomen has a dark grey stripe down the middle, and each segment is fringed with white, rosy, and black.

Larva.—Dark brown, a yellow dorsal line to the sixth segment, after which it is black. There are six yellow segmental bands, from the sixth to the eleventh segment: these only reach the subdorsal line. Line below the spiracles whitish; spiracles black, in a brown triangular ground covered with white spots arranged in rows, the upper row representing the seven usual streaks. Above these streaks are dark brown triangular spaces. Horn brown, with a yellow stripe on each side. Two white dashes on the anal segment. Head yellowish and very small. This description is from a beautiful coloured figure lent me by G. C. Bignell, Esq., of Plymouth. The larva is said sometimes to be green in colour.

Pupa.—I never saw it, and know of no description.

Food Plant.—The larva feeds on the small bindweed (*Convolvulus arvensis*), and also on the greater bindweed (*C. sepium*), and on Balsams.

Times of Appearance.—A very uncertain insect: sometimes appearing in great numbers, and then occurring very rarely for years. It emerges from the pupa in August or September, and continues on the wing till October. It then hibernates, and re-appears sometimes in June. The larvæ have been found in July.

Habitat.—Very widely distributed when it occurs, having been taken in every county in England, and both in Scotland and Ireland. It is common in Europe, except in the North.

BRITISH BIRDS, THEIR NESTS AND EGGS.

By S. L. MOSLEY.

22, SPOTTED FLYCATCHER.

Muscicarpa griseola, Linn.

Y Gwybedog (Anct. Brit.)

GRISEOLA, from *griseus* (L.) grey.

Size.—Length, $5\frac{1}{2}$ in.; expanse, $7\frac{1}{2}$ in. to 8 in.

Plumage.—Bill nearly black; the lower mandible yellow at the base, with a few bristles about the mouth; eyes hazel; the whole of the upper parts, including the tail, are pale greyish brown; under parts greyish white, tinged with grey brown on the breast and throat, where each feather has also a dark stripe down the centre. Both sexes are similar.

THE IMMATURE or nest plumage, which only lasts for a few weeks, has on the tip of each feather a yellowish white spot.

VARIETIES.—An *albino* was captured some years ago near Gravesend in Kent, and Mr. Wood has one, very pale wood brown, with the markings of a rufous colour, killed in Sussex. Varieties, however, are rare.

Flight.—This bird delights in the vicinity of shady trees, where it flits about in a kind of butterfly-like flight, incessantly in quest of insect life.

Migration.—A regular summer visitor to this country, seldom reaching us before the middle of May, and departing again about the end of September.

Food.—Consists almost entirely of flies and other insects, but sometimes a few berries such as those of the mountain ash, are eaten.

IN CONFINEMENT.—I know of no case of this bird being kept in captivity.

Habitat.—This bird is not uncommon in most parts of England, Scotland, and Ireland, but rarer in the north than in the south. It frequents woods, orchards, plantations, and similar places.

ABROAD.—It is found throughout Europe, and in many parts of Africa, and Asia. Dresser says it is a regular visitant to western continental India.

Nest.—The nest seems to be begun immediately on the arrival of the birds at their breeding places, and sometimes two broods are reared in a season. It is composed of moss, mixed with a few bits of stick, dry leaves or roots, lined with fine grasses and horsehair, sometimes also with a few feathers. Mr. Bond has one with the outer parts formed principally of fine seaweeds, and lined with feathers, dried grasses, and hair, taken in the Isle of Wight. But the prettiest nest he ever saw was composed almost entirely of dead flowering racemes of the evergreen oak, the lining of hair and dried grasses. This nest was taken at Hampstead. Generally the site chosen is among a few small branches against the bole of a tree, or in a tree trained against a house side; but sometimes very odd situations are made choice of; such, for instance, as tops of lamp-posts, in inverted tree pots, various places in and about outhouses, or on a beam in a cow-house. On one occasion a nest was placed on a hoe which hung in a shed. When the hoe was wanted the nest was taken down and replaced again when the implement was done with; an arrangement to which the bird did not seem to object, for it reared a brood of young (Zool., p. 3577). I once found a flycatcher's nest placed inside that of a thrush upon the ledge of a rock in North Yorkshire. The thrush's nest contained two eggs under the other nest, and it would almost seem as if the flycatchers had taken forcible possession. Gilbert White relates an instance of a pair having built upon a naked bough, and that when the hottest weather came on, the heat of the sun was enough to have scorched the young brood, had not the old birds had the sagacity to hover above the nest during the hottest parts of the day, panting for breath them-

selves, but protecting the young ones from the scorching rays.

Eggs.—Four to six eggs are laid, greyish or greenish-white, spotted or mottled with yellowish or reddish sienna spots or blotches. Sometimes the spotting is fine, and forms a zone round the thick parts; at other times it is in blotches, and then more of the ground colour is shown.

VARIETIES.—"I have had one entirely white. I took a nest in Cambridgeshire in 1864 with four eggs entirely rich cream colour without any spots or markings. I have seen eggs similar to those of the pied bird, also without spots or marks.—F.B."

LECTURE ON BOTANY.

A lecture on Botany was delivered by Mr. J. P. Soutter, the subject being "First Steps in Botany, with the Properties and Folk-lore of Familiar Flowers." The following condensation is from the "Auckland Times." After a brief allusion to the extent and variety of vegetable life, and the difficulty of drawing a sharp line of demarcation betwixt the animal and vegetable kingdoms, the lecturer proceeded to define plants as producing organic matter, whilst animals consume it, or that plants have the power of elaborating organised living structures out of dead matter, whilst animals only re-arrange the already manufactured materials. He then showed, in considerable detail, what are the various substances which form the food of plants, how they are obtained, absorbed, and built up in the body of the plant; how the minute microscopic cells which form the tissues of the plant derive their nourishment, grow, and increase in number; tracing the gradual evolution of the plants from a mere speck to the fully developed flower or tree. In the whole life history of the plant perhaps nothing is more wonderful than the attributes and vagaries of the young growing root. So exquisitely sensitive and sensible is this important organ that it has been aptly called the

brain of the plant. As soon as ever it bursts the shell of the germinating seed it commences moving round and round, rotating from side to side, seeking for sustenance and the easiest way to find it, resembling nothing so much as the head of the common earth-worm protruded from its hole and striving to lay hold of the adjacent leaves and twigs. Although its natural tendency is downwards, from the attraction of gravitation, yet if grown freely suspended in air, the least bit of resisting medium attached to its tip, such as the merest fragment of card paper, will cause it to bend away from the object till it will even form a complete circle, lengthening out all the time. Of course, when growing naturally, surrounded and weighted by the superincumbent soil, it is forced downwards, and here is seen its adaptability to circumstances by its adoption of the line of least resistance, for it takes advantage of every crevice in the soil, of a worm hole or other channel, and the depth to which it will penetrate and the distance it will travel in search of food is incredible, except to actual observation. To shield it from injury whilst thus forcing its way amongst the soil, sand, and stones, the tip is protected by a sheath, as a lady protects her finger with a thimble or a glove, only this root-cap has the merit of never wearing out. As it becomes abraded and rubbed on the outside it is constantly being renewed by a layer of fresh cells originated at the growing point within. Having once obtained an entrance into a crevice, it soon, by its expansive power, enlarges the opening and makes room for itself. And this, not as a nail driven in by a hammer forces a passage, but as a wedge of dry wood inserted in the cleft of a rock and kept constantly wetted by the absorption of moisture will split the solid cliff asunder, so the tiny rootlet burrows its silent way. And whilst absorbing nutriment it is also exuding a secretion which dissolves and as it were cooks and prepares

for digestion the mineral constituents of its diet. Perhaps, most wonderful of all is the root's selective power, the ability to choose from the various surrounding substances in the soil those most congenial to its tastes. Thus, of two plants grown side by side, the one may absorb potash, the other phosphates; and the one may elaborate a nutritious food, whilst the other produces a virulent poison. Hence arises the exhaustion of soils, and the importance of a scientific training to our farmers, that they may comprehend the necessity of rotation of crops and judicious manuring. An emphatic protest should be entered against the wilful waste of the best of all fertilizers for the impoverished land by the absurd—nay wicked—disposal of the sewage of our towns. As nothing in nature is absolutely lost, the food taken from the soil ought sooner or later, in some shape or form, to be restored to it again. Our plants and crops are perishing for the lack of the very substances we are pouring into our rivers, polluting our waters, contaminating our air, poisoning our fish, and often our fellow-men, whilst starving the poor farmers! From the rather startling statement that the tip of the root may be called the brain of the plant, it is not to be inferred that there is claimed for it, sensory apparatus and a set of nerves as complete as in the higher animals. But numerous experiments have proved that the extreme tip is not only sensitive to contact with a hard substance—or a corrosive, such as caustic—or common grease, to which it has an excessive repugnance—but it is able to transmit the sensation to an adjacent part, which then bends *away* from the opposing object. Or if it detects moisture on one side, it conveys the impression to the mutable or bendable part, which then turns *towards* the water. If, after the inclination to turn in a given direction has been transmitted to the root, the extreme apex or sensitive part be cut off,

the root will continue to bend in the direction in which the impulse has been given until a new apex has been rejuvenated, when, if the obstruction has been removed, the direction of growth will be resumed. To find an analogous case in the animal world, we must suppose an animal to have resolved to raise or bend its body in a certain direction, and when the movement has begun its head is amputated, but the elevating impulse conveyed to the body goes on for an indefinite time. Recent research has proved this general law to pervade all vegetable existence, viz., that the apex of the growing part of every plant—whether root, stem, branch or leaf—is in a constant state of motion, continuously revolving or rotating from side to side. The movement may be slight, but it is decided enough to be appreciable. Being inherent in all plants, we see that no special law is required to govern the more obvious manifestations of it. The same power which enables the infant root in the germinating seed, to penetrate the soil, aids the tender stem to break through the ground, and we see it amplified and modified, and not abrogated or superseded, in the folding petals of the daisy, the extension and collapse of the sensitive plant, the twining stem of the honeysuckle and the hop, the clasping tendrils of the pea and vine, and the adhesive suckers of the ivy and Virginian creeper. The second part of the lecture was chiefly occupied with a dissertation on the daisy, the singular structure of its flowers, the lingering superstitions, curious customs, and tender associations which cluster around it. This was garnished and embellished with numerous quotations from the poets, who seem to be never weary of singing the praises of this favourite flower. The lecture was copiously illustrated by a series of beautifully executed diagrams, several interesting practical experiments, and various specimens; and it was attentively listened to by an appreciative audience.

BRITISH ANTS—By G. C. BIGNELL.

(Continued from page 255.)

GENUS LEPTOTHORAX, Mayr.

The female and worker in this genus present the peculiarity of having their hairs clavate, —a character easily seen with a strong lens.

1. *Leptothorax acervorum*, Fab.

MALE.—Black; mandibles and legs brown, joints and tarsi paler; clothed with long whitish hairs, especially on the dull, rugose head; mandibles not toothed; antennæ twelve-jointed, scape very short and thick, about as long as the second joint of the flagellum, which is much longer than the first; metathorax tuberculated at the sides behind; nodes of the petiole smooth and shining; abdomen shining and smooth; wings white. Length, 5 mill.

FEMALE.—Brownish red; head, thorax, and abdomen above, nearly black; mandibles, scape and legs, paler; antennæ eleven-jointed; head finely and longitudinally rugose; thorax and nodes of the petiole also rugose; metathorax with two stout, rather blunt spines; abdomen shining, with scattered white hairs; legs with prominent hairs. Length, 4-5 mill.

WORKER.—Testaceous, red; head, apex of antennæ, and abdomen nearly black; thorax sometimes with a more or less extended dark patch on the disc; entire insect clothed with scattered short, upright, pale hairs; head and thorax rugose; antennæ twelve-jointed; metathorax with two short, rather blunt spines; first node of the petiole nearly quadrangular, looked at from above,—from a side view much raised posteriorly; both nodes more or less rugose; abdomen smooth and shining. Length, 4 mill.

HABITAT.—Often found under bark of old trees, &c., chiefly in the north. It has been taken in the London district; also at Dawlish and Woolcombe, in Devonshire.

2. *Leptothorax Nylanderi*, Foerst.

MALE.—Brown; the mandibles, antennæ,

and legs pale; mandibles four or five-toothed; scape of the antennæ as long as the first three or four joints of the flagellum; the first seven joints of the flagellum are of about equal lengths, the following four are thicker and longer, and the apical joint is almost longer than the two preceding together; thorax in front of the converging lines smooth and shining, behind finely and longitudinally rugose; metathorax finely rugose, and with two small tubercles; abdomen shining, the nodes of the petiole smooth above. Length, 2 mill.

FEMALE.—Testaceous, club of the antennæ of the same colour; abdomen black-brown, with the base of the first segment widely, and the following more or less narrowly, testaceous; head and thorax longitudinally striate, clothed with scattered club-shaped hairs; thorax as wide as the head; wings slightly milky, nervures very pale; metathorax with two sharp spines, very wide at the base; abdomen shining, clothed with scattered hairs. Length, 5 mill.

WORKER.—Differs from the female only in having the thorax much narrower than the head and constricted in the middle, its surface rather more rugosely striate, and the spines of the metathorax rather longer, and in being smaller in size. Length, 2 mill.

HABITAT.—Not common; has been taken at Chobham, Wimbledon, and Exeter.

3. *Leptothorax unifasciata*, Ltr.

Very like the preceding. Messrs. Forel and Emery consider it a race, uniting them under the name of *tuberum*, Nyl.

MALE.—May be known from the preceding by having the thorax in front of the converging lines rugose.

FEMALE.—May be known by having the apex of the antennæ dark brown, and the black bands of the body narrower, often wanting, except on the basal segment.

WORKER.—Like the female.

(To be continued on page 287.)

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VOL. 3.

MY LIBRARY.

II.

THE ILLUSTRATED NATURAL HISTORY OF
BRITISH MOTHS, BY EDWARD NEWMAN.

THIS is a handsome looking volume of much greater pretensions than the last. It contains the Sphinges, Bombyces, Noctuæ, and Geometræ, but none of the other groups. It is of very unequal merit, and while the descriptions, &c., on the early pages are, perhaps, rather brief, the later ones are very much spun out. We believe the beginning of it was originally published in *Young England*, a much more deserving paper than many that have attained an enormous circulation by pandering to the taste for highly spiced fiction, that is corrupting our very schools. A separate publication of these papers was begun, and three numbers, extending to the end of the Bombyces, were issued. The publication was then suspended for a considerable period, and when it was resumed, much more lengthy descriptions, &c., were given. Thus the first sixteen species, including the largest Sphinges, are all figured and described in eight pages,

of which about half are taken up by the figures, being an average of quarter of a page of letter-press to each. In the latter part of the volume there is sometimes a whole page of letter-press to a species; though, doubtless, the more closely allied species require more elucidation, we cannot say that the descriptions here are very easy to understand, and certainly prefer the briefer ones of *Stainton's Manual*. There, the differences between species, are clearly pointed out; here, they are almost lost in the multiplicity of words, most of which are but repetition. The division into genera is entirely ignored, in fact, after the fourth family of *Geometra*, even the divisions into families are not noticed; and the species follow each other in unbroken succession, except that there is a change of heading to the pages on which the Cuspidates and Noctuas are described. English names are given to every species, but so many of these are utterly meaningless, that in our opinion they hinder instead of helping the beginner. In a former article we mentioned that there were no less than

twenty-one "Wainscots," in nine different genera, and only those who have thought about it, can imagine how confusing and misleading this is. The scientific names are given to each species, but they are often not those in common use, or in the accepted catalogues: and, this too, is a hindrance to beginners. The chief feature of the work, however, is its woodcuts. Every species, except some of the more closely allied *Eupethecia*, is represented by one or more figures, which we may say, are almost as good as they can be. When the sexes differ, both are shown, and in case of some variable species, three, four, or even more figures are given. A large number of species may be named from the woodcuts, and the book is thus of use to those who only care to name their specimens. The more obscurely marked, or those more closely allied, cannot be so well made out; but this does not detract from the excellence of the figures, for many of these are difficult to make out from the actual specimens.

While we thus consider the book little use as a scientific manual, and not one we would put into the hands of a student; it will answer well for those who are merely collectors. It may also be of service to many who would not pore over a purely technical book, and we know it is used by many who cannot master the system and method so well displayed in Stainton's

Manual. Its original price was One Pound, but it has recently been offered at Fifteen Shillings. It cannot, however, be had through the booksellers at this reduced price.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now due. Weekly numbers or monthly parts, 6s.; with plain plates; or 8s. with coloured plates. The latter cannot be obtained through the booksellers, but any one can have their plates coloured on application to the editors.

Miss R. PRESCOTT-DECIE.—Thanks for the pupæ; but those from *Filipendula* and the unnamed larvæ are lepidopterous. The larvæ have probably been among the food.

EXCHANGE.

Will give twelve copies of No. 1 of the "Birmingham Naturalists' Gazette" for Nos. 1 to 8 of the "Amateurs' Arena," or twelve copies for Vol. i. of "Frizinghall Naturalist," and six copies of the "Birmingham Naturalists' Gazette" for Nos. 1 to 4 (Vol. ii.) of the "Frizinghall Naturalist." Apply to W. HARCOURT BATH, Sutton Coldfield, Birmingham.

NOTES AND OBSERVATIONS

CAPTURES AT BINGLEY.—The following captures have been made by my brother and myself since the 8th instant:—June 8th, *L. salicata*, only one, abundant in 1878. June 10th, *V. cambricaria*, Bingley Wood. June 11th, *A. candidata*, *E. heparata*, *N. camelina*, *A. ulmata*, in Hawksworth wood; *I. lactearia*, Shipley Glen. June 15th, *A. adusta*, *S. belgiaria* (male

and female), *L. caesiata*, Blackhills; *C. suffumata* and *C. ferrugata*, Bingley Wood. June 17, *A. fumata* (several), *E. lariciata*, and *A. porphyrea*. June 18th, *A. menyanthidis*, *H. vellela* (barely out), *C. corylata*. It has been the worst year, so far, for lepidoptera, since we began collecting.—E. P. P. BUTTERFIELD, Wilsden, near Bingley, Yorkshire.

BIRMINGHAM NOTES.—May 25th. I heard the cuckoo to-night after dark.

May 27th.—Saw a green woodpecker in Holly Hurst. I heard this bird tapping a tree from a distance of over a quarter of a mile. I crept up to the place cautiously, and observed it at work high up on a tall oak-tree. Every now and then it would give a series of sharp pecks with its beak on the trunk to peel off the bark. The noise made sounded very much like a walking-stick being struck very hard on the trunk of a tree, or like something being tapped quickly inside an empty cigar box. It would go too—too—too—too, every so long, and then it would peck off the insects that had been revealed. It seemed a very shy bird. The instant it observed me it was off; but I heard it at work on other trees. A large patch on a tree where it had been at work was quite stripped off the bark. I have come across several others lately, and had much pleasure in observing their habits.

Took one *Iodis lactearia* and one *Eupithecia virgaureata* and other moths on trunks of trees in Holly and Lower Nut Hurst. Took first *H. humuli* this season (male specimen. This is very early. There was a great swarm of gnats this evening by Windley Pool: they were so numerous that they could not be seen through, and they cast a dark shadow on the ground.

May 28th.—Saw a cuckoo chased by a flock of small birds. Lepidoptera captures: Gum Slade) *T. rubi* (plentiful), *L. argiolus* (several), one *P. phlaas*, *C. p umphilius* (very plentiful), *P. rapæ* (very plentiful), one

P. brassicæ, *T. automaria* (very plentiful), *E. palumbaria* (very plentiful), one *P. gamma* flying in sunshine, and many others.

May 29th.—(Gum Slade) Captured a fine female specimen of *A. fuliginosa*. It laid a number of eggs, from which I am breeding the larvæ. Took one *Y. impluviata*, &c., &c. (Middleton Wood) Pheasant's nest with sixteen eggs, goldfinch's with five, and others.—W. H. BATH, Sutton.

BIRMINGHAM NOTES.—June 24th. Saw four jackdaws in a field near Handsworth Old Church, also a spotted flycatcher hawking for flies.

Three splendid specimens of the Common Tern (*Sterna fluvialis*) were killed at the Edgbaston reservoir on the 23rd, one male and two females. Several species of sea birds are seen there occasionally, but although the reservoir is a tremendous sheet of water, none of the birds breed there.

June 26th.—I had the pleasure of seeing a splendid specimen of the Little Gull (*Larus minutus*), killed somewhere in Scotland. It was sent to Mr. Spicer, the taxidermist, of Birmingham, for preservation, and is now the property of Robert Chase, Esq., of Edgbaston. This gentleman is a well-known amateur naturalist, and has the most beautiful collection of British birds I ever saw. On the bird being dissected it proved to be a good old male. This bird is extremely rare.

A very fine specimen of the Night Jar or Goat Sucker (*Caprimulgus Europæus*) was killed at Ashburton, South Devon. This bird is known by a great number of fictitious names. Its food is principally beetles; sometimes they feed on moths. On dissecting it I found the stomach quite empty. In the stomach of one I had last year I found four or five perfect beetles.

The Nightingale was heard singing near Smethwick on the 23rd.—ALEXANDER GEO. DAVIS, B.N.F.C., Birmingham.

A MORNING'S WALK ON A SURREY COMMON.

THERE having been a soft warm rain on the previous night, everything was looking fresh and bright in the sun, the only drawback being that the heather was rather too wet to be pleasant. On my way I observed plants of pasture lousewort (*Pedicularis sylvatica*), among them a white variety; also milkwort (*Polygala vulgaris*), of various shades and colours, and close to it the pretty little flowers of *Potentilla verna*. The chief object of my walk was to get some plants of sun-dew (*Drosera rotundifolia*)—having lately been reading Mr. Darwin's very interesting experiments with this plant in "Insectivorous Plants," and wishing to follow out some of them—which I soon came upon in any quantity, by the side of a lake; on an average, eight out of twelve leaves having insects on them in different stages of digestion. I had the good fortune to find Marsh St. John's Wort (*Hypericum elodes*), a pretty water plant with yellow flowers and quite new to me, and not far from it water crowfoot (*Ranunculus aquatilis*), with its delicate white flowers. The only moth I saw was the Silver Y (*Plusia gamma*), before whose head I thoughtlessly waved a stick, and on seeing it did not fly repeated this three times, going within a few inches of its head each time, it, however, took no notice, not flying until actually touched; I do not know the reason of this unless it was fright. A male furze chat (*Saxicola Rubicola*) kept hopping from top to top of either bracken or furze just in front, in my opinion there is no prettier English bird for its size than this. The cotton sedge (*Eriophorum angustifolium*) was growing in abundance in the bog, with the marsh club moss (*Lycopodium inundatum*) spreading over the *sphagnum* below it. On my way home I saw a beautiful bush of the

dog rose (*Rosa canina*) covered with its delicate pink flowers; also several adders basking in the sun. Besides the plants already mentioned were germander speedwell (*Veronica chamædrys*), white galium (*Ranunculus arvensis*), lesser dodder (*Cuscuta epithymum*) not in flower, red-berried bryony (*Bryonia dioica*), climbing about a hedge, the common purple vetch and corn cockle (*Agrostemma githago*.) While I am writing this a fern owl (*Caprimulgus europæus*), is purring away loudly on the heath outside my window. What a pleasant sound it is on a still summer evening.

A RAMBLE ROUND THE LICKY HILLS, BROMS- GROVE.

By A. G. DAVIS and E. F. SPICER,
B.N.F.C.

June 18th.—Took the 8.20 train to Barnet Green, arriving there at quarter-past nine. This morning was very fine, the fields looked beautiful, the grass was very deep, and ready for the mower. We observed from the train a magpie feeding; also starlings busily engaged carrying food to the young. On reaching our destination, we proceeded towards the hills; on our way we came to a field of beans, where we made a short stay. Looking down the hedge we found a nest of the brown linnet, containing four eggs; a little further on we found a nest of the goldfinch, containing four eggs; and a nest of the brown linnet, containing a dead young one, all the others had fled. It seems strange this one should be in the nest by itself dead. There we came to a wood, where about six feet from the ground, in a small bush, we found a beautiful little nest, very much resembling that of the long-tailed titmouse in shape; it was composed of dried oak

leaves, lined with dry grass. I put my finger in the nest, and no sooner had I done so, than out popped a beautiful little mouse. It was a little larger than the common house mouse, and of a beautiful light brown colour, I caught hold of its tail, but the long fur slipped off, and the mouse ran up the tree and we lost it. Altogether in the same wood, we found four nests of the thrush, containing eggs varying from three to five in number. We also found a blackbird's nest, the female was sitting on the eggs, and had a narrow escape from being caught; there were five eggs in the nest, almost ready to hatch. We also observed some splendid specimens of the redstart, the marsh tit, the wood wren, and young robins rather plentiful. After a thorough good search through the wood, we went on our way, and within a very short distance of the hills to the right, was another large thick wood, which looked very tempting. We lost no time in getting into it, and here we saw a splendid pair of young nightingales, which are rather rare; also a turtle dove and lots of wood pigeons, not in flocks but singly. Nests in this wood seemed rather scarce, we only found two; one of the wood wren and the other of the chaffinch, both empty. Wending our way out brought us to our rendezvous, here we had a splendid view of the country. We could see the Hagley Monument and Clent Hills very plainly. Going down the hills we saw a pair of cuckoos; Mr. Spicer, by means of his two thumbs and mouth, gave a capital imitation of the cuckoo's call, the bird answered to it each time, and, in fact, came flying round us for some time. A little further on we found a nest of the lesser whitethroat, containing four eggs; in the next hedge we found another nest of the same kind, containing four naked young ones, they looked very pretty all huddled up together. Here we saw some boys throwing stones at the birds, one of them was a splendid marksman, he killed two white-

throats and a lesser redpole, and gave them to us. Turning back to the right we came to large sand hole, where we saw large numbers of sand martin's nests, we tried our best to get to them, but were unsuccessful. A little further on we turned into a field, where we found a nest of the common plover and a nest of the partridge contain-eggs. On coming out of the field into the road again we saw a beautiful male bullfinch and a pair of whitethroats, we then proceeded on our way to the station, and caught the 5.30 train back to Birmingham. On the lines we saw a young bird running about, which proved to be a young titlark, we brought it home alive. The rain came down very heavily in the afternoon, and having about three miles to walk to the station, we got a real good soaking, and were very glad to get back home again and take our wet clothes off. Nothing is pleasanter than a delightful ramble into the country, where for a time you may fancy, like the butterfly, that everything around is your own.

"What more felicity can fill a creature,
Than to enjoy delight with liberty;
And to be Lord of all the works of nature,
To reign in the air from the earth to highest sky,
To feed on flowers and weeds of glorious feature,
To take whatever thing doth please the eye:
Who rests not pleased with such happiness,
Well worthy he to taste of wretchedness."

BUTTERCUPS.

By J. P. SOUTTER, Bishop Auckland.

"Wildings of Nature, I dote upon you;
For ye waft me to summers of old,
When the earth teemed around me with fairy delight,
And when daisies and buttercups gladdened my sight,
Like treasures of silver and gold."

If we except the daisy, with which it is often associated, there are no wild flowers that are better known or more abundant than the buttercups. They are so generally distributed that every child, who has visited

a meadow field in summer time, has become familiar with its gold cup, and learned to lisp its name. So numerous do they become in old pastures, that they overshadow every thing else, and for a few weeks in May or June the ground seems carpetted with a cloth of gold, at a little distance not a green blade being visible. It is a widespread popular fancy that the golden buttercup gives the rich yellow colour to summer butter, but, like too many current beliefs, the facts are against it, for the cows invariably avoid browsing on the buttercups as much as possible; and, no wonder, for all the family are very biting, acrid, and pungent in their qualities, scarcely one of them being suitable for animal food, several are virulent poisons, as the Monkshood (*Aconitum napellus*,) The leaves of one species of Water Crowfoot (*R. sceleratins*), is used in rustic herbal practice to produce blisters, or as a counter irritant in toothache; and even carrying a handful of *R. acris* has been known to inflame and excoriate the hands. The genus *Ranunculus* (from *Rana*, a frog, because many of the species love to grow in marshes where frogs abound), is very widely distributed, and varied in its general appearance and places of growth. Some grow in deep water with floating stems and much divided leaves, others live in shallow stagnant pools, many more in marshes and by water-courses, several in cultivated fields, two or three in woods, and the true buttercups in meadows and pastures. In almost all the natural arrangements of British plants, this order holds the place of honour in the Flora. The flowers being botanically perfect they are often used as a typical illustration, to show beginners the various parts of which a flower consists. Thus in a buttercup we have the four whorls of a flower, the calyx, corolla, stamens, and pistil distinctly represented; and not only are the whorls separate, but the individual parts of each, the sepals,

petals, stamens, and carpels, are distinct and independent of each other. So variable are the British *Ranunculi*, especially those which grow in water, that the number of species varies from twelve to thirty or more, according to the whims and fancies of individual botanists, no two of them attaching the same value to the various minute characters. We shall not attempt to discuss these debateable points, but endeavour to elucidate the distinguishing features of the three common meadow crowfoots, which are alone recognised as buttercups, viz:—*Ranunculus acris*, the upright meadow crowfoot; *R. repens*, the creeping crowfoot; and *R. bulbosus*, the bulbous crowfoot. All these three are about equally common, they may often be found growing together, and they have so strong a family likeness that it requires a slight smattering of botanical knowledge to be able to distinguish them. These three are the only crowfoots which grow in meadows and pastures, and they all have the root leaves much less divided than the stem leaves, which are cut up into long, narrow segments, bearing a fancied resemblance to a bird's claw, whence the common name of crowfoot. *R. acris* so called from the sharp biting nature of its juices, is best distinguished by its rigid erect habit, it is by far the tallest of the three, rising to a height of eighteen inches or two feet. In Autumn, it is often very conspicuous in the closely-cropt pastures, standing up bare, gaunt, and spectre-like, with here and there a solitary diminutive flower crowning the leafless branches, but usually functionally abortive in the cold cheerless sunless days of Autumn. *R. bulbosus* is unmistakeable when pulled out of the ground, because of the bulbous root from whence it takes its name, this usually grows to about the size of a hazel nut, with white fibrous roots attached, it is generally found just under the surface of the soil so that it is very easily dug up, being in this respect very

different from the common earth-nut (*Bunium flexuosum*), which is invariably found at a depth of four or six inches and can only be extracted by deep digging. The bulbous crowfoot prefers rather dry sandy or loamy banks, commons, or old pastures. It does not so soon take possession of cultivated fields and meadows as the other two, indeed, it is a strong advocate of "fixity of tenure," and does not like to be disturbed in possession. It is a very neat, compact, little plant, from six inches to a foot high, repeatedly branched, each branch terminating in a single flower. It may be recognised when growing by the sepals being curiously reflexed or rolled back from the corolla and the furrowed flower stalks. It is the earliest flower of the three, commencing to bloom in April, attaining its greatest profusion in May and June, but withering away before the fierce heats of summer. Growing as it often does in dry sandy places, the permanent bulbous root is a beautiful provision for resisting the long continued droughts to which it must be subject, and for retaining a store of nourishment for its future sustenance. Whether or not it may be as some maintain only a state of the upright crowfoot acquired by growing under different conditions, no one can deny its present suitability to its environment, and the permanency of its character seems now fully established. If *R. bulbosus* be regarded as the long established settler, then *R. repens* may be looked on as the pioneer of the crowfoots. It is the first to take hold of waste ground or fallow fields. Wherever the soil has been broken up and left uncared for a year, there the creeping crowfoot is sure to obtain a footing. It revels in a freshly made railway embankment or rubbish heap, and its peculiar mode of growth eminently fits it for covering the greatest amount of space in the least possible time. It throws out in all directions numerous slender creeping stems, similar to the run-

ners of the strawberry, every joint producing roots, and being able to maintain existence as an independent plant. Having once effected a lodgment, the more unpromising and sterile the site, the faster it hurries along in search of richer soil. I have seen a plant on a dry cindery railway bank produce numerous stems twelve feet long in a single season: these were being pushed rapidly along over a paved portion to find, if possible, a resting place in the adjoining ground. It also loves to grow in the damp portions of ill-drained fields and in open ditches, where it often attains a luxuriant richness of foliage and flower far excelling its congeners. Its leaves are larger, glossier, and not so much divided as the other two species, the rooting stems forming an entangled, inextricable mass, above which the peduncles rise, each bearing a large, brilliant, orange yellow flower. The inner side of the petals all seem as if varnished with shining burnished gold, and at the base of each is a small scale easily observable when the petal is detached. These are nectaries which contain the nectar, the saccharine fluid so attractive to insects. In some members of the *Ranunculaceæ*, as the Monkshood, Larkspur, Hellebore and Columbine, they are very curiously developed, although with beekeepers they bear an evil repute as honey bearers. The flowers of buttercups have a marked tendency to become double; and a double-flowered variety, common in old-fashioned gardens, introduced from across the channel, is known as "fair maids of France," or "bachelors' buttons," which is also a local name for the buttercup. The popular names of king cup and gold cup have the same meaning, being derived or corrupted from the old English "cop," a head or button, and is given in allusion to the resemblance of the unexpanded flower-buds to the gilt or golden studs and buttons so much affected by the bachelor swells of bygone days.

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VOL. 3.

HOW TO INCREASE OUR CIRCULATION.

ONE of our earlier articles was addressed to working men, and many of our correspondents since have expressed their desire that we should endeavour to induce larger numbers of working men to take an interest in natural science. But then the difficulty is to know how we are to win their ear; how we are to reach them, so as to show them the pleasures and advantages we would fain have them share with us. Many of our subscribers and readers are, we know, working men. But outside of those that this, or any other natural history magazine, can reach, are tens of thousands of working men, and among them are doubtless many that could take an interest in such subjects, and that doubtless would do so if only they could be approached. We can only express our willingness to do anything that can be suggested to approach them. Many pursue natural history from their youth up. They acquire a taste for some branch of it early in life, and this being one of those

appetites that are increased with a good supply of suitable food, instead of being satiated by it, they continue to follow it as they grow up, and always with additional zest and pleasure. Others, on the contrary, never seem to be awakened to the beauties of nature till they are men, perhaps past middle life, or even going down the hill. Yet even these may render good service to the cause of science; and there is no period of life, short of dotage, where much pleasure can not be had by those who seek it in the lap of nature. We do not wish to run down the hobby of any one else and insist that our own is the only animal of the kind that ought to be mounted; all we ask is that ours may have a trial in the race, and that if you like its paces, and can enjoy the company among which it leads you, that you will give it a share of your leisure time. Our magazine was commenced specially to assist beginners,—not *young people* only, but *young students*, whatever age they might be. None know our shortcomings better than we do ourselves; none know better than we do, how far we

have fallen short of our own ideal at times, and how rarely we have ever approached it. But with all this humility we do not think that our magazine has altogether failed in its object, or that it has not been useful in the manner intended, to many of our readers. Nevertheless, we do not profess to be able to create a taste for natural history pursuits in the minds of those who have naturally no inclination in that direction. Still more is it impossible for us to assist those who have such a taste if we cannot reach them. The idea that prevailed with us in commencing the *Young Naturalist* was that the existing magazines were rather too advanced for beginners, and we have tried from time to time to write or print such papers as might assist these in their earlier steps, and lead them on to higher walks. Yet we have been mindful, too, to be as full and as correct as we could, whatever was the subject on which we wrote. From time to time criticism has reached us, which we were always glad to see when it was well intended, and which we could always afford to smile at, if a rejected article or other personal motive prompted it. But as the praise so many of our readers have bestowed upon us has far exceeded the adverse criticism, we have, perhaps, thought too well of our own bantling. But as

our own opinion is not of so much importance as that of our readers, we will accept the fact we have just named as proof that the *Young Naturalist* is appreciated by the large majority of its readers, and we will ask them to assist us in increasing its usefulness both to themselves and to others. The more extended the circulation of a paper like this, that depends so largely upon its readers for its matter, the more choice would the editors have for selection if the circle of contributors was enlarged. We have also always been desirous to add a cover to the weekly parts, to which the advertisements, exchanges, announcements, and other items of a temporary nature could be transferred, by which we would have additional space for matter of more importance. Both these can be done if our circulation can be increased, and we propose to send occasionally to our subscribers a few extra or back numbers with their weekly or monthly parts. These we will be glad if they will distribute among their friends and acquaintances, --if they will give them to any one likely to care about the subject,—enclose them in their entomological correspondence, or in any other way circulate them where they are likely to be appreciated. By doing this they will render us the greatest possible service, and help us to improve the *Young Naturalist* in more ways than one.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now past due, and we will be glad to have remittance from those who have not yet sent them. Weekly numbers or monthly parts, post free, 6/- per annum, or 1/6 per quarter, *in advance*. Coloured plates, 2d. each extra. These can only be had direct from the conductors as above, but any one procuring them through the booksellers can have them coloured on application.

To H. ANDREWS, Aldborough, our thanks are especially due for the nest of the Spotted Flycatcher. The plates containing this species are due with this month's part of "British Birds," but we hold them back another month in the hopes of obtaining a full feathered young bird. We issue the Dipper plates instead.

NOTES AND OBSERVATIONS

THE NIGHTINGALE AT WHITBY.—A nightingale (*Sylvia luscina*) about three weeks ago took up its abode in a plantation a short distance from the town. As this is only the third that has ever, so far as I can ascertain, been heard in this district, it is, perhaps, unnecessary to state that large numbers availed themselves of the opportunity to hear its matchless song. I record this fact as, on referring to a list of Yorkshire towns in which the nightingale is said to have been heard, I do not find Whitby amongst them.—S. H. B. THORNTON, Whitby, June 22nd, 1882.

SIREX GIGAS, &c.—A fine and perfect specimen of this insect has just come into my possession. Some men were discharging a cargo of pit props from Sweden the other day, when one of them felt something moving upon his neck: He knocked it off with his hand, and as it was an insect none of them had seen before, it was carefully secured for

me. No doubt it had come from Sweden in the vessel. We get many *longicorne* beetles about the timber yard, *S. edilis*, *M. sutor* and *sartor*, *P. fasciculatus*, and others are often common, as also is *P. pini*. These beetles seem to come over as larvæ or pupæ and to emerge after they reach our shores. This year I have taken three or four species that I have not met with before.

BRITISH BIRDS, THEIR NESTS AND EGGS.

BY S. L. MOSLEY.

Genus III. Cinclus.

CINCLUS, (Gr.) a lattice, probably from the markings on the back of the bird. This genus has only one representative in Britain, and few other species exist abroad. The bill has a ridge along the upper edge, moderately long and slightly turned upward. Tail and wings short; claws long; the body very plump and round.

23, DIPPER.

Cinclus aquaticus, Bechst.

AQUATICUS, from *aqua* (L.) water, the bird being always found about water.

Size.—Length, about $7\frac{1}{2}$ in.; expanse, 12 in.

Plumage.—Bill blackish; eyes hazel; top and sides of head, and neck brownish black; back wings and tail sooty black, the feathers margined by darker colour; throat and breast white, suddenly changing to chestnut on the belly, and gradually changing to sooty black at the vent; legs horn colour. The sexes are very similar.

IMMATURE birds have the upper parts pale sooty black, the feathers margined with darker colour; breast and belly yellowish white, each feather margined with sooty (pl. 23, fig. 2).

VARIETIES.—One white specimen is recorded. There is also a variety of this bird found in Scandinavia, which is sometimes described as a distinct species, under the

name of *C. melanogaster*. It has the usual chestnut on the belly replaced by sooty black. This variety is sometimes found in this country, being recorded from both Yorkshire and Norfolk.

Note.—Besides the ordinary note, a simple "chet," the dipper has a short, but pleasant song, which may be heard at all seasons of the year.

Flight.—The dipper has a strong, quick flight, generally in a straight line along the course of some stream, and has the habit as soon as it alights, generally upon some stone in the middle of the stream, of moving its tail after the manner of the wagtail.

Migration.—I think the bird is partially migratory, in some parts of the country at least—(F.B.).

Food.—Larva of aquatic insects, water snails, worms, &c. The dipper has been charged by anglers with destroying the spawn of fishes, and, in consequence, has been persecuted, and rewards have been offered, and, I believe, still are, in some parts of Scotland, for its destruction. It has been proved, however, by dissection of the birds at all seasons of the year, that it seldom takes spawn, but feeds upon the larvæ of aquatic insects, which would be much more likely to injure the spawn than the bird itself. Such cases as this are very strong in favour of natural history forming a part of our system of education.

Habitat.—Mountain streams, in England, Scotland, Wales, and Ireland; most numerous in the north, being a common bird in all the Scotch highland burns. It has the power of sinking to the bottom of a pool and rising again at some distance; it has been seen to rise to the surface in the middle of a pool and take flight.

ABROAD.—It is common in most of the hilly parts of Europe.

Nest.—The nest is very large for the size of the bird. It is round, with a hole in

one side, and is composed of moss, lined with dry leaves. It is placed in a crevice of a rock or bridge, generally near some cascade. I have known it placed behind a waterfall, where the birds had to go through the water each time of approaching or leaving the nest.

Eggs.—Five or six, pure white.

BRITISH MOTHS.

By JOHN E. ROBSON.

2. LIGUSTRI.

The Privet Hawk-moth.

"LIGUSTRI, L., *Ligustri*, feeds on Privet (*Ligustrum vulgare*)."—A.L.

Imago.—This species expands from three inches and a half to nearly four inches and a half, but the large majority of the specimens that have come under my notice have exceeded four inches. The costal half of the fore wings is pale greyish brown, with darker streaks and marks; the hind margin is also pale greyish brown; from the tip to the inner half of the base, and from the base nearly to the hind margin, is a triangular patch of very much darker brown. The hind wings are rosy, with three dark bands. The thorax is dark coloured, greyer on the back and light at the sides. The abdomen is rosy, with the hind portion of each segment black; a grey brown stripe down the centre, tapering to a point at the anus, and broadest at about the tenth segment.

Larva.—Bright green, with seven diagonal stripes on the sides, whitish below, and rather dark reddish lilac on the upper side. From the point of each of these diagonal streaks a faint yellowish stripe continues till it meets the one from the opposite stripe on the back. The body is not warty, but looks ribbed. The face is bi-lobed; a black streak at the sides, which does not quite meet at the top. Horn long and curved; yellowish at the sides, but black above and below, and about one third from the point entirely black. Legs and pro-legs

are dark next the body, then yellow, and dark again at the feet. Spiracles yellow. (This description is from larvæ kindly sent by Mr. G. T. Miller, of Gateshead-on-Tyne.)

Pupa.—Dark reddish brown, of the usual shape, but the portion enclosing the proboscis is detached, and forms a sort of beak about a quarter of an inch in length, and folded down on the underside of the pupa.

Food Plant.—Its natural food seems to be Privet or Lilac, but Mr. Owen Wilson gives the following in addition:—Holly, Ash, Guelder-rose, Laurestinus, Portugal Laurel, Spindle Tree (once by Mr. Bond), Dogwood. Merrin gives several of these and adds Evergreen-oak.

Times of Appearance.—The imago emerges towards the end of June, or a little earlier, and may be found on the wing through July. The eggs hatch in twelve or fourteen days, and the larvæ are full fed by October. The pupæ, which are subterranean, remain over the winter.

Habitat.—This species is tolerably abundant in the south of England, but is far from common towards the north; it is, however, of more frequent occurrence on the north-west than the north-east of our island. In this district (south-east Durham) privet grows abundantly in some of the limestone denes, but the insect has never been found there. It is very rare in Scotland, perhaps only an accidental visitor; it is also rare in Ireland. Abroad it is well distributed throughout Europe, but does not reach the extreme north, occurring, however, in Sweden, Finland, &c. It is found in Asia Minor and in other parts of Asia, reaching Siberia and the valley of Amoor, but not extending to India. It is also found in Northern Africa. It rests on tree trunks or palings by day, and sometimes comes to light, but is generally obtained by breeding from the larva.

Variation.—*Ligustri* is not by any means a variable species. No specimen has come under my observation that could be spoken of as varying in any striking manner. A distinctive name has, however, been conferred upon one variety by Esper. The form is said to be smaller and paler, and is called *Spiracæ*. I have no knowledge of it whatever.

NOTE.—Kirby, speaking of the larva, says "Its attitude in repose has been thought to resemble that of the Egyptian Sphinx, and hence this name was first applied to the larva, then to the moth, and subsequently to the whole group of which it forms the type."

3. PINASTRI.

Pine Hawk-moth.

"PINASTRI, L., *Pinastri*, *pinaster*, a wild pine, feeds on Pines."—A.L.

Imago.—Expands about three inches, generally rather less, but I have one specimen (European) that reaches three inches and a half. Fore wings brownish or bluish grey, varied by black streaks and brown marks; the brown markings generally form two wavy bands from the costa to the inner margin; sometimes they are but narrow lines, fringe white with regular black spots. Hind wings brown, without bands; fringe white, interrupted with brown. Thorax bluish grey, with a black mark on each side. Abdomen black with narrow white rings in front of each segment, a greyish band down the centre of the upper side, with a narrow black line down the centre.

Larva.—Kirby describes it as being green with white longitudinal lines, and an irregular reddish brown stripe on the back. Stainton, translating from Duponchel, describes the lines as being citron yellow, rather interrupted; spiracles orange, edged with black. Horn black and rough. The figure given in Donoran cxcvi. is copied from Roesel, and may be described as green with

a pale yellow line on each side, above the spiracles, a white or pale grey dorsal stripe, down the centre of which is a dark reddish line, widest at the middle of each segment. We have rather enlarged on this point as the discovery of the larva in this country would give considerable satisfaction to many entomologists. The figure in Cassell's European Butterflies and Moths seems to be a bad copy of the same figure.

Pupa.—Similar to the last, the sheath of the proboscis detached in the same way. Donovan's figure does not show this peculiarity, which, I believe, is common to the genus; it is also too bright in colour.

Food Plants.—Pines and firs, especially Scotch fir (*Pinus sylvestris*).

Times of Appearance.—The imago appears on the wing in June and July, and the egg is laid during the latter month. The larva feeds up during August and September, or sometimes even in October. The pupa is subterranean, and remains over the winter.

Habitat—Donovan says "We have only a traditionary report that *Sphinx pinastri* has been sometimes found in Scotland; but as it is generally admitted, on that authority, to a place in the cabinets of English insects, we cannot refrain inserting in the present work." Curtis says, "Don 9, 296,—Sepp., v. 1, t. 4,—June. Trunks of Pines, Colney Hatch, near London, and Revelston wood, near Edinburgh." Stephens cites the same localities. Stainton says "By many doubted as a British species," and then quotes as above from Stephens, adding "I know of no recent captures." A specimen was exhibited at the Entomological Society of London in February, 1860, said to have been taken in a fir wood near Romsey by Mr. Morris. Great doubts were felt as to the authenticity of the specimen, for Mr. Morris was only a beginner and had not known the value of his capture. He had some Swiss

insects, but declared this had never been placed with them. The specimen was admitted to have been re-pinned and re-set, and, perhaps, the possessor of the specimen would be the only one who was convinced of its British nationality. I know of no further records—though many may have escaped my notice—until November, 1873, when a specimen said to have been taken near Harwich in June, 1873, was exhibited at the meeting of the same society. Two *D. euphorbiae* were shown at the same time, bred from larvæ, also said to have been found near Harwich. I know no further particulars, but neither of these species is included in a list of the hawk-moths occurring at Harwich, supplied me by F. Kerry, Esq., of that place. I see no reason why it should not establish itself in Britain, and shall not be surprised if at some future date it is proved to have done so. Suitable localities are abundant enough. In Europe it is widely distributed, but does not appear to be common in the North or East, nor to extend beyond the boundaries of the continent. The perfect insect appears to be very partial to the flowers of the honeysuckle. Kirby says "It is most frequently observed on the honeysuckle flowers in the evening, or resting on the trunks of poplars and other trees." Stanton says "Ratzeburg's receipt for finding the perfect insect is as follows:—We first see them at the flowers of the honeysuckle; and where this plant occurs, over arbours in villages, near forests, one can with certainty expect them at evening dusk if they abundant."

Variation.—Except slight variation in hue, or in the extent of the markings, I have heard of no departures from the type.

NOTE.—This species is placed among the "Reputed species," in Doubleday's list, and is excluded from Newman's book. Readers may judge for themselves if it is not rightly so excluded.

BRITISH ANTS—By G. C. BIGNELL.

(Continued from page 271.)

HABITAT.—Rare. Sherborne, Dorset; Ventnor, Isle of Wight.

GENUS SOLENOPSIS, Westw.

This genus may be easily known from any other British species of this group. The male has the mesothorax without the impressed converging lines observable in all the others; the female and worker have the metathorax without spines; labial palpi and maxillary palpi with only two joints; the antennæ of the male with twelve joints, the female and worker with ten; the club formed with two joints.

1. *Solenopsis fugax*, Ltr.

MALE.—Black, shining; mandibles, antennæ, and legs brown; tarsi and inner margins of the mandibles testaceous; entire insect covered with long pale hairs; mandibles with three teeth; scape of the antennæ short, about as long as the second joint of the flagellum, but thicker; the three apical joints are longer than the others; head and thorax finely rugose; abdomen shining, nodes of the petiole finely rugose; wings hyaline, nervures pale. Length, 5 mill.

FEMALE.—Brown-black, shining; mandibles, antennæ, and legs paler; entire insect hairy, like the male; mandibles with four teeth; abdomen shining and punctured, nodes of the petiole somewhat rugose; wings hyaline, nervures pale. Length, 6 mill.

WORKER.—Pale yellow, shining, covered with long pale hairs; clypeus bidentate; mandibles with four teeth; scape of the antennæ not quite so long as the flagellum, but reaching almost to the middle of the apical joint; apical joint almost as long as all the other joints of the flagellum together; abdomen with scattered punctures; first node of the petiole very wide behind and rounded, second slightly transverse; legs hairy. Length, 2 mill.

HABITAT.—Rare in England, and very local. It has been taken at Southend and

Deal.

M. Forel's remarks on the habits of *S. fugax* are too interesting to be passed over, he having paid much attention to this little ant, in the Canton of Vaud, Zurich, and in the department of the Drôme (south of France). He always found them inhabiting the nests of other ants, naming no less than sixteen species; and only found three or four isolated nests, and these he considered were originally inhabited by a larger species, but had been abandoned, *S. fugax* not being able to follow, in consequence of their want of strength to remove the females, which are about forty times heavier than a worker; while he daily met with it in the nest of different species,—sometimes forming its runs on one side of the nest, at others in the very centre, always keeping the galleries and channels distinct from those of its host, as, according to M. Forel, they are bitter enemies when they meet. He goes on to say, "Let us take a particular case, where the host is *Formica fusca*. Scarcely have we opened the nest when we see two desperate enemies in the presence of each other. The *Solenopsis* hang on with rage to the legs of the *fusca*, which turn them over and trample them down without noticing them. Four or five *Solenopsis* are often seen attached to a single leg of a worker of *fusca*, or a dozen clinging to its entire body. They fasten themselves on, bend round their abdomen, and work their sting violently, which quickly exhausts them, for they are less robust than courageous. Sometimes a *fusca* is seen to succumb under the number of its enemies; at other times to escape, more or less crippled; ordinarily it disengages itself, for as soon as a *Solenopsis* lets go, it falls, and it suffices the *fusca* to make two or three steps in order to be out of reach; others are violently thrown off, or removed by rubbing against divers objects."

On reading this we wonder how such

(To be continued on page 303.)

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COMMON THINGS.

WE have more than once called the attention of those of our readers who are but young in natural history pursuits to the importance of their "Notes and Observations" being sent to us. Our circle of correspondents is enlarging, and a tendency is manifesting itself to record everything noticed. We have to use the scissors rather unsparingly to many of these contributions; and while there is no doubt that we sometimes print a note of little importance, it is equally likely that in our ignorance we cut out many an important record. We have tried to err on the other side, for we believe it better to run the risk of repeating an item that every one knows, or publishing the same fact more than once, rather than run the opposite risk of not printing it at all. Some people seem to think that "Common Things" should not have any notice at all; yet there are many important matters to be learnt even about "Common Things," and many facts concerning them that we do not understand.

Travelling by rail one day with a botanical friend, we remarked the abundance of cowslips on the railway banks and in the fields. "Yes," said he, "they are very abundant here, but after another mile you will find they disappear altogether." And the fact was so, whatever the cause might be. Now in our opinion the occurrence of the cowslip is not worth noticing in a general way, yet this was a remarkable fact, not only worth recording as such, but deserving investigation and explanation. In a former article we spoke of our surprise at learning from the examination of a collection of local lepidoptera that the Common Blue (*P. Icarus*), along with several other, did not occur in the Huddersfield district. Newman, in his remarks on the distribution of the species, states that it is not found in the neighbourhood of Halifax, and from the contiguity of these places it may be assumed the entire district is without it. Is this an unaccountable circumstance, or can a reason be assigned for the fact? To us it seems very strange, and we would gladly publish an account of its cap-

ture there. Yet,—and we call the attention of our correspondents to this —if such a record were made in the ordinary way, “Captures at Huddersfield. Found *L. Icarus* rather common in the meadows and pastures,” every one who did not know the general absence of the species from that district would think the editor had been very much in need of matter to fill up his pages to admit such a paragraph. Again, were we to print “The members of the Hartlepoons’ Field Club had a ramble on Saturday, and found *S. Megæra* flying freely in all the grassy lanes,” ordinary readers would again credit us with being short of material, while the fact is that *S. Megæra*, which a quarter of a century ago was one of the commonest butterflies in the neighbourhood of Hartlepool, and in Durham generally, disappeared after one season and has never been seen since. Such a record then would really be an important one, uninteresting as it would seem to those who did not know of the non-occurrence of the species for so long a period.

We give these illustrations that our readers may see there may sometimes be considerable interest attached to the occurrence of the commonest species; but if the special interest such as obtains in these cases be not named, then such records are hardly worth making, and stand a good chance of

being cut out. We are as desirous of knowing all about the Common Blue as we are about the Camberwell Beauty —perhaps rather more, for the one is an undoubted Briton, and the claims of the other to be more than an immigrant are rather questionable. We will, therefore, as gladly welcome notes about common things as about rarities, only they should be notes of interest or importance.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

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S.B.W.—Your notes were printed without your name as you did not append it, but such papers ought always to have the writer’s name as an authority for what is said. We shall be glad of the further communication you promise.

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PITY THE SORROWS OF A POOR NATURALIST.

By GEO. P. STATHER, Huddersfield.

Read at a meeting of the Huddersfield Naturalists' Field Club.

It is related of Euclid that on one occasion, after he had successfully demonstrated a complicated and difficult problem, his king who was present asked him if there was not an easier and simpler way of solving the question. The wise old mathematician shook his head and answered that there was no royal road to geometry. This famous saying has been handed down and applied to learning generally, and it does seem to be a great natural law, admitting of very little, if any, exception, that things worth having are not to be obtained without a certain amount of difficulty and pain-taking, and hence, as a natural sequence, every pursuit or hobby has its drawbacks. If we are musically inclined and have set our affections on the piano, there is the constant tendency to get out of tune, necessitating visits of the tuner—visits by no means of the angelic character, "few and far between,"—and causing serious inroads on our modest allowance of pocket-money. Should we betake ourselves to the violin—that king of instruments—the matter is not much mended, for apart from the enormously increased labour of learning, there is always the chance of your E string breaking at a critical moment. It is extraordinary, by the way, what a knack these strings have of snapping at the most awkward and in-

opportune time; just, for instance, as you are in the midst of an exciting presto movement from some grand classical concerto, crack goes a string, hitting you, probably, a smart blow across the nose, and covering you with shame and confusion of face. Or say we do not care for music, but dote on flower gardening: then what torments await us. What martyrs we are to our neighbours' cats or poultry, and isn't our vocabulary in a fair way of being enriched by the addition of a new and original assortment of strong expressions. Does our taste incline us to join the volunteers and enrol ourselves among our country's defenders, then how often are our feelings wounded and our dignity insulted by such salutations as "Eds hup," "Right shoulder three-quarter march," "Who shot the cat?" and so on. But I will not delate longer on the painful theme. Perhaps enough has been said to prove the rule that every pursuit has some drawback—a rule to which the study of natural history is not an exception,—though it must in fairness be added that the advantages and pleasures far more than counter-balance the inconveniences and disappointments.

Have you ever, dear hearer, gone to the fruiterer and bought a pottle of strawberries? You have. Has it ever occurred to you to wonder by what law of nature the big strawberries always rise to the top while the little ones sink to the bottom? I confess it is a problem that has taxed my feeble powers as much probably as the famous question "How the apples got inside the dumplings" puzzled George III. I begin to suspect that the solution which enlightened the king will apply to my case, that it is the law of art, not of nature; and the strawberries, like the apples, are there because they are put there. Now we might, if we were worldwise, follow the example of a British shopkeeper, put our big strawberries at the top, and expatiate on the joys

of the naturalist whilst maintaining a discreet silence as to his troubles; but, either from superabundance of honesty or lack of worldly wisdom, we prefer to take the opposite course and describe some of the sorrows of the naturalist, leaving you the easy and pleasant task of finding out the joys for yourselves.

We will pass over the annoyance by being warned off the land by churlish farmers' men, or of being chased out of the field by indignant cattle, because these evils can usually be avoided by a little tact and discretion. The best way to avoid the first is to join our society, by which step you will at once become entitled to many valuable privileges (which our chairman will be happy to explain afterwards), and will have permission given to enter and roam about several extensive grounds which are not thrown open to the general public. If you are timid about the cattle—and our own experience goes to show that young horses are not by any means the most desirable of playmates—the safest course is to give them a wide berth till you know something of their manners and customs.

(To be continued).

ON THE MEANS OF DEFENCE OF INSECTS.

By E. L. RAGONOT.

It is well known that insects have many enemies to contend with, for they are the natural prey or food of the greater part of the more highly organized animals, and more especially of birds and reptiles; but many of the mammalia are insectivorous, and even man himself uses insects as food. I refer here to locusts, which are greedily eaten by the natives of Africa and part of Asia; the larva or grub of the palm weevil (*Calandra palmarum*), which is esteemed a delicacy even by the white planters of the

West Indies; and the *Termites*, misnamed white ants, which are made into a paste and eaten with great relish by the negroes in certain parts of Africa.

It is, in fact, a wonder, what with their natural enemies in the higher classes, their foes in their own class, to which may be added the ravages caused in their ranks by the weather, &c., that they should not in course of time be utterly exterminated; an all-wise Providence has, however, ordained otherwise, and has given to these apparently defenceless creatures great and endlessly varied modes of successfully resisting their numerous enemies.

The first, and probably most important reason why insects do not become exterminated, is because they are among the most prolific of animals; and, indeed, were it not for the wholesome check on their multiplication by their foes, they would soon cover the earth; and puny as they are singly, they would, collectively, devour every plant on the surface of the globe, and in process of time finish by destroying by their ravages, the whole of animated nature—not even excepting man.

As I said before, the means of defence of insects are very varied—in fact, endless; but as regards those directed against animals of higher orders they are generally of a passive nature, for few have weapons sufficiently powerful to use against other than their insect foes. It is more especially to these passive modes of defence that I would now direct attention.

Some insects, indeed, have means of forcibly resisting attacks from larger animals, and many of them would not hesitate to employ them against man himself. No one who has the least experience in hornets, wasps, bees, and even ants would like to attack their nests, and would be very cautious indeed in approaching single individuals of some of the above families.

The lancets of the mosquito could hardly

be called weapons of *defence* against man and the larger animals; they are rather weapons of *offence*, as many travellers have been painfully made aware.

Throughout their various stages of existence—viz., the egg, larva, pupa, and imago forms—insects have various means of defence. I shall give a few instances, confining myself as much as possible to the order Lepidoptera, and more especially to the insects that are found in this country.

The Egg State.—The eggs of insects are, as a rule, always laid in, on, or near substance upon which the future larvæ may feed, and their minuteness, must in a great measure, protect them from birds and other enemies, although such is not uniformly the case. Small as they are, however, they cannot always escape the eyes of certain small ichneumons—*Microgaster ovulorum* in particular, the female of which introduces an egg into them by means of her long ovipositor; and when the parasitical larva emerges, it feeds upon the other embryo larva.

Insect eggs being so small, and apparently so frail, it might be supposed that their greatest enemy would be the weather, but their nature is such that they are enabled to support with impunity a wonderful amount of extreme heat and extreme cold.

Spallanzani, in experimenting on the eggs of the "silk moth" (*Bombyx mori*), and subjecting them to various degrees of artificial heat, found that they did not quite lose their vitality till 144° Fahrenheit, whilst they bore without injury an artificial cold of 23° below zero.

The eggs are, moreover, generally protected from the inclemency of the weather by the way they are laid, for the parent insects, with an instinct which might easily be confounded with foresight or reason, generally deposits them close to the midrib, or on the axil of the leaf, so that the danger of their being destroyed is lessened.

The female of some species—the "gipsy"

moth (*Liparis dispar*), for instance, whose eggs have to bear the severe cold of winter, plucks, by means of a kind of tweezers, with which the end of her abdomen is provided, the hair or down from the extremity of her body, and wraps each egg separately in it, and when all are laid, covers the mass with the same down in such a manner that the rain or frost cannot penetrate. Others, such as the lacky moth (*Bombyx neustria*) and the small egger (*Eriogaster lanestris*), lay their eggs round a twig of hawthorn or other plants, and then cover them with a kind of varnish, which effectually protects them from wet and cold.

Very often, also, eggs owe their security to their colour resembling the substances upon or in which they are laid; and no doubt the way in which the female insect frequently disperses her eggs tends to prevent the extermination of the species.

The eggs of the "cockroaches" (*Blattidæ*), are laid in a very peculiar way, being enclosed altogether, but in separate cells, in a kind of case or capsule, in shape of a kidney, consisting of a tough substance called *chitine*; this case the female carries at the end of her abdomen until all the eggs are laid, after which it is deposited in some safe place.

The lace-wing fly (*Chrysopa reticulata*), whose larvæ feed upon aphides, lays her eggs on plants infested with these plant-lice in a curious manner. She attaches a drop of a gummy substance to the stem or branch, and drawing it out to the length of about an inch, deposits an egg at the extremity. In this way the egg is safe from attacks of the larvæ of the lady-birds (*Coccinellidæ*), or of the *Syrphi*. The foot-stalks of the eggs are placed at intervals along the stems.

The care and ingenuity which bees and wasps evince for the safety of their future progeny, from the attacks of parasites and other enemies, as well as the solicitude with which the ichneumons provide for the well-being of their offspring, is truly wonderful.

Lastly, I may mention that the eggs of such insects as bees, wasps, &c., which live in community, are so carefully laid and jealously guarded, that there is little danger of their being attacked by parasites and other foes.

A WALK TO STRATFORD-ON-AVON.

By GEO. F. WHEELDON, Birmingham.

THE other Sunday (the 2nd inst.) I started with a friend to walk to Stratford-on-Avon, a distance of twenty-two miles. We started from here at eight o'clock in the morning, directed our steps to King's Heath, some three miles, and here got on the towing path of the Stratford Canal. One of the first plants I noticed was the herb bennett (*Geum urbanum*). Although it had almost done flowering, its peculiar seed vessels were to be found in abundance. The most abundant plant here was the bird's-foot trefoil (*Lotus corniculatus*). We had not gone many yards before the dog rose (*Rosa canina*), honeysuckle (*Lonicera perelymenum*), and elder (*Sambucus nigra*) made their appearance; but two or three miles further the hedges were nothing but one mass of them, accompanied by the common blackberry (*Rubus fruticosus*), and the woody nightshade (*Solanum Dulcamara*). A little further along on the top of the embankment we found the field poppy (*Papaver Rhæas*), the ox-eye daisy (*Chrysanthemum Leucanthemum*), the strawberry-headed and white Dutch clovers (*Trifolium fragiferum* and *repens*); and in a field at the foot, the crimson clover (*Trifolium incarnatum*) and yellow rattle (*Rhinanthus major*) in abundance. We now began to pass several detachments of fishermen, and saw several small roach pulled out as we passed. Another mile brought us to where we found the ladies' bedstraw (*Galium verum*) and common speedwell (*Veronica officinalis*). Hearing a bird fly out of the

hedge above, I looked up, and found a nest of the chaffinch (*Fringilla cœlebs*) containing a nearly fledged young one and an addled egg. Presently we came to where the canal ran through a deep cutting, whose banks were covered on each side with the furze (*Ulex europæus*), broom (*Cytisus scoparius*), and the common bracken (*Fteris aquilina*), now some three or four feet high, with the red flowers of the fox-glove (*Digitalis purpurea*) picturesquely interspersed. This plant, of course, was to be seen rearing its purple head from amongst all the other herbage in the hedges all the way. In the canal we found in flower the water crow-foot (*Ranunculus aquatilis*), the water plantain (*Alisma plantago*), and the yellow flag (*Iris Pseudacorus*), the latter in abundance. A short distance further, where the canal ran on the level again, we found the knapweed (*Centaurea nigrescens*), the cut-leaved geranium (*Geranium dissectum*), and the hedge woundwort (*Stachys sylvatica*), while the hedge was one mass of honeysuckle, which scented the path for some yards ahead. While enjoying a quiet pipe for a few minutes, we studied a pocket map to find the nearest way, and found it would be nearer by four miles to leave the canal at Hockley House and take to the main road, a course we decided to adopt, especially as for the last two miles we had been walking over "shag" and small pieces of rock which they had lately put down to mend the path, and which was far from pleasant to walk upon. A few yards from the house we found two or three closed flowers of the white campion (*Lychnis vespertina*), and on a bank some quarter of a mile further, found the male fern (*Nephrodium filix-mas*) growing in all its glory. Under a bridge near here a canal boat was moored for the day, and a few yards from it we saw the boatman cutting a supply of grass for fodder. The only butterflies or moths we saw along the canal side were one common white (*Pieris rapæ*),

two or three meadow browns (*Satyrus janira*) and the yellow shell (*Campptogramma bilineata*), and silver ground carpets (*Melanippe montanata*) in abundance.

At Hockley House we struck off to the right, along the Stratford road for miles, when we found ourselves in Henley, in Arden, a pretty little quiet town. In the main street we noticed a dilapidated-looking monument, and on asking an inhabitant what it was, were informed that it was "The cross," which was all the information we could obtain. I do not think that if "The Cross" had been in Birmingham it would have stood a week, for it seemed as though a gust of wind would blow it over. We turned into a very cosy smoking-room for a few minutes, then started off again with eight miles before us. A mile past Henley we came to a small coppice, where we noticed, in the hedge, the dog roses and woody nightshade, growing to a height of eight or nine feet, and smothered with flowers.

About five miles from our destination we lay down under the shade of an oak on a bank for some five minutes or so, and while here I saw a hive bee, flying about from flower to flower, and noticed that it always alighted on the flowers of the white Dutch clover and never on those of the strawberry headed clover, although there were quite as many near. I had read some months ago Sir John Lubbock's "Insects in relation to Flowers," so I gathered a flower of the white clover, and was deeply interested by observing the way the flower opens when the bee alights on it, and then closes again by a spring when the pressure is removed, thus effectually preventing the rain from touching the pollen. In fact, so deep was I meditation, that I did not hear my friend saying it was time to get on, till he brought me to in rather a more forcible way. Along the roadside, and almost growing in the horse road, was the greater plaintain (*Plan-*

tago major) in abundance, and the banks on one side were quite white with the flowers of the meadow sweet (*Spiræa ulmaria*). As we got nearer to Stratford, the meadow browns (*S. janira*) came out in great force, flying along the banks; and we also saw another common white (*P. rapæ*), the only two we saw all day. Some two or three miles from our destination we found a few flowers of the yellow and grass vetchlings (*Vicia lutca* and *Lathyrus nissolia*) on the banks, and now and then a few flowers of the tansy (*Tanacetum vulgare*), the majority of the plants not being out.

We arrived at Stratford at 2.20 p.m., feeling very hungry, so our first care was to go and get some dinner, which we demolished very quickly. After dinner we had a wash, brushed our clothes and boots which were smothered with dust, then went down to the river, engaged a boat and started up. On our way we past several patches of the yellow water lily (*Nuphar lutea*) in flower, and saw some half-dozen or more water voles swimming across the river and finally disappear in their holes. When coming down the river at six o'clock we had one or two drops of rain and heard the thunder rolling in the distance, but it soon past over and we continued our journey down. My friend, who was steering, saw on the opposite shore a corncrake (*Crex pratensis*, which he thought could not fly (he was not a Naturalist), and would persist in landing to try and catch it, so he landed a few yards below the place, but, of course, when he got there the bird was "non est." We got back to Stratford at 6.30, settled up with the boatman, caught the seven o'clock train and arrived in town again shortly after eight, where we were surprised to see the streets so muddy, and learned that they had had a fearful thunderstorm at half-past three in the afternoon. We made the best of our way home, had some supper, and (I speak for myself), got off to bed.

THE YOUNG NATURALIST.

E. G. MEEK,

NATURALIST,

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SUGAR.

IN the writer's district, sugar is proving successful this season, for the first time for five or six years. Correspondents elsewhere complain that it is not productive of anything better than earwigs, which always seem to find it out. It may be worth while to say a word or two again about sugaring to our young readers, with a few hints as to sugaring notes. To the uninitiated, "sugaring" certainly needs explanation, and we well remember our amazement when first taken out by an "old hand" on a sugaring expedition. The partiality of nearly all insects for sweets is well known, but it was reserved for modern times to take advantage of this taste for the capture of certain species of lepidoptera. The mixture that we believe is generally used now-a-days is composed of coarse treacle mixed with a little rum. Some prefer ale, and we have used the "bot-toms" of port wine with considerable success. Probably the strongest smelling admixture may be best, but we have at times used treacle only. This

is daubed on tree trunks, posts or rails, stones, &c., before dusk, and visited after dark with a lantern. Various insects will be found congregated,—earwigs, spiders, caddis-flies, and others of nocturnal habits; but it is generally spread by the lepidopterist, and he expects more particularly to find *Noctua* upon it. Members of other groups do visit sugar occasionally, but they are never numerous, and none seem to do so regularly; but the *Noctua* are especially attracted by it, and it is a treat indeed to see them on a suitable night, almost shouldering one another out of the way; their eyes glowing in the lamp-light; their long proboscis extended, eagerly sucking up the liquid. As the rays of the lamp fall upon them some will drop off or fly away, but others will take little heed of the intruder, and you may box such as you desire without those remaining appearing disturbed. But many of the best species drop off as soon as the collector approaches, and it is well to have your net ready to receive them as they fall. They may safely be boxed from the sugar, for sweets of all

kinds, without alcoholic mixture, appear to have an intoxicating effect upon, and they will generally remain motionless after they are secured, until next day.

We do not know if there are any genera or species of *Noctuae* that never visit sugar, but if collectors would make a list of the species found in their neighbourhood, and observe how many of them occur at sugar, we should soon be able to ascertain this fact. Some, no doubt, only visit it now and then, thus we have taken more than one species of *Dianthæcia* singly, that could be taken freely at campion flowers within half-a-dozen yards; other species of the same genus we have never seen at sugar, though equally abundant at flowers. Facts of this kind should all be recorded and we direct our readers' attention to them. We have also taken certain day-flying species occasionally, such as *A. myrtilli*, which we once found at sugar; but then it is only a stray specimen of that insect that can reach our district, and we should be glad to learn its habits at home. Other day-flying species should be noted in the same way. Besides these and other notes of interest that may be made in reference to *Noctua*, a list of the *Geometrae* that have been taken at sugar would be worth making. We are not aware that an attempt has been made to record all the species that have been found to come to sugar, and if

our readers will send us the names of all they see, we have no doubt some interesting facts will be brought to light. Isolated observations are of very little use by themselves, but a number of isolated observations often lead to very important generalizations. Observations respecting common species will be as valuable as of rare ones.

Another class of observations much needed with respect to sugaring are those relating to meteorological or other influences that may have some effect on the numbers that appear. Sugaring the other night with the wind easterly, we did not see a single insect worth taking, but the next night with a westerly wind there was twenty to fifty *Noctuae* on every patch. Does this law obtain at other places? We are on the east coast where an easterly wind blows direct from the sea. What is the experience of collectors on the west coast? and what do inland sugarers find with regard to wind, &c.

These hints are only intended to be taken as a sample of the kind of observations that appear to us to be interesting or important. Others will, doubtless, suggest themselves to other collectors, and we shall be glad to find space for any remarks on the subject. Entomologists, no doubt, think themselves fairly intelligent, yet there are many things connected with their study (or amusement) concerning which their knowledge is still exceedingly limited.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now past due, and we will be glad to have remittance from those who have not yet sent them. Weekly numbers or monthly parts, post free, 6/- per annum, or 1/6 per quarter, *in advance*. Coloured plates, 2d. each extra. These can only be had direct from the conductors as above, but any one procuring them through the booksellers can have them coloured on application.

J. DAVIS.—Thanks. We have got a figure of the dipper's nest and have all the birds you name in our own collection.

NOTES AND OBSERVATIONS

THE CUCKOO.—On Wednesday last, as Mrs. Thompson, wife of the gardener employed at Thomas Heppell's, Esq., Leafield House, Birtley, returned into her house after milking a goat, she perceived a cuckoo sitting upon a little bed in the kitchen. She closed the door and captured the bird, when it was discovered that the cuckoo had laid an egg upon the coverlet. Both are in the possession of Mrs. Thompson, Wash Houses—*Newcastle Daily Chronicle*.

DIARY AT TENBURY.—June 2nd.—Elder (*Sambucus nigra*) in flower.

June 6th.—Privet (*Ligustrum vulgare*) and hedge woundwort (*Stachys sylvatica*) in flower.

June 9th.—Fragrant orchis (*Gymnadenia Conopsea*) in flower.

June 10th.—Dew-berry (*Rubus cæsius*) in flower.

June 22nd.—Goosegrass (*Galium Aparine*) and ivy-leaved lettuce (*Lactuca muralis*) in flower.

June 24th.—Devil's-bit scabious (*Scabiosa succisa*) and self-heal (*Prunella vulgaris*) in flower.

June 28th.—White water-lily (*Nymphaea alba*) in flower.—(Miss) N. PRECOTT DECIE, Sockleton Court, Tenbury.

PITY THE SORROWS OF A POOR NATURALIST.

By GEO. P. STATHER, Huddersfield.

(Continued from page 292.)

Let us suppose that you have taken up the study of entomology, and that, anxious to enrich your collection of moths and butterflies, you set forth some fine morning, furnished with a strong handy net suitable for general purposes, and having your pockets well supplied with the necessary apparatus for killing and setting out the specimens you may capture. As you pass along the street you attract a little attention, it is true, for the ubiquitous boy is ever on the alert for something to look at. Nothing comes amiss to him: from a conflagration costing £50,000, to a drunken man rolling along the road, all is fair game for him, and you must not expect to pass unobserved; but he contents himself with a stare and, perhaps, a chance remark, for he knows better than to follow you with the chance of seeing you get into a train or climb an omnibus. You have got fairly out into the country, and may now expect your troubles to begin. You have not got far down the road when you come across a few urchins at play. Immediately you are saluted with such sounds as "Hey! look you! butterfly catchers! let's go with 'em" and the like. It is vain to try and persuade them they have made a mistake as to your intentions. Your equipment confirms their statement. True, the boxes being made to fit inside each other don't take up much room, and they are snug enough in your pocket; but the rod, and above all, the net cannot be so readily disposed of; sharp eyes detect them however you may try to wrap them up, and the probable consequence is you find yourself accompanied by a volunteer retinue more numerous than select, who criticise your apparatus and discuss among themselves your probable destination and intentions with that charming frankness and utter disregard of conventional rules which

is so characteristic of the British boy.

What are you to do? You cannot send them back, for the roads and footpaths are as free for them as for you, a fact which they are slow neither to see nor to announce. It will never do to let them follow you to your hunting ground, for if left to themselves they will whoop and halloo till they make all ring again, and if you try to impress on them the necessity of being quiet each one will be so intent on keeping all the rest still that he will make more noise than ever, like a Sheriff in a police-court, crying "Order" and "Silence in court" till nobody can hear another word. Happy are you if you are near the homestead of a friendly farmer, or gateway of some private grounds which you are privileged to enter. Gracefully bidding adieu to your perhaps unintentional tormenters, and warning them not to follow, with mysterious hints of the big dog or the game keeper, you heave a sigh of relief and wend your way in peace and quietness. Should no such refuge, however, present itself, your best course will be to choose a comfortable bank, bestow yourself thereupon, take out your note book and begin to write. The youngsters will not stand much of that: it reminds them too much of school, impositions, home lessons, and such like bug-bears. Your patience will not be put to a very severe test; one by one they will troop off, leaving the coast clear at last. You have lost half-an-hour, may be, for it will not do to move till the last is out of sight, but you have rid yourself of your unwelcome attendants. It is a better plan than bribing them to go away, for if once they've tasted the sweets of bribery and corruption you are never safe from them—they are ever on the look out for the chance of levying black mail on any unfortunate entomologist who may chance to come that way.

The pond hunter fares somewhat better than his insect-loving friend, but he has his annoyances occasionally. Fortunately for

him, he can, if so inclined, entirely conceal his implements. His jars, or wide-mouthed bottles, filled with corks that will admit air and yet prevent water spilling, can be carried in a small basket if too large or too numerous for his pockets; his net, smaller than the entomologist's, can be made to fold in two; his rod is simply a walking stick: and thus equipped he can stalk through a regiment of the most inquisitive boys without attracting notice. No! his troubles are likely to begin after he has arrived at his hunting ground, the margin, say, of some old pond in the middle of a pasture field. For a while his fate permits him to search in quietness, but soon—far too soon—appears the "boy," whose mission in life seems to be to turn up just when he isn't wanted. Presently he begins: "Hey, mister, are you fishin'? it's no use fishin' in that pond, there's never nowt in it nobbut dead cats and dogs!" Now which shall you do? If you ignore his presence he will probably take offence and show it, not by taking himself off in a dignified manner as you or I might do, but by staying and making himself unpleasant. And if you come to think of it, a boy's capacity for making himself disagreeable, when he gives his mind to it, is—well it is simply unlimited. Perhaps the best and kindest way is to take him into your confidence, make a friend of him, and tell him what you are doing and why you are doing it. True, you run the risk of being set down in his mental note book as a person of weak intellect; but as that is not an indictable offence it need not disturb either your sleep or your digestion. One or two boys can be managed with a little tact and knowledge of human nature, but when it comes to a shoal of them, the best plan usually is to gather up traps and walk away to find a quieter spot.

But if you want to hear a tale of woe indeed, cultivate the acquaintance of an amateur aquarium keeper, and let him pour his griefs into your sympathetic ear. There

is something in the fascination of an aquarium that is almost diabolical. You may fail over and over again, now in this point and now on that, but the idea of giving up the whole affair in disgust never occurs to you, or if it do occur it is only to be scouted at once. If of a mechanical turn you perhaps try to make your own aquarium, especially as it will be a saving in cost. Unless you are painstaking, clever, and patient, our advice is the same as Punch's advice to those about to marry, "Don't!" Buy your aquarium if nobody will give you one; see it filled with water, and make sure that not a drop leaks out; carry it safely home yourself, or see it carried: so shall you save much trouble, worry, and strong language. I know a man—an ingenious man too—who would make an aquarium; he has made it, unmade it, and made it again six times over to my certain knowledge, and it leaks yet! Well, we will suppose you have got your aquarium, all you want now is some water and some fishes, with a few water beetles thrown in to make things look cheerful and lively. The tap is handy, and in goes the water. You haven't much time just then to go a fishing, or you don't exactly know where to go, so the market supplies your requirements in that line, and now you are prepared to enjoy your hobby; but instead of enjoying you are going to have trouble and disappointment, bringing with them, however, wisdom and practical skill and final success. First of all you find that things are more lively than cheerful with your fishes, and an examination reveals the fact that they are being bitten and harassed to death by the beetles. Both may have come originally from the same pond or stream, but circumstances alter cases. You may not be on friendly terms with another resident of Huddersfield, he lives at Lockwood and you at Hillhouse, so the peace is kept without any difficulty; nay, you may even meet and pass each other casually in

the street without coming to blows: but let adverse fate condemn you both to live together in one room and the consequences might be disastrous—something after the fashion of the Kilkenny cats. So it is with these little creatures. In a large pond animals of various and even antagonistic dispositions may and do contrive to rub along and exist in tolerable comfort,—to be sure, the strong prey upon the weak when they can catch them, but the chances of escape are numerous, and so the balance of life is pretty easily maintained. Now in an aquarium all these conditions are set aside—the space is limited, hiding places are few or altogether wanting, and the weakest goes to the wall with a vengeance. So at the cost of some trouble and vexation comes lesson No. 1, viz., to be careful about associating uncongenial companions in the same vessel. And this rule applies not merely to carnivorous beetles and their larvæ, but to some kinds of fish which are apt to swallow those less and bully those bigger than themselves. Sticklebacks and perch are open to this objection: they are both beautiful, lively fish, but they are not fit to live with any other species, owing to their quarrelsome, tyrannical disposition. The carp (gold and silver fish) is the most harmless and inoffensive of all, but then he really is such a dreamy, easy-going fish that there isn't much fun to be got out of him. Minnows are universal favourites, and they deserve it, for they are most lively and interesting fish, and soon become very tame; but even here it is not advisable to put big ones and little ones together—that is if you want to see the little ones again. Well, you try once more. The beetles and dead fish are got rid of, and some more fish procured. For a time all seems right, but by and by the fish take a fancy to swim round and round at the top, frequently poking their noses quite out of the water, then one by one they begin to subside quietly to the

bottom and after a wriggle or two they die. Enquiry on your part brings the knowledge that your glass is too crowded, that the fish, having consumed all the oxygen in the water, are dying for want of air. So you set to work to give the survivors fresh water; and this has to be done every other day or so, which entails a large amount of labour, to say nothing of sundry messes and slops, resulting in black looks from Betty, who is not of a naturalistic turn of mind, and who can't be always wasting her time with cleaning up master's fid-fads after him. And, after all, the result is not quite satisfactory, for the water, however oft you change it, never looks bright and clear as you many times see it in an old pond with muddy sides and clayey bottom. Further enquiry lets in a whole flood of light, and now you begin to see your way to success. Water plants are necessary for the perfect health and well-being of your pets. By a wonderful law of nature all plants consume carbonic gas and give off oxygen, whilst, as is needless to say, all animals consume oxygen and give off carbonic gas, so that each supplies the other's wants: that, together with another little matter to be mentioned presently, is the main secret of a successful aquarium. But beware how you stock your glass: there are water plants *and* water plants. Not every plant that grows and flourishes in the water is fit to be introduced in an aquarium. Some wont live at all—they cannot bear the confinement,—others run up tall and spindly and then die. Some live and grow, but they have a knack of getting themselves covered with a rusty-coloured scum which is very unsightly, whilst there are about half-a-dozen species which really do well, they are a great ornament, they keep the water bright and clear, and there is no need to change the water from one year's end to another. And this holds good equally of small as of large glasses. Instance.—I have a cylindrical

glass $7\frac{1}{2}$ in. high, $4\frac{1}{2}$ in. across, holds $1\frac{1}{2}$ pint; put in two small minnows, two handfuls of weed, neither gravel nor sand; water unchanged for more than a year, and is now brighter than when put in; fish have been perfectly healthy from first.

Now you think you are on the right track at last, but if you omit one other point there is trouble in store for you yet. You say there's nothing so inspiring as sunshine. Everybody likes sunshine. I've a nice south window with a good broad sill—that's the spot for my aquarium. Put it there and you will at once undo all your previous good arrangements. If the water does not get so hot as to kill the fish, it will in a couple of days or so grow so thick and turbid as to suggest the idea that some practical joker must have been trying to fatten your fish on pea soup. The cause of this state of affairs is not very apparent at first, but it arises from the fact that the water contains an infinite multitude of the seeds of microscopic plants. Warmth and intense light are favourable to the growth of these, and they do grow till they sometimes make the water so thick that you cannot see half-way through it. Perhaps you ask how it is that a pond, exposed to constant sunlight, does not become equally turbid. The reply is that the sides of a pond are not transparent, and the sides of your glass are so, that the conditions are vastly different. Fortunately the remedy is simple. Remove your glass to a north window, and in a few days the water, no matter how cloudy, will clear itself. Keep it in a north aspect, or, at least, away from direct sunlight, and you will not have to complain of muddy water again. So far from being an abstruse problem, an aquarium is the easiest thing in the world to keep in good order. Have plenty of suitable plants—you cannot very well have too many;—don't overstock with, or put together, unsuitable animals; choose a northern aspect; and—let them alone.

BRITISH ANTS—By G. O. BIGNELL.

(Continued from page 287.)

desperate enemies can live under the same roof. It explains itself, however, when we learn that the *Solenopsis fugax* lives in the nests of other ants just as mice live in our houses. They bore narrow galleries for their own use even in the partitions which the larger ants set up for separating their chambers. The reason for the *Solenopsis* occupying the nest of other ants appears, by M. Forel's remarks, to be that "they are so delicate that they can live but a very short time in the sun or dry air. In ordinary weather it is very rare to find a *Solenopsis* worker out of its nest." He therefore conjectures that they obtain their food in the nest: some portion from the sweets that must be spilt by accident or awkwardness by the hosts while feeding their young; also from dejections of the larger species, and from the saccharine matter obtained from the *pueros*, which were found in their small chambers.

As *S. fugax* is bound to avoid the large foe, it is worth mentioning how the males and females leave the nest of their host without being molested. "On the 16th September, 1868," M. Forel says, "it was a cloudy day without rain, but it had rained several days previously. The same day I had searched into a large number of ant-hills, and found them almost deserted in all their upper parts; the workers had retired to the deepest parts of the nest" (the winged males and females having departed at least a month before.) He saw "the top of a nest literally covered with workers of *S. fugax*, which appeared a yard off to be of an uniform yellow; they were following the movements of the males and females, which were taking their departure by the two or three little round holes bored for the occasion, and were climbing the surrounding blades of grass in order to take flight," the workers following them, until they flew,

just as the workers of other species do on similar occasions.

GENUS MONOMORIUM.

1. Monomorium pharaonis, Linn.

MALE.—Nigro-fuscous; abdomen shining; the flagellum and legs pale testaceous; antennæ with thirteen joints, the club composed of three joints; the thorax very closely and delicately punctured; wings hyaline, the nervures pale testaceous. Length, 2 mill.

FEMALE.—Pale rufo-testaceous; the antennæ with twelve joints, the last three forming the club; thorax elongate ovate; the posterior margin of the scutellum fuscous; abdomen dark fuscous, with the base pale rufo-testaceous; the apical margins of the following segments narrowly testaceous. Length, 2½ mill.

WORKER.—Pale reddish yellow, naked, smooth and opaque; the apex and sides of the abdomen more or less fuscous; metathorax not spined; thorax slightly constricted between the meso and the metathorax; abdomen smooth and shining.

Length, 1½ mill.

HABITAT.—Common in many houses in London, Hastings, Exeter, Plymouth, &c. "A native of tropical and sub-tropical countries throughout the entire world, living in houses."

GENUS MYRMECINA, Curt.

1. Myrmecina Latreillei, Curt.

MALE.—Black-brown, covered with rather long hairs; antennæ and legs somewhat paler; head with the vertex much rounded and elevated, the ocelli very prominent; antennæ with thirteen joints, the scape very short, about as long as the two following joints; mesothorax irregularly punctured and somewhat rugose behind, converging lines very deep and crenate; metathorax crenate at the base, apex with two short spines; wings very dark and hairy, margins ciliated, with an appendiculated marginal

(To be continued on page 319.)

THE YOUNG NATURALIST.

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NATURALIST,

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 142.

JULY 29TH, 1882.

VOL. 3.

WHAT DO WE KNOW.

DURING the last two weeks we have been endeavouring to impress on our readers the kind of observations needed to be made. We can but give a hint or two in each paper, and they must fill in all the rest for themselves. What is the object of publishing observations? It seems to us that it is to enable others to know what you have seen. But, then, if they and everyone else have seen it already, it would be no use publishing it. To record that water wets, and that fire burns, might once upon a time have been novel observations; but everyone knows now that they do so, and it is very properly taken for granted that everyone does know. But there are many matters connected with water and fire that have not yet been discovered, and any new observation on such subjects are as valuable to-day as were the first discoveries of the properties we have named. So is it with natural history. Very many things that were once new discoveries are now known to everyone who has

any acquaintance with such subjects.

But there is no branch of the subject on which everything is known. No single animal concerning which there is no more to learn. In fact, on many important matters our knowledge is just in its infancy, and we may well ask ourselves the question "what do we know?" In the magazines of the day we frequently see an article headed "Life History of" such and such an insect. In many cases this will begin with the depositing of the egg, and trace the insect through every change. Tell how it cuts through the shell; its mode of moulting, and altered appearance at each moult; its preparation for pupation, &c., &c. This is all as it should be, but it is not everything. The changes in its progress from the egg to the perfect insect are quite independent of the volition of the animal. The egg hatches as a matter of course; the appearance of the young larva in no way depends upon itself. As it grows older the moulting, pupating, and appearance in the winged state, all follow in natural succession. But what of its life during this time?

Why does one white butterfly deposit its eggs on cabbage, and another in the same garden on *Tropælium*? Why does one butterfly seek honey from one flower and another from a different flower? Does the same species differ at all in its habits? Do even the early brood and the late brood differ in these respects? All these and a thousand more questions might be asked, and who can reply? "What do we know?" We have but very few British butterflies, yet there are several of them respecting which we appear to know very little. We cannot tell with certainty, in what state many of them pass the winter. An article on their hibernation appeared lately in a contemporary by a well-known entomologist, and in it, it is said that *C. edusa* passes the winter as a larva. Is this really so? Other suggestions are made by other writers, and the very fact that there is a difference of opinion is a proof that we know but little about it. We really do not know how some of our commonest butterflies pass the winter. Of others we do not know how many broods there are in a season. One writer makes one statement quite positively, and another asserts just the opposite with equal certainty that he is right. They do not contradict each other, they merely state what they believe; but the fact is, so much is copied from books, so much is assumed, that where knowledge

terminates and conjecture begins is not easy to say, In September, of last year, we asked a question of an Entomological friend with reference to the number of broods of *V. urticae*. In our opinion his Entomological knowledge far exceeded our own, but he stated that this species was never known to pair before spring. Before the week was out we had some larva and pupæ presented to us, and a record was made in our columns of the double broodedness of the species last autumn. But again we would ask "What do we know?" Is this a regular occurrence?" Certainly it is not so far as our knowledge goes, but that is not very far.

What is the object of these rambling remarks? First, to call our readers attention to the kind of observations that are needed to be made. We do not necessarily want something new—that cannot always be had. But we want observations that convey information. We have pointed out before, that in making notes, it is often as important to repeat an observation as make it for the first time. A circumstance noticed once, may be a chance occurrence; if seen frequently, it would appear to be a habit. But if only recorded once, the regularity of its occurrence would only be known to those who had often seen it. On this subject we have spoken again and again, and will probably often do so in

the future. Our second object was once more to ask our readers for a life history. Last year we offered a prize for the best account of a British mammal which was awarded to Mr. J. Osborne. We now beg to offer a bound copy of either Volume I. or II. of this magazine, for the best life history of a British Butterfly. In making the award, special attention will be given to all facts stated as the result of personal observation; to notes on the habits, both of the larva and the perfect insect; and more particularly to any fact that has not been recorded before. Papers for competition should reach us by the last day of August.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now past due, and we will be glad to have remittance from those who have not yet sent them. Weekly numbers or monthly parts, post free, 1/- per annum, or 1/6 per quarter, *in advance*. Coloured plates, 2d. each extra. These can only be had direct from the conductors as above, but any one procuring them through the booksellers can have them coloured on application.

Mr. H. ANDREWS, Aldborough.—Thanks for the parasites. We have not known a dipterous insect parasitic on *C. caja* before,—of course, it is impossible to tell what species they are until they emerge.

A.F.L.—Many thanks for the valued information respecting *acis*. The larva is said to feed on Kidney Vetch.

W.H.B.—Pheasants eggs will be protected under the Game Laws, not under the more recent laws protecting certain species during the breeding season; but in any case, the police could do nothing on a mere verbal statement, unless their informant was prepared to substantiate it before a magistrate.

EXCHANGE.

DUPLICATES—1 *Stellatarum*, 1 *Z. trifolii*, 1 *T. rubi* (unset), 4 *T. crepuscularia* (2 very dark varieties), 1 *Pinaria*, 1 *P. gamma*, 2 *Zonaria* (1 male and 1 female), 1 *H. defoliaria* (female), and many others; 12 good-sized larva of *A. Fuliginosa*, &c. DESIDERATA—very numerous, especially *Geometrae*, and four of a species preferred. Write quickly, giving a list of duplicates and number, to W. HARCOURT BATH, Manor Grove, Sutton Coldfield.

DUPLICATES—*Rurea* and var. *Combusta*, *Fasciuncula*, *Albicolon*, *Carpophaga*, *Albulata*, &c. DESIDERATA—very numerous.—JOHN E. ROBSON, 15, Northgate, Hartlepool.

NOTES AND OBSERVATIONS

VARIETIES OF *P. ICARUS* AND *CAJA*.—Mr. J. J. Dixon has brought for my examination a variety of *P. icarus* he has taken here. The wings are entirely dark lilac blue, except a dark marginal band along the costa of all wings. The fore wing on the right side has the lunules, which are usually orange, very pale yellow. On the underside the lowest eyed spot on the fore wing is elongated into a streak. He has also bred a specimen of *A. Caja*, which has the hind wing on the left side, shading from pale yellow at the hind margin to pale red at the

base. The right side has the spots margined with yellow and a pale fringe. The fore wings are quite normal.—JOHN E. ROBSON, Hartlepool.

ASSISTANT NATURALISTS.

J. P. SOUTTER, Clyde Terrace, Bishop Auckland. All branches of Botany except microscopic.

JOHN A. TATE, 61, Merlin Street, Liverpool. Inhabitants of the Aquarium, Terrarium.

DR. ELLIS, 101, Everton Road, Liverpool, Coleoptera.

W. H. BATH, Manor Villa, Sutton Coldfield, near Birmingham. British Macro Lepidoptera. Will name specimens sent by post.

(We shall be glad of additions to these lists.

Any one communicating with the above will please enclose stamped directed envelope for reply, or stamped directed label for return of specimens.

MY MARINE AQUARIUM.

By J. OSBORNE.

You have frequently made room for my odd jottings on Natural History, and I have been induced to write on the present subject from the reference to fresh water aquaria, in the article "Pity the sorrows of a poor Naturalist." Though as a lad I had collected birds eggs, and had been fond of "gathering up the shells on the sea-shore," I had made no study of any branch of Natural History, and had no scientific knowledge of any kind. When aquaria first became the rage, I was smitten like other people, and as I lived near the sea, it seemed fitting that I should have a marine aquarium. I had a small globe in which gold fish had been kept, and in this I made my first attempt. I could not, of course, wait a single day, after I had taken the disease. I

had no knowledge on the subject, nor was I acquainted with any one who had, but with pail and basket set off for the rocks. My globe held about a gallon and a half, but I had not the slightest idea how many animals this water would contain. My main idea was to get all I could. I had a hazy sort of notion that sea-weeds were needed to keep the water sweet, so I took with me a hammer and chisel to break off some weed-covered fragments of rock. Two or three pieces covered with green weed were procured, and one piece studded over with small barnacles. These were arranged on a sandy foundation, so as to leave some secret recesses into which a crab or other animal could retire. Then I put in my live stock. A periwinkle or two, one limpet, a "dog-crab," a small hermit crab, and the fish, which were two kinds of eels, one dark in colour and the other much lighter. The rock-work was so arranged that it just reached the surface of the water. It had rather a muddy look—the water cleared slowly, and I went to bed without seeing any more of my new treasures. Next morning the water was clear, the paler eel was dead, the crab was sitting on the top of the rock-work, which had settled down somewhat during the night. It was twiddling its "feelers" at the surface of the water, and perched upon its back was the hermit crab. It never struck me that they were there because there was not sufficient oxygen in the water. The water was drawn off through a syphon, the stones re-arranged, and the remaining live stock replaced. The next day was Sunday, and the crab was dead; but the dark coloured eel, driven from its retreat by hunger, was prowling about the barnacle-covered rock, and whenever it got a chance, would seize one of the projected hands and tug away till it got the unfortunate animal out of its shell. Long I watched it, but if I made the slightest movement it was off to its retreat, to emerge again after a time.

Monday morning came, and when my aquarium was looked at, all were dead. The crab had a watery, semi-transparent look; the eel was much paler in death than in life; the hermit crab was out of its shell; and the water was unpleasant to smell. I had left it where the full rays of the sun would fall upon it, which with over-crowding had helped the catastrophe. I said everything was dead,—but the limpet was still alive. It was put in a basin of salt water and I tried again.

I now procured a large propagating glass holding perhaps ten gallons. I had a wooden stand turned to fit the curve at the top, with a hole for the nob, and in this it stood securely. A few inches of sand and fine gravel were put in, and some rockwork made of seaweed-covered stones cemented together, with plenty of dark chambers, ledges and crannies. The whole rested on a slate, and as soon as the cement was set it was put into the water with a fresh stock similar to the last, but more in number, and including a moderate sized smooth anemone. Next morning all were dead, except the anemone and the limpet which had survived the previous destruction. The lime in the cement had, no doubt, contributed to this, but, n thing daunted, I tried again. Luckily I had not far to go either for salt water or marine animals. I need not recapitulate every disaster, even if I could remember them correctly, but at last I seemed to succeed. By this time the seaweeds I had introduced were all dead, but a fine, fresh gr with were springing up, as well on the sides of the glass as on the rockwork. I had discarded the eels, which always died, and had a few pretty little blennies instead, which were lively little fish, not seeking concealment as the others did, but always in the open water, and soon becoming so tame as to come to the side of the glass at a tap, or to the surface if the fingers were held over it. They would eat any kind of meat

or fish, but not bread or any vegetable diet. I now learned to ærate the water with a glass syringe, and it seemed to improve it greatly. After syringing, the anemonies would spread their tentacles; the crabs, especially the hermits, would move about more freely; and everything appeared to enjoy their bath of fresh air. The sides of the gla s, especially that near the window, became thickly coated with gaeen weeds, with here and there a dark brown one, some of which grew well on the rockwork. This I used to remove as far as possible with a rag on the end of a stick, or rather, I used to follow the periwinkles, &c., to clear off what they had left. I always carefully avoided the darker weeds, which were thus allowed to grow. It continued in this state all through the summer, and for six months the water was never changed. At first I added salt water to make up for loss by evaporation. After I had learned my error I added rain water. As autumn approached the weeds began to die, and I had no idea how to deal with the decayed matter, which began to accumulate at the bottom. The underside of stones became black, and when the sand was disturbed all below the surface was black also. Still the animals seemed tolerably healthy; but on looking at it one morning I found the water thick and foul smelling, and every animal it contained was dead.

With your permission I will give you a few jottings of odd observations made during the time I kept it, but they had better be held over for another article.

BRITISH MOTHS.

BY JOHN E. ROBSON.

GENUS DEILEPHILA.

DEILEPHILA, Och., *Deilephila*, from two Greek words, signifying to love the evening alluding to their period of flight.

This genus contains three British species, all very rare and of extremely irregular occurrence. The following tabulation of them may help to name a single species, should any reader be fortunate enough to meet with one:—

1.—A white band on fore wing from the tip to the inner margin near the base.

A.—The band broad, 1, *D. euphorbiæ*.

AA.—The band narrow.

B.—The hind wing with a small rosy patch near the anal angle, 2, *D. galii*.

BB.—The hind wing much suffused with rosy; the veins of fore wings white, 3, *D. lineata*.

1. EUPHORBILÆ.

The Spurge Hawk-moth.

"EUPHORBILÆ, L., *Euphorbiæ*, feeds on spurge (*Euphorbia Paralias* and *Cyprisissias*.)"
—A.L.

Imago.—Fore wings rosy grey; an olive green patch at the base, scarcely extending to the inner margin; another near the centre and close to the costa, and there is often a smaller one nearer the tip; a triangular mark of the same colour, the apex of which reaches the tip, and the base the inner margin, extending from the anal angle to about the middle; beyond this the hind margin is rosy grey, often darker than the central portion. Hind wings black at the base; then rosy, with a narrow black band from the tip nearly reaching the anal angle, which is white.

Larva.—Ground colour greenish yellow or white, covered all over with black reticulations, making it appear to be spotted with the paler hue; or it may be described as black, with white or greenish yellow spots in rows round the back. At every segment there is one large oval spot on each side of the dorsal line, which is red, and a smaller one below. In younger specimens the dorsal line is sometimes white and sometimes yellow. Head red, with two black spots. Horn red

next the body, with black tip. Spiracular line red under each spiracle, which are whitish. Legs black; pro-legs red. This description is from foreign larvæ kindly supplied by G. T. Miller, Esq., of Gateshead-on-Tyne. The figure of this larva in Cassell's "European Butterflies and Moths" is very good, much better than those in Wilson's "Larvæ of British Lepidoptera," as compared with the specimens we had. As these may not be in some of our readers' possession we propose to give a figure of it.

Pupa.—Red brown, with darker reticulations, in a loose earthen cocoon.

Food Plants.—Sea spurge (*Euphorbia Paralias*), Cypress spurge (*E. Cyprisissias*) (Stainton), also Portland spurge (*E. p. rtlandica*) (Wilson). When the larvæ described reached us they had had no food for some hours, and none of the above named were obtainable. I tried them with the petty spurge, common as a garden weed (*E. pepplus*), and they ate it freely, and seemed to prefer it to the wood spurges (*E. amygdaloides* and *Esula*), with which they were afterwards supplied. Mr. Millar was unable to obtain any kind of spurge for them, and gave them dandelion, which they ate, but did not thrive upon.

Times of Appearance.—The imago appears in June, and continues on the wing during the following month. The larva is found from the middle of August to the middle of September. Mention was made under *S. pi astri* of this insect being said to have been taken at Harwich. It will be well to quote the passage in the *Entomologist* as I have not access to the proceedings of the Entomological Society:—"Mr. Higgins exhibited two bred specimens of *Deil phila Euphorbiæ* (one a remarkable variety) and a *Sphinx Pinastris*, taken near Harwich, in June, 1872, when several specimens were found in the larva state."—*Entomologist*, Feb. 1874, p. 46. The italics are mine, as the passage

is evidently an error, for *Euphorbia* could not well be found in the larva state in the month of June. It is not very clear which species is meant as being found in the larva state, but the *Euphorbia* must have been so, as they were bred, while the *Pinastri* was "taken." The larvæ of neither could have been found in June.

Habitat.—Very rare in this country. "Scarborough; formerly taken by Mr. Raddon at Braunton Burrows, near Bideford."—Stainton's Manual. "It feeds on the Sea spurge at Appledore and Braunton Burrows, near Barnstaple, where it was found by the late Mr. Raddon in abundance many years ago. The perfect insect has never been found in this country."—Newman. "Devonshire, Yorkshire, Hants, Essex."—O. Wilson. It will be observed that it is only recorded as a coast insect in this country. On the continent it is not uncommon throughout Central and Southern Europe, and extends also into Asia Minor.

As considerable interest attaches to so rare a species, it may be worth while to mention the earlier records of its occurrence in England. Drury appears to have been the first to figure it, which he does as a foreign insect ("Illustrations on Natural History," 1770-75, Tab. 29, Fig. 3.) Harris ("The Aurelian," 1778, Plate 44), says "It has been long in dispute whether the Spotted Elephant was a native of this Island; but it now past a doubt, as I have had the good fortune to find a caterpillar of this moth, in marshy ground at Barncray, near Crayford, in Kent, about the middle of August (1778); it was better than three inches long, of a dark brown colour; the horn at the tail part, which was about half an inch long, appeared long and glossy. The head was nearly the size of a small pea, of a lightish yellow, brown, or tan colour. I tried various herbs to bring it to feed, but my attempts were fruitless, and it died for want." Donovan pointed out that Harris's

figure did not agree with either his figure or that of Roesel (Plate 1, Tab. 3.) Curtis afterwards suggested that this larvæ was not *Euphorbiæ*, but *Galii*. Donovan figures the larva, pupa, and imago, but says that the particular larva figured could not be guaranteed to be British. He states, however, that "a damaged specimen of the fly has been taken at Bath, and is in our cabinet"; which Newman must have overlooked when he said it had never been found in England. In 1824, Curtis gave a beautiful figure of the larva and imago, that of the larva being from a specimen found by Mr. Radden, at Braunton Burrows. These were found feeding on *E. paralias*. Curtis also says "when more advanced they became so conspicuous, that their numbers are reduced by marine birds which feed upon them." Newman is probably referring to this statement when he says "it becomes a most beautiful object, and so conspicuous as to attract the sea-gulls and terns, which devour them in numbers." In strange contradiction to these statements, Kirby ("European Butterflies and Moths," p. 70), says, "The larva is seldom attacked by birds, to some at least of which, it appears to be poisonous." It is now well known that gaily coloured larvæ are often distasteful to birds and other insectivorous animals.

Variation.—Two varieties are named in Staudinger. *Paralias*, Nick, which is redder than the type, and *Esula*, marked with doubt as from Southern Italy. The names given to these varieties suggest the idea that they are supposed to have fed on the spurses so called. I have heard of no British variety, except that named in the quotation from the *Entomologist*. Certainly no two specimens are exactly alike, varying slightly in the extent of the markings, or depth of colour, and it is quite likely that well marked forms occur where it is abundant.

E. G. MEEK,

NATURALIST,

56, BROMPTON ROAD, LONDON, S.W.

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 143.

AUGUST 5TH, 1882.

VOL. 3.

THE STUDY OF NATURAL HISTORY.

THAT now, in the nineteenth century, it should need any argument to prove that the study of natural history is of utility, is absurd and yet true. But it is a fact that there are a large number of people who look upon the naturalist as a kind of go-between a harmless lunatic, and a walking curiosity shop. But the strangest of all is, that those who have the power have not the inclination, to make the study of nature as popular as it really ought to be. Yet while it cannot be denied that there are a vast number of people to whom natural history is as a foreign language, and these people look upon the naturalist with suspicious awe, it must be admitted that these people are getting fewer, and that students of the great book are consequently becoming more numerous.

The man who looks upon the study of natural history as a useless hobby can never have given a moment's thought to the subject, for if he had, it must have been apparent on every

hand that it is not only a useful pursuit, but in many cases a most essential one. But even to admit that it is only a recreation, how very far it is in advance of most other recreations of the present day! I will not mention such as horse racing, and all other kind of racing, pigeon flying and shooting, and all their consequent betting and misery; but take one of the higher recreations, such as cricket, and compare it with the study of natural history. Cricket is physical exercise, and when you have said that you have exhausted its virtues; but the student of nature has both physical and mental exercise. He is taught to observe and to admire the grand and the sublime. His study takes him over hill and dale, through pleasant fields and shady woodlands. It takes the town operative out into the balmy country, where not only his mind is improved but his body strengthened, and he returns a better and happier man. Let him dive into the vast depths of the invisible world, let him see the grand adaptation and the wonderful, and if he be a man of veneration it will make him firmer and

truer in his belief. He will feel that this vast universe is beyond his powers to comprehend, that go wherever he will there are things strange and stranger still, and that the power which called him into being and governs him called these into being and governs them also. Wordsworth had a true naturalist feeling when he wrote:—

Books! tis a dull and endless strife,
Come hear the woodland linnet!
How sweet his music! on my life
There's more of wisdom in it.

And hark how blithe the throstle sings!
He, too, is no mean preacher;
Come forth into the light of things,
Let nature be your teacher.

She has a world of ready wealth,
Our minds and hearts to bless;
Spontaneous wisdom breathed by health,
Truth breathed by cheerfulness.

Our impulse from a vernal wood,
May teach us more of man,
Of moral evil and of good,
Than all the sages can.

But we deny that natural history is a mere recreation, it is something more, and is more worthy a place in our education than many things which are taught now. What, for instance, is the use of "cramming" every child with the theory of grammar, it is only necessary for those who are to become teachers; a child, if brought up in proper company, will learn to speak and write grammatically and correctly by hearing others do it, without having the minute technical knowledge lavished upon all children now. Some

knowledge of the things which surround us and which we come in contact with in every day of our lives, surely is of more importance than such tuition as this. Take for instance the science of botany. What an incalculable boon it has been to mankind that some persons have devoted their time to the study of plants. You need not be remind that for cotton, linen, and other substances of great utility, we are indebted to those who made plants their study. For medicine, too, the field of botany is almost inexhaustible, and so wonderful and sure are some of the remedies obtained from the vegetable world that there is scarcely a physician in the country, if one at all, who totally disregards plants as curative agents. A knowledge of the uses of some of the common herbs which grow upon every wayside will often save a person—that is, if the herbs are applied according to the knowledge—from a lengthened disease, a doctor's bill, misery, and perhaps death. In many cases a person is so situated that he cannot obtain medical aid, and if he is taught how to administer nature's own remedy to himself, will anybody be so insane as to say that that knowledge is not of very great utility to him? For all the vegetables we eat, and for all the beautiful flowers with which our houses are adorned, we are indebted to some one who has brought them from a wild state, and by selec-

tion and cultivation trained them to be fit for our use. And on the other hand, how often do we read of children having been poisoned by eating poisonous plants? Yet those children had, no doubt, been taught all about nouns, adverbs, and pronouns, but of what use was this to them, when by want of a knowledge of plants they had been poisoned by eating the deadly kinds?

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now past due, and we will be glad to have remittance from those who have not yet sent them. Weekly numbers or monthly parts, post free, 6/- per annum, or 1/6 per quarter, *in advance*. Coloured plates, 2d. each extra. These can only be had direct from the conductors as above, but any one procuring them through the booksellers can have them coloured on application.

A.G.S. AND OTHERS.—We are very much obliged to you for your communication, which shall have attention. We think it is not necessary to publish your letter, but will write you.

PLATES.—The plate that should have been issued with last number was not ready, and the paper was sent without it. The monthly parts have been delayed till it could be included. It is sent to weekly subscribers with the present number, but will be supplied with No. 142 in future. Those ordering back numbers will please note this.

EXCHANGE.

I shall be glad to send living specimens of *Pissodes pini* to anyone desiring them.—JOHN E. ROBSON, 15, Northgate, Hartlepool.

DUPLICATES.—*Geryon, Capsincola, Bidentata, Borcata, Chi, Zonaria*. DESIDERATA.—Very numerous; many common butterflies wanted.—TOM ROBSON, 15, Northgate, Hartlepool.

Paphia, Euphrosyne, Selene, Batis, Umbrosa, Triangulum, Diluta, Herbida, Nebulosa, Lonicera, Saticis, Bucephala, Ulmata, Albicillata, Gonostigma, and larvæ. DESIDERATA.—Fine specimens of many species.—J. LISSAMAN, 48, Court, 28, House, Lyons St. Coventry.

DUPLICATES.—*Vanessa cardui, Abrazas ulmata, Abrazas grossulariata, Poliz chi, Hybernia defeliaria, Hybernia progemma, Lycenæ alexis, Bombyx quercus, Noctua festiva, Noctua augur, Plusia gamma, Flavicornis*.—RICHARD HAYHURST, 16, Anderson Street, Maningham, Bradford.

NOTES AND OBSERVATIONS

PLUSIA BRACTEA, near Morpeth, Northumberland.—It has been a very bad year here for treacle. Nothing whatever to get, we have sugared almost everywhere, but can never get a solitary specimen, whereas last year we took all sorts of *Noctua* in swarms. A friend of mine, Mr. J. G. Scott, has taken a *P. Bractea*, at Pleasey, near Morpeth this week. He also took several *Camelina*, at the beginning of the season, at the same place.—GEORGE T. MILLER, Gateshead.

SUGAR IN DEVONSHIRE.—Sugar has, with me, yielded nothing but the very commonest species, such as *Exclamationis, Segetum, Polyodon*, etc., in June; *Oculea, Pronuba*, etc., now, and these by no means plentiful. Perhaps if I had sugared more persistently the result might have been a little better, but it was too discouraging.—(Miss) K. M. HINCHLIFFE.

SUGAR AT HARTLEPOOL.—I sugared some posts and rails on the Sand-hills on Friday night, 28th July. There was scarcely a breath of wind, and a heavy dew falling. The low land on the west of the railway was covered with dense white mist making it appear as if covered with water. It was exceedingly "close," and I thought a good night for sugar, but scarcely anything visited it. *Polyodon* and *pronuba* were scarce, and such species as *pallen* and *impura* only appeared singly. A week before, these species were shouldering each other out of the way, and many others were equally abundant. The best thing I got was a female *cytherea*, which has laid me a lot of eggs. I turned in disappointment from sugar to ragwort. Nothing upon it but *cubicularis*, which has been abundant at everything for at least two months. *Triticum*, which is just out and fine, was scarcely obtainable, and except *pronuba*, and one or two *M. literosa*, I saw nothing else but one *N. baja*. I understand from Mr. Gardner that he took *N. ravidata* at sugar the same night. *Ravidata* was never common here, and I have not heard of a capture for several years.—JOHN E. ROBSON, Hartlepool.

BOTANICAL DIARY (continued from No. 134, p. 243.) Ash leaves (*Fracinus excelsior*) May 10th; scarlet pimpernal flowers (*Agallis arvensis*) 13th; fly orphrys flowers (*Orphrys muscifera*) 14th; ragged robin flowers (*Lychnis flos-cuculi*) 14th; birds-foot trefoil flowers (*Lotus corniculatus*) 17th; yellow iris flowers (*Iris pseudacorus*) 21st; dog rose flowers (*Rosa canina*) 8th; honey-suckle flowers (*Lonicera periclymenum*) 2. th; field knautia flowers (*Knautia arvensis*) June 3rd; bladder campion flowers (*Silene inflata*) 3rd; white bedstraw (*Galium palustre*) 3rd; yellow bedstraw (*Galium verum*) 10th; dewberry flowers (*Rubus cæsius*) 10th; meadow cranesbill flowers (*Geranium pratense*) 10th; woody nightshade flowers (*Solanum dulcamara*) 11th; foxglove flowers

(*Digitalis purpurea*) 15th; wild cornel flowers (*Cornus sanguinea*) 15th; white water-lily flowers (*Nymphaea alba*) 20th; yellow water-lily flowers (*Nuphar lutea*) July 2nd; meadow sweet flowers (*Spiræa ulmaria*) 2nd; greater bindweed flowers (*Calystegia sepium*) 4th.—A. DAVIS, Junr., High Street, Great Marlow, Bucks.

ECONOMIC ENTOMOLOGY.

BY S. L. MOSLEY.

IV. Insects injurious to Window and Greenhouse Plants.

Aphis.—The Aphis, or Green Fly is a great pest on many kinds of plants, and its prodigious powers of increase makes it very troublesome to get rid of. Rose-buds are particularly liable to be infested by it, and almost every kind of plant is more or less subject to its attacks.

REMEDIES.—Nature has provided a remedy in the whole tribe of Lady-bird beetles (*Coccinella*). Both the beetles and the larvæ which produce them live upon these plant lice, and if a few can be caught and placed upon an infested tree they will soon clear it. The larvæ of the Hawk-flies (*Syrphus*), and Lace-winged flies (*Chrysope*), also live upon plant lice, and should be encouraged. Artificial remedies are syringing with tobacco water, warm soft soap water, or dusting with powdered sulphur. Small plants may be taken up and rinsed in tobacco and soft soap water, as hot as the hand can bear, finish with cold clean water and re-plant.

Scale Insect.—This insects attacks the vine. The female is in the form of a scale, firmly attached to the stem of the plant. The male has four wings. The insect injures the plant by sucking the juices.

REMEDIES.—Washing and brushing with a hot application of soft soap and water, or painting the stems with a thick coating of paint composed of clay, soot, sulphur, and water.

Red Spider.—This insect is not a spider, but a mite, and is sometimes very troublesome in greenhouses, where they exist in countless numbers.

REMEDIES.—Procure some sulphuret of lime, or make it by boiling 1lb. flour of sulphur and 2 lbs. of fresh lime in four gallons of water. Of this sulphuret, take 4 oz., soft soap, 2 oz.; hot water, one gallon. Mix the soap and sulphuret well, and pour on the water while stirring. When cool enough to bear the hand, syringe with powerful engine, dip infested shoots, or brush stems and bark.—(*Miss Ormerod's Manu. l.*)

BRITISH MOTHS.

BY JOHN E. ROBSON.

2. GALII.

The Bedstraw Hawk-moth.

"GALII, F., *Gal'ii*, feeds on Bedstraw (*Galium verum*)."—A.L.

Imago.—Fore wing dark olive green along the costa, followed by a pale yellowish band from the tip to the anal angle; the costal markings and this band are irregularly indented into each other, but the lower edge is well defined; hind margin greenish grey, and between it and the central band is an olive-green triangular mark as in the last species, but broader at the base, and only reach the tip as a narrow line.

Larva.—Dull greenish yellow to pale brown, with a faintly darker dorsal line; on each side of this is a row of black rings. The larvæ with greenish ground have the centres of these rings yellow, the brown larvæ have the centres paler brown. There is one of these rings on every segment but the second and last, the fourth segment has two, and that on the twelfth is oral in shape. Horn black at tip; spiracles encircled by black.

Pupa.—Dark reddish brown; it changes on or just below the surface, among leaves, &c.

Food Plants.—Its natural food is undoubtedly yellow bedstraw (*Galium verum*), but it has been found on the white bedstraw (*G. mollugo*) also, and in gardens on fuchsia. It will also eat willow herb.

Time of Appearance.—The perfect insect appears in this country from June to August, and the larvæ feed up that same Autumn. I have seen it feeding as late as November. The pupa remains over the winter, and sometimes for more than one.

Habitat.—It seems to be rather partial to the coast, the yellow bedstraw generally growing profusely on sand banks near the sea. It has been taken in most of the English counties around the coast, but appears to be most abundant on the south or south-east. It has also been taken in some inland places, and also in Scotland and Ireland. Abroad it is much commoner and more generally distributed, being widely spread over Europe, and occurring also in Western and Northern Asia.

A WALK UP THE WREKIN.

By W. HARCOURT BATH.

ON Friday, 28th July, having occasion to be passing through Wellington on the way to Birmingham, I thought it would afford me a good opportunity to go up the Wrekin (1320 feet above the level of the sea). Having arrived at Wellington at 8.45 a.m., and leaving my luggage at the station, I made my way quickly out of the town and got on to the main road up to the Wrekin. About five minutes' further walking I turned to the left and commenced the ascent of the Ercal Hill, and arrived at the top after fifteen minutes' hard but pleasant walking through fine oak trees and bracken fern. On the summit were numerous pieces of

crystalised limestone strewn about. I now thought it quite time to put my handkerchief at the back of my head, for the flies were following me in thousands, and kept up a continual humming. The further I walked the more numerous they appeared to become, till I was nearly driven mad with their itchings. Now and then when I looked at my hand I beheld spots of blood on it, there were something else besides flies. Everyone knows how uncomfortable it is for flies to keep settling on their nose. It made me quite out of humour to search for moths, although I managed to obtain several new species (to me). Passing over on to the Lawrence Hill, I seated myself on a bed of purple heather, which looked beautiful, being in full bloom. Rabbits here were extremely numerous, running down the slopes and in the valley beneath. I observed several kestrels soaring about in quest of prey; some of them were making a peculiar screaming noise which sounded like a young bird or a chicken. Now and then one would give a dart, but I could not see what they took. Wood pigeons were abundant everywhere. Jays were also very plentiful, several denoting their presence by a screech. After staying here for a short time I passed down into the valley after a very steep descent. At the bottom a quarry is worked and a capital section obtained. The great beds of volcanic agglomerates are seen clearly defined, dipping into the face of the quarry, and, therefore, nearly in the direction of the length of the hills. Some of the blocks of which the agglomerate is composed are of considerable size, and some are of the beautiful red altered glassy rock. I took several small specimens with me. Cutting through these beds there are two or three dykes of an ancient basalt, one of them dividing into two branches in the upper part. Continuing along the road I observed the quartzite, which flanks the hill sides. The grass which covers the surface

of the ground obscures the geological structure, but one or two bosses of trap will be noticed, and at the south end the altered pitchstone stands out in a bare mass of rock, from which a splendid view of the surrounding country is obtainable. At the bottom of the valley is a stream, which I followed for a short distance till I came to a field which was completely crowded with meadow browns and small heath butterflies and bees; then going through a wicket I came on to the main road, and turned into a farmhouse on the left to obtain a little refreshment. The people of the house evidently did not understand trading, for when I asked what was the damage they said three halfpence for two glasses of milk and two slices of bread and butter,—but, of course, I gave them more. They would not have fared well in "Sharper Brum." They were very civil people. Leaving I went across a field and disturbed a grey plover off her nest, but I did not stay to look for the eggs. Five minutes' walk more and I came to the foot of the Wrekin, which I soon ascended. From its peculiarly isolated position this huge wood-covered mass of volcanic rock commands an extremely fine view, and "the gaunt Wrekin, like a well-strung bow," is a landmark all through the midland counties. The prospect extends from Edge Hill, south of Birmingham, to Cader Idris, and from Malvern to the borders of Yorkshire. I walked along the summit till I came to a prominent rock on its most southern end. The weather was very fine, but it was not so clear as I should have wished for, although I had a magnificent look round. Returning at about 12.30 p.m., I passed down into the horse road and made the best of my way to Wellington (three miles), and after taking lunch and having a look about the town I took the 2.7 p.m. train back to Birmingham, from whence to Sutton and home, after spending a very pleasant morning on the Wrekin.

BRITISH ANTS—By G. C. BIGNELL.

(Continued from page 303.)

cell, and one sub-marginal; abdomen smooth and shining; nodes of the petiole irregularly rugose; legs finely pilose. Length, 4 mill.

FEMALE.—Black-brown, the clypeus, mandibles, antennæ, legs, and the underside of the thorax, and nodes of the petiole, reddish testaceous; head rugose, antennæ twelve-jointed, the scape thick, and about as long as the nine following joints of flagellum; mesothorax smooth in front, longitudinally rugose behind; metathorax with two horizontal spines; abdomen shining, finely pilose; nodes of the petiole rugose, basal node nearly quadrangular, the second somewhat rounded in front, truncate behind; legs finely pilose. Length, 4 mill.

WORKER.—Thorax more rugose; otherwise like the female. Length, 3 mill.

HABITAT.—Rare. Isle of Wight; London district.

The following species are without doubt importations, and occur only in greenhouses or bakehouses, where the heat through the winter enables them to hold their footing in this country.

Tetramorium guineense (Kollari. Smith.)

A notice of the capture of this insect will be found in *The Entomologist's Annual*, for 1871. It was taken at Sheerness in 1866. Mr. Smith says, "*Tetramorium Kollari* is of the same size as the common *Leptothorax acervorum*, and at first sight looks very like it; but it has four-jointed maxillary palpi; *Leptothorax* has them five-jointed; in both the labial palpi are three-jointed. The most obvious distinctions—those indeed which will at once serve to separate the species—are, first, the colour of the head: in *L. acervorum*,

it is black or dark brown; in *T. Kollari*, it is palish red, the same colour as the thorax. Another distinction is, that the former insect has the head very delicately striated longitudinally, whilst in the latter it has a number of longitudinal carinæ, between which it is coarsely punctured; the thorax is also rugosely punctured; the antennæ are entirely pale; the club in *L. acervorum* is blackish."

Tetramorium simillimum, Smith.

WORKER.—"Head, thorax, and nodes of the penduncle rufo-testaceous; mandibles, flagellum and legs pale flavo-testaceous; abdomen rufo-fuscos, shining, and pale at the base and apex; thorax rugose-striate, the anterior margin transverse, the angles acute; thorax continuous, not strangulated between the meso and metathorax, the spines short and acute; metathorax truncate; nodes of the petiole finely rugose. The insect is thinly sprinkled with short erect pale hairs, most apparent at the apex of the abdomen."

Found in a greenhouse at Exeter, and at Glanville's Wootton, Dorset.

GENUS PHEIDOLE, *Westw.*

1. Pheidole megacephala (lævigata, Smith.)

(The house Ant of Madeira.)

WORKER.—Rufo-testaceous; mandibles, antennæ, articulations of the legs, and tarsi pale testaceous; head, thorax, and abdomen highly polished and smooth; the prothorax forming a neck, being narrowed towards the head; metathorax truncate and very delicately reticulated; the spines very minute; the first node petiolated, the second widest and globose; in the WORKER MAJOR the head is very large, from three to four times larger in proportion than that of the small worker. Length, 3 mill.

(To be concluded on page 315.)

THE YOUNG NATURALIST.

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THE STUDY OF NATURAL HISTORY.

(Continued from page 315.)

AS with botany it is the same in the insect world; it forms no part of our instruction to know our friends and our foes, and while the former are often killed under the impression they are doing some damage, the latter are permitted to revel in peace and plenty. As an illustration of the manner in which insects can effect us, I need only mention that in the year 1826, one particular kind of insect made a difference in the top produce of this country of £450,000. This was caused by what is popularly called a "blight," but the manner in which people talk of "blight" shows a deplorable want of entomological knowledge. Not long ago a person came to me to ask my advice upon a certain point. Some of his property had been attacked by insects, and was known to popular ignorance as being "moth-eaten." Seeing a number of moths about his premises he had killed a large number, but left as harmless little creatures, those small beetles which were the real perpetrators

of the injury. Another episode is, that one day I received two insects from vinerics of one of the largest houses in this district, with the intimation that they were very numerous and that the gardener feared the crop would be destroyed, as the insects were gnawing the bark and leaves from the plants. I took the trouble, or perhaps I should rather say the pleasure, to walk between three and four miles one rainy day to see the nature of the attack, and found the enemy at work and the head gardener aghast. By seeking the advice of Miss Ormerod, now consulting entomologist to the Royal Agricultural Society, I was able to suggest remedies which, I believe, were acted upon, and which in consequence saved the vine crop. For this I received nothing, nor would I have accepted anything if offered, but I did not expect, when I asked permission from the owner to collect a few insects in his woods, that I should be refused. The common black ground beetles so common in every garden are generally destroyed when found. People have never been taught that they

are carnivorous, and that they destroy other vegetable-eating insects and slugs.

From insects we turn our attention to birds. Here we find it just the same. Not only harmless birds, but others of considerable benefit like the kestrel and owls, are ruthlessly destroyed under the impression that they are destroyers of game; even the cuckoo, a bird so loved and welcomed by almost all, has been found nailed up in the gamekeeper's museum as a destroyer of game. And what can we expect from such mistakes when those in authority make such glaring blunders? Parliament recently passed a "Wild Birds' Protection Act," but the principle of that Act is past the power of any naturalist to find out. Grain-eating and insect-eating birds are alike protected, and even the sea birds, which feed upon fish, are protected as the fishermen's friends; until now, when the Act has been in operation a few years, the birds have so increased in some localities as to render it almost impossible for fisherman to obtain remuneration for their toil. Some birds eat fruit, others grain, and others insects. Some eat one thing at one time of the year, and another at other times, and ought not the farmer and gardener to know all this? Go wherever we will, into any rank of society, or into any station of life, a knowledge of natural history can never be out of place; but for the want of it

we see, almost daily, most disastrous and deplorable results. Man attacks his friends and slaughters them; he leaves his enemy to perpetrate his evil deeds; the poor starve to death while vegetables grow abundantly in every field.

Temptations beset us on every side, and if young men and young women have not some good thing wherewith to occupy their minds, evil things will step in. The study of nature, whether it be as a naturalist or as an artist, is suited to either sex; it will lead people to a healthful and a pleasant life; it will free you from many of the temptations which beset your path; it will open out a wide field for the exercise of your body and mind; and in many cases which I have known, it has freed persons from the demon chains of drink.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now past due, and we will be glad to have remittance from those who have not yet sent them. Weekly numbers or monthly parts, post free, 6/- per annum, or 1/6 per quarter, *in advance*. Coloured plates, 2d. each extra. These can only be had direct from the conductors as above, but any one procuring them through the booksellers can have them coloured on application.

EXCHANGE.

DUPLICATES — Lepidoptera: *Defoliaria*, *Aurantaria*, *Progemmaria*, *Leucophearia* (males), *Zonaria*, *Ulmata*, *Perla*, *Chi*, *Pilo-*

saria (males), *Carpini* 2 females, *Dispar* 3 males, *Bidentata* 2, *Casiata* 4, *Ferruginea* 4, *Spadicea*, *Macilenta* 2, *Tenebrosa* 2, *Dahlia* 1 pair, *Suspecta* 1, *Glaucia* 1, *Turoa* 1, *Instabilis* 4, *C-nigrum* 4, *Camelina* 2, *Fulgiginosa* 1, *Velleda* var. *caruus* 1, *Impura* 4, *Porphyrea* 1, *Varivata* 1, *Pusaria* 1, *Nymphæalis* 4, *Aglaiia* 1, *Paphia* 1, var. *Valezina* 2 pair, *Edusa* 2, *Adonis* 2, *T. rubi* 2, *Lucina* 2; Coleoptera: *Harpalus ruficornis*, *Nebria brevicollis*, *Pterostichus madidus*, *Aphodius prodromus* and *ater*. DESIDERATA—British Lepidoptera, Coleoptera; or Land and Fresh Water Shells.—J. W. CARTER, 14, Valley Street, Valley Road, Bradford.

DUPLICATES.—Ova of *E. Blandina* and *C. cytherea*.—JOHN E. ROBSRN, 15, Northgate, Hartlepool.

NOTES AND OBSERVATIONS

LARVÆ OF OCELLATUS.—Miss Hinchliffe, in sending us some larvæ of the Eyed Hawk, makes the following interesting observations:

"They have changed a good deal in the first three moults. When hatched they were bright pea green, with the stripes hardly traceable, and bright red tails. At the first moult they turned a thicker, more whitish green; the stripes were more distinct, and the tails a pinkish mauve. At the second moult the ground colour and stripes were much the same as now (colour very pale bluish green, stripes nearly as in the adult larva), and the tails turned nearly white, with a short pinkish stripe above, extending from the insertion to about half the length of the tail. At the third moult the only change was that the pinkish stripe vanished. So far they have moulted regularly once a week, on Saturday or Sunday."

CAPTURES AT SALFORD PRIORS AND CLEVE PRIOR, July 29th, 1882.—*Sphærium rivicola*, 2; *Pisidium fontinale*, 1; *Unio tumidus* var. *radiata*, 2; *Anodonta cygnæa* va. *zellensis*, 1; *Neritina fluviatilis*, 6; *Brythinia tentaculata*, 14; *Planorbis vortex*, 3; *P. compla-*

natus, 19; *Limnæa peregra*, a few; *Limax agrestes*, 8; *Succinea putris*, 14; *Zonites nitidulus*, 3; *Z. nitidus*, 3; *Helix aspersa*, 10; *H. nemoralis*, 3; *H. nemoralis* va. *hortensis*, 7; *H. rufescens*, 10; *H. concinna*, 39; *H. concinna* var. *albida*, 7; *H. hispida*, 3; *H. virgata*, 44; *H. caperata*, 5; *H. rotundata*, 3; *H. rupestris*, 27; *H. pulchella*, 38; *Bulimus obscurus*, 1; *Pupa marginata*, 38; *P. marginata* var. *albina*, 1; *Clausilia rugosa*, 10; *Cochlicopa lubrica*, 1. I also saw plenty of "dead" specimens of the following:—*Dreissena polymorpha*, *Paludina vivipara*, *Helix lapicida*; but as my time was rather limited I could not hunt for the living specimens.—P. T. DEAKIN, Birmingham.

MISTLETOE.—A short time ago I saw Mistletoe (*Viscum album*), growing upon the black poplar (*Populus nigra*), very plentifully. Can any of your readers inform me whether it is common for mistletoe to grow on that tree?—A. DAVIS, High Street, Great Marlow, Bucks.

BEE TLE HUNTING IN THE TIMBER YARDS.

By JOHN E. ROBSON.

LARGE quantities of foreign-grown, small fir, and other timber is imported here for mining purposes with the bark on, and various species of coleoptera are imported with it. Some are species known to be British; others are doubtfully so; while others, though found here and elsewhere alive, are not known to have been obtained in this country except under similar circumstances. Many of these beetles are, no doubt, in the larva state when they reach our shores, and I once had the opportunity of observing the larva of *Monohama sutor* for some time, at least, I have every reason to believe it to have produced that species. I found it under a bit of loose bark on a piece of timber just unloaded for piling. I took

it out that I might place it where I could find it again. It was then an inch in length, dead white, with the dorsal vessel showing through the skin; each segment was thickest in the centre, but was not rounded as the segments of lepidopterous larvæ are, but each segment projected like a \wedge at the sides, and was similar at the back, but flatter. It was not so round as lepidopterous larvæ are, being necessarily flatter for feeding between the bark and the wood. The head was brown, and the anal segment was slightly bifid. I placed it under another piece of loose bark, on a stack of timber already piled, and watched its progress for some time. It appeared to eat the outside of the wood, and left a considerable quantity of what looked like coarse sawdust as it did so. Whether this was caused by it biting off and leaving the skin while it ate the wood, I could not say. It seemed to get used to my periodical visits, for at last it ceased to wriggle backwards when I raised the bark. At last it disappeared and I thought I had lost it, but on pulling the bark off I found it had eaten a hole into the wood, the end of which was filled up with small fragments. In this I suppose it changed to a pupa. I always proposed to take the piece home, but I could not get it out of the stack, and I waited in vain for the stack being taken down. One day I examined it in going to the office and noticed no change, but on returning at noon the insect had evidently emerged. On looking about the stack I found a specimen of *Monohamma sutor*, and concluded it was from my larva. I could find nothing else, but, perhaps, the evidence may be considered too doubtful. *Monohamma sutor* and *sartor* are both rare here, though commoner sometimes. The insects come out to sun themselves towards mid-day, and very often climb high up the stack of timber, where it is neither easy nor safe to climb. *S. adilis* is sometimes quite abundant; it varies much

in size and in the length of its antennæ. Last year I had a specimen brought me that measured seven inches across the outstretched antennæ. It was the finest specimen I had ever seen. Sometimes they are not nearly half that length. The females have them much shorter, and are generally smaller; they have a projecting ovipositor that makes them look very different from the males. *Pissodes pini* is sometimes very abundant. It runs about all over, and is as often on the loose bark on the ground as anywhere else. This year it is very plentiful, and varies greatly in size. *Clerus formicarius* was very numerous last year. It is as lively as it is pretty, and if you have far to climb you are more likely to lose it than not. One day I put three of them into a box along with three other beetles nearly as large as themselves, and was astonished on opening the box to find each had one of the others in its jaws, nor would they give them up either. Since then I have been more careful. They will seize your finger viciously, and if they do not hurt it is no want of will to do so on their part. The *Monohami* are also very savage, and must be boxed separately, or you will find both antennæ and legs bitten off when you open the box. They will attack each other, which *Formacarius* does not. Another little long-horn is sometimes seen, it is a *Pogonoschærus*, but I do not know the species, being only a beginner with Coleoptera, though I have collected these kinds for friends. I have taken besides them *Saperda carcharius* and *scalaris*, *Clytus rusticus* (not in the British list, I believe), *Coccinella ocellata* and *oblongo-guttata*, but only one or two of each. This season I have taken at least half-a-dozen species I do not know. A systematic search would certainly add largely to the numbers. One word more in conclusion. Nearly all this timber is sent off inland to the various mines and works. Many of these places are near fir and other

woods, and it must be easy for any of them to establish themselves in suitable localities. The labourers on the docks believe that some of them breed year after year among the stacked timber, and I have heard several of them speak of a certain cargo of French wood that swarmed with *Ædilis*, which they say continued to breed for several years. I scarcely think it possible that they will feed on the dead wood the second year, for it is then quite dry; and I know nothing of their duration of life as larvæ, or whether the beetle lives over the winter to deposit its eggs in spring. If it does, they might be placed in newly imported wood, and thus breed. But while this timber is taken all over the country there need be no wonder if some species, previously unknown, manage to establish themselves.

UPPER WHARFEDALE.

ITS PHYSICAL FEATURES AND FAUNA.

(The following paper from the *Leeds Mercury*, is so exactly our idea of how a local fauna should be described, that we have great pleasure in laying it before our readers. Our numerous Yorkshire readers will also be glad to have it for future reference, and it will serve as an introduction to an account of the club excursion which has been promised us.)

"In view of the approaching meeting of the Yorkshire Naturalists' Union at Grassington (on the August Bank Holiday Monday), it will be of considerable interest to give a summary of what is at present actually known of the animals which inhabit the district generally. More especially is it desirable when it is remembered that Upper Wharfedale is one of the districts embraced in the scope of the forthcoming "Fauna of Leeds, Wharfedale, and Nidderdale," a book which the Leeds Naturalists' Club has in preparation, and which it is hoped will see the light before the close of

the present year. The object of the excursion spoken of is to effect something towards the working out of a more complete list of the natural productions, so far as a single day's research by a goodly number of competent naturalists can produce to the attainment of such an end. One of the most powerful incentives to discovery is a previous knowledge of what has already been done; consequently it will facilitate the labours of the Yorkshire naturalists at Grassington to furnish them a base from which to commence their investigations, by bringing to a focus the whole of the information at present on record.

Upper Wharfedale—the district known by that name to the naturalists of Leeds and Bradford, who for the future propose to undertake the investigation of its natural phenomena, in the absence of resident naturalists—includes so much of the drainage area of the Wharf and its tributary streams as extends from the sources on Cam Fell and the eastern slopes of Penyghent down to a point about a mile north of Barden Tower. In area it includes about 110 or more square miles of elevated country, guarded by high hills, of which Penyghent, Buckden Pike, and Great Whernside reach an altitude of 2,000 feet or more, while others do not fall very far short. The infant Wharfe, after draining Langstrothdale and Kettlewelldale, and its earliest tributary of importance—the Skirfare, which receives the waters of Peryghent and Hesledine Gills and of Littondale—effect their junction not far from the imposing Scar of Kilnsey. From the confluence the Wharfe, now a swift and noble stream, flows through lovely green pasture lands, past the sylvan beauties of Netherside and Grass Wood, and over rocky limestone beds, and through a narrow gorge at Ghaistrills (the "Strid" of Upper Wharfedale) to Grassington and Burnsall, presenting at every stage of its course scenes of fresh beauty and interest.

Geologically the whole district is included within the mountain limestone area, all the hills of which formation are covered with bright green grass to their very summits—it being only where the limestone strata are capped by the sandstones of the millstone grit series that the green pastures give way to heatherland.

The district would appear to be very rich in various branches of natural history. Its limestone soils yield a characteristic and interesting series of plants, some of them of considerable rarity—one, indeed, being so scarce that its habitat is very properly withheld by those who know it, otherwise the plant would hardly escape destruction at the hands of some dealer or rapacious and greedy collector. The same remarks apply to one or two of the birds; while of butterflies the district has one species in abundance which is found nowhere else in Yorkshire. Of the natural history of Upper Wharfedale, however, little is at present known. Rich as it would appear to be, it is as yet almost as completely a *terra incognita* as if it were some remote district in the thinly populated wilds of Scotland or Ireland, instead of being, as it is, within three hours' journey of the populous manufacturing towns of Lancashire and Yorkshire. But it would seem as if they had never had the benefit of the researches of a competent resident naturalist. No inhabitant of the dale seems ever to have interested himself in its fauna, and the researches of naturalists from a distance have been confined to flying visits at long intervals of time.

Grass Wood—a very extensive stretch of mixed woodland, with a dense and rich undergrowth—occupies an irregularly contoured stretch of country on the left or eastern bank of the Wharfe, about a mile or two north of Grassington, and, so far as it is yet known, appears likely to be a very prolific hunting-ground, especially for entomologists.

So much for prefatory remarks; now to set forth the sum total of the information actually known on the subject of its animal productions.

MAMMALIA.

The mammalia have not been noted apparently by any one, only seven species being reported. But it should be remembered that the animals of this class are of retiring and unobtrusive habits, and not to be seen on any chance visit. It requires the observations of a resident naturalist fully to ascertain what mice, shrews, voles, weasels, bats, &c., occur in any particular neighbourhood. The species known so far include—

HEDGEHOG.—Has been noted as common on the slopes of Earl Seat, in the extreme south of the district. The Mole has not yet been recorded, nor have any of the Shrews, or Shrew-mice. The same remark applies to the Fox.

2. PINE MARTEN.—A specimen of this extremely rare and almost extinct British animal was taken near Backden in the winter of 1880. It has also occurred at Azerley, near Ripon, and on High Ash Head Moors, near Masham. All these localities being in the vicinity of the same range of hills, it would appear as if the district was one of its last strongholds in Yorkshire. None of the Weasels have been recorded, nor has the Otter.

3. BADGER.—About 1880 one was taken on the northern slopes of Simon Seat.

4. SQUIRREL.—Inhabits Grass Wood. In 1874 a very fine example with a cream-coloured or nearly white tail was chased near Dib Scar by a party of members of the Leeds Naturalists' Club. Its relative, the Dormouse, has not been recorded, and it would be very interesting to learn whether its occurs or not at so high an altitude as Grass Wood would present.

5. HOUSE MOUSE.—Has been seen near Ghais'trills. No doubt as common at Grassington as in other towns, but has not been formally recorded. None of the other Mice or the Rat are known to occur.

6. HARE.—Occurs in Grass Wood.

7. RABBIT.—Is found at Kinsey Crag.

BIRDS.

The ornithological character of the district is essentially that of a subalpine region, as the presence—more especially their presence in abundance—of such birds as the dipper, grey wagtail, common sandpiper, ring ouzel, and red grouse fully demon-

strates. The list of birds—a very meagre one as will be seen—is mainly the result of a single day's ramble in July in the vicinity of Grassington, Conistone, and Kilnsey. This will fully account for the absence of many species which are certain to occur, especially the winter and casual visitants.

The bird list includes the following species, which are resident in the district all the year round, a statement which, of course, implies that they breed there annually:—

8. SONG THRUSH.

9. BLACKBIRD.

10. DIPPER.—Very abundant on the Wharfe, particularly where the bed and banks of the stream are rocky, as at Ghaistrills.

11. REDBREAST.

12. HEDGE SPARROW.

13. WREN.

14. PIED WAGTAIL.—Partially migratory. The individuals frequenting the district in summer retire further south on the approach of winter, being replaced at that season by others coming from more northerly localities.

15. GREY WAGTAIL.—Partial to the streams, and very common. In form and plumage one of the most elegant of the British birds.

16. MEADOW PIPIT.—Like the pied wagtail, this species is partially migratory.

17. GREENFINCH.

18. COMMON SPARROW.

19. CHAFFINCH.

20. BULLFINCH.—A lover of seclusion; has been heard Grass Wood.

21. YELLOW BUNTING, or YELLOW HAMMER.

22. SKYLARK.—On the day of the ornithological renaissance spoken of, this bird was noticeable from the paucity of its numbers, only about two being observed.

23. STARLING.—Breeds on Kilnsey Crag.

24. ROOK.

25. RAVEN.—Said still to linger in the district.

26. RED GROUSE.—Plentiful on the moorlands about Pughent and round the heads of —barfedle.

27. MOORHEN.—One observed on the river near Grassington.

The Tits have not yet been noted, although it is really certain that the five commoner British species are.

28. LAPWING or PEEWIT.—A species which is permanently resident in the country, but should in all probability be regarded as only a summer visitant to a district

which lies so high and possesses so limited an area as the one now under consideration.

The following birds are annual summer visitants, frequenting the dale for the purpose of rearing their young, after accomplishing which they retire in the early autumn for more southern winter quarters:—

29. RING OUZEL.—Frequents the grouse moors at Kettlewell and elsewhere.

30. WHEATEAR.—Not uncommon.

31. WHINCHAT.—Very abundant in the meadow lands.

32. REDSTART.—Fairly common. Breeds in the crevices of the walls which are so common in the hill country. Ranges as high up the dale as Starbottom.

33. WHITETHROAT.—Common in the lanes.

34. WILLOW WREN.—Everywhere.

35. YELLOW WAGTAIL.—Common in the meadows with the Whinchat.

36. TREE PIPIT.—Fairly common.

37. SWALLOW.

38. MARTIN.—Breeds in abundance on the face of Kilnsey Crag, which is interesting as being a natural habitat for a bird which so usually builds its nest in situations provided for it by human handiwork.

39. SAND MARTIN.

40. SWIFT.—Breeds in the crevices at Kilnsey Crag.

41. NIGHTJAR.—Was noted in 1890 as common on the lower slopes of Earl Seat, at the southern extremity of the district.

42. COMMON SANDPIPER.—Very common on the Wharfe, and one of the characteristic and most interesting birds of the district.

There are other birds which have either become extinct or nearly so, or whose visits to the district are more or less of a casual nature.

43. BUZZARD.—Upwards of half a century ago this species was common amongst the Craggs, where it nested. Now, it is to be feared, it is quite extinct.

44. PEREGRINE FALCON.—Till within comparatively recent years this noble species bred annually on Kilnsey Crag and Arncliffe Cote, and even now it is said to occasionally attempt to rear its young in the neighbourhood.

45. OSPREY or FISH-HAWK.—In April of 1844 a female specimen was killed on Burnsall Moor, which had been feeding on the remains of a red grouse.

46. HERON.—Visits the Wharfe occasionally, probably coming from the herouy which still exists in the vicinity of Gargrave.

47. DOTTEREL.—One was observed in August, 1881, on the summit of Penyghent, probably following the range of hills in its southward migration."

(To be continued).

THE YOUNG NATURALIST.

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VOL. 3.

BUTTERFLIES.

OUR young Entomologists are naturally most interested in Butterflies. The desire to complete their sets of these, rather than of moths, is natural enough. Their position at the head of our lists would be enough to create this desire, if there were no other reason; but their limited number, and distinct separation, as well as their day flying habits, all combine to attract the attention of beginners. Many enquiries are made of us from time to time, about one or another, and though the papers on British Butterflies, published in Vols. 1 & 2 of this magazine, contain all needed information, it is mixed up there with much for which beginners do not care. We, therefore, purpose here, to give a very brief account of the various butterflies recognised as British, giving such information only as we think our younger readers require.

There are sixty-four butterflies clearly entitled to a place on our lists. One of these, alas! must be relegated to the "has beens." It—the Large Copper, *C. dispar*—is no longer to be

found, and as it has no very exact representative in Europe, the existing specimens are proportionately highly valued.

PAPILIO MACHAON.

THE SWALLOW TAIL.—Formerly more widely distributed, but now almost or entirely confined to Wicken Fen, in Cambridgeshire, where it is still abundant. It flies from May to July. The larva feeds on milk parsley (*Peucedanum palustre*), and other umbelliferous plants. In confinement it will eat garden carrot, and is very easily reared. The pupa is suspended by the tail, has a silken band round the body, and remains over the winter.

GONEPTERYX RHAMNI.

THE BRIMSTONE.—Common all over except in the north, frequenting lanes and open places. It emerges about the middle of July, and passes the winter in the perfect state, to pair and lay its eggs in spring. The larva feeds on buckthorn, and the range of the species is limited by the range of the food plants, which do not grow north of Yorkshire.

COLIAS HYALE.

THE PALE CLOUDED YELLOW.—An insect of very irregular and uncertain appearance. Probably only occurs here when a migratory swarm or part of one has reached our shores. When it does occur it is found in the more southern counties, and never strays northward beyond the midlands.

COLIAS EDUSA.

THE CLOUDED YELLOW.—Much more frequent in appearance than the last, but equally irregular, and it is probable that this species only keeps its place by immigration. Sometimes it is exceedingly abundant, and though always more abundant in the south, it occasionally, as in 1877, strays far north, and even reaches Scotland. The perfect insect hibernates, but a second brood sometimes occurs.

ANTHOCARIS CARDAMINES.

THE ORANGE TIP.—A common butterfly in almost all parts of the country, appearing in the early part of May in the south and rather later further north. The female is rarer than the male, and is without the orange patch at the tip of the fore wings. It may often be found at rest on umbelliferous flowers, and the resemblance between the underside of the hind wings and the umbelliferæ on which it rests, will strike the least observant. The larva feeds on Cuckoo flower (*Cardamine pratense*), called also "milkmaid" in some places; on Hedge mustard (*Sisym-*

brium alliarica), &c. The pupa is long, slender, and much curved, and remains over the winter.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

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BRITISH BIRDS, THEIR NESTS AND EGGS.

BY S. L. MOSLEY.

Genus IV.—TURDUS.

TURDUS (L.), a thrush.

The birds composing this genus are all of moderate size. The beak rather large, upper ridge curved to the point; the wings have the third and fourth quill feathers longest; tarsus rather long. Six species are native of this country:—one summer visitor (partial), two winter visitors, and three residents. Two or three other species have been taken in this country either as stragglers from distant lands or birds escaped from confinement.

24. MISSEL THRUSH.

Turdus viscivorus, Linn.

Penn y llwyn (Anct. Brit.)

VISCIVORUS.—From *viscum* (L.) misseltoe, and *voro* (L.), I devour.

Size.—Length about 11 in.; expanse, 1 ft. 7 in.

Plumage.—Bill brown, lower mandible yellow at the base; eyes hazel; the whole of the upper surface is clove or olive brown; the wings, wing coverts, and tail slightly

paler colour, edged with wood brown; the outer tail feathers with a dull white spot; under parts white, tinged with yellow, and blackish spots; legs and feet pale brown. The sexes are similar.

THE YOUNG, when they leave the nest, have a streak of pale colour down the centre of each dark feather on the back, and the wing and tail feathers are edged with the same colour. Under parts similar to the adult, but lighter in colour. (See lower figure, pl. 24.)

VARIETIES.—White and pied varieties have been recorded. A white one was killed near Exeter in 1851. Mr. Bond has a very pale variety, which is represented in the upper figure, pl. 24, killed near Plymouth in 1873. Cases of melanism occur in this species. There is an example in the British Museum.

Note.—The ordinary note is a harsh scream, uttered when the bird is alarmed, as by intruders approaching too near its nest. The song is commenced in January, and is always uttered from the top of a tall tree. It is loud and clear, but has not a great variety of tone. It occasionally sings when on the wing.

Flight.—Rather heavy, produced by a series of flappings and periods of cessation, which causes an undulating flight.

Migration.—In this country the Missel Thrush is resident throughout the year, but their numbers seem to be augmented during the winter, probably by arrivals from the extreme north.

Food.—Snails, slugs, worms, and caterpillars, also berries of almost any kind, including those of the mistletoe, from which probably the bird derives its name. During fruit season the missel thrush is destructive in the orchard, but at other seasons it destroys large quantities of vermin. It has also been known to devour young birds.

IN CONFINEMENT this bird may easily be

reared from the nest on bread and milk; afterwards it should be fed upon German paste, also barley meal and wheaten bread moistened with water, with a little lean beef or hard-boiled eggs to vary the diet. It should have plenty of room, and water to drink and bathe.

Habitat.—Common in all parts of England and Ireland. For many years this bird has been increasing in numbers in Scotland, but is still rare in the extreme north. It frequents orchards and coppices, &c., open downs and heather, and after the breeding season the young associate with their parents and form small companies.

ABROAD it is common throughout Europe, numerous in Turkey and Asia Minor, also parts of Africa, Himalayas, and Cashmere. Those found in India are, by some, considered distinct. Moves from the north southwards during winter.

Nest.—The nest is begun early in the season, and is generally placed in a thick fork at some distance from the grown. It is composed of coarse dry grass, with bits of moss, lichen, wool, or any other available substances, fastened together internally with mud, and lined with fine grass or fibrous roots.

Eggs.—The female begins to lay early in March, and the number of eggs vary from four to six. Their colour is generally pale bluish green, spotted with ash grey and red brown (pl. xxiv., fig. 6). The old birds are very pugnacious during the time of incubation, and very noisy if any one approaches too near the nest.

VARIETIES.—The eggs of this bird are subject to great variety. Figs. 1, 2, and 3 are from drawings kindly sent me by Mrs. Battersby, taken from eggs in her collection. Fig. 4 is from Mr. C. S. Gregson's collection, and he has another entirely pale blue without any spots. Fig. 5 is from my own collection.

UPPER WHARFEDALE.

ITS PHYSICAL FEATURES AND FAUNA.

(Continued from page 327.)

REPTILES AND FISHES.

Of the reptiles and amphibians—or the lizards, snakes, newts, frogs, and toads—not one species has so far been reported, common as most of them are sure to be.

Of the fishes only two species are known—

48. TROUT.—Abundant in the Wharfe and all its tributary streams.

49. MINNOW.—In small streams at Kilnsey.

There can be little doubt that other species of fish occur, and will be found when looked for, though the district is too elevated to permit of the list being a very long one.

MOLLUSCA.

The mollusca—or snails and slugs—are somewhat better known than are the other departments of natural history, but much work has yet to be done before we can plume ourselves on knowing the mollusca of the district. So far as our knowledge of this section of the fauna goes, however, it is seen to be characteristic of an elevated limestone region such as Upper Wharfedale happens to be. Such species as *Balia perversa* and *Helix rupestris* and the variety *dubia* of *Clausilia rugosa*, mark the influence which is exercised by the elevation or altitude of the district, they being montane or subalpine species which do not descend into the lowlands, thinning out in numbers and degenerating in size and condition even in such a locality as Ilkley. Then such species as *Helix lapicida* and *Pupa secale* show that the district is of a limestone formation; they are in Upper Wharfedale in profusion, and do not occur at all in localities deficient of calcareous soil. We now give list of shells:—

50. ARION ATER.—The Black Slug. Has been noted on Kilnsey Scar slopes.

51. A. HORTENSIS.—Grassington Bridge.

52. LIMAX AGRISTIS.—Common Field Slug. Abundant everywhere.

53. L. ARBORUM.—Has been taken by Mr. Wm. Nelson at Threshfield.

54. SUCCINEA PUTRIS.—The Amber Snail. Has occurred in Littondale.

55. ZONITES CELLARIUS.—Has been found at Conistone-in-Kettlewelldale.

56. Z. ALLIARIUS.—Has been found by Mr. George Roberts between Arncliffe and Grassington.

57. Z. GLABER.—Has been found at Threshfield by Mr. Nelson.

58. Z. NITIDULUS.—Ghaistrills.

59. HELIX NEMORALIS.—Has been found at Ghaistrills and near Hebden.

60. H. HORTENSIS.—Is in great profusion at Kilnsey Scar and in lanes near Kilnsey Bridge; also at Mason Plains, near Grassington, and at Conistone.

61. H. ARBUSTORUM.—Likewise swarms at Kilnsey Bridge and Kilnsey Scar, in company with the last. Is also in Grass Wood and at Conistone. Of its varieties there are *flavescens* and *pallida*, while the specimens of the typical form are very small in size.

62. H. RUFESCENS.—Very abundant everywhere; at Kilnsey Scar, at Conistone in Grass Wood, at Ghaistrills, near Grassington, and at Threshfield.

63. H. CONCINNA.—Was abundant in Littondale in 1872.

64. H. HISPIDA.—Abundant in Littondale and at Arncliffe Cote, has also been found at Ghaistrills.

65. H. FUSCA.—Occurs in Grass Low Wood.

66. H. ERICETORUM.—Inhabits the hazel copse above Ghaistrills

67. H. ROTUNDATA.—Abundant everywhere: in Littondale, at Conistone, in Grass Wood.

68. H. RUPESTRIS.—A montane form. Very abundant; Kilnsey Scar, Conistone, Arncliffe, Grassington, Threshfield, Burnsall, Penyghent, Grass Wood, &c.

69. H. LAPICIDA.—Abundant on Kilnsey Scar. Occurs also at Threshfield, Grassington, Linton, and Arncliffe.

70. BULIMUS OBSCURUS.—Grass Wood.

71. PUPA SECALE.—The Rev. W. C. Hey has found it on Kettlewell Crag.

72. PUPA UMBILICATA.—Abundant at Kilnsey Scar.

73. BALIA PERVERSA.—Abundant at Grassington.

74. CLAUSILIA RUGOSA.—Abundant everywhere. Linton, Burnsall, Threshfield, Kilnsey Scar, Grassington, Conistone, and Ghaistrills, &c.

75. DO. VARIETY DUBIA.—Kettlewell Crag, Arncliffe, Conistone, Grass Wood, &c.; not uncommon.

76. C. LAMINATA.—Has occurred once between Arncliffe

and Grassington. It has also been reported from "Linton-in-Wharfedale;" but it is very probable that this means Linton, near Wetherby, where this species is known on other evidence to occur.

77. *COCHLICOPA LUBRICA*.—Has been found singly at Arncliffe and Kilnsey.

This completes the shell-list. A conchologist, glancing over it, will at once see that a number of species have yet to be found, more particularly the small ones, many of which will turn up when properly searched for. It will also be seen that the varieties remain to be discovered. The water shells, too, are entirely unrepresented. The district being an elevated one, with rapid streams, and an absence of pools and ditches or other collections of standing water, cannot be expected to produce more than a very few of the aquatic species; but there can be but little doubt that, when looked for, such species as *Neritina fluviatilis*, *Ancylus fluviatilis*, and *Limnæa peregra* will almost certainly be found. Altogether it may be anticipated that when a good conchologist has had an opportunity of thoroughly examining the district, the list given above will be very much extended.

BUTTERFLIES AND MOTHS.

The entomology of the district is one of its least-known quantities, but yet there can be little doubt that the Dale, and Grass-Wood especially, is very rich and will produce when worked, some very interesting species of Lepidoptera. The list of what is already known only includes some twenty-two names out of the three or four hundred which may be expected to fall to the pro-cess of a good collector stationed for a season or two.

78. *PISNIS NAPI*.—Green-veined White Butterfly, near Penyghent.

79. *VANESSA URTICÆ*.—Small Tortoiseshell Butterfly. Abundant everywhere in the valley.

80. *EREBIA BLANDINA*.—This is the great glory of the district, occurring plentifully on hill-sides in Grass Wood, its only Yorkshire locality.

81. *CHORTOBIUS PAMPHILUS*.—Near Penyghent.

82. *SATYRUS ÆGERIA*.—Grassington.

83. *S. JANIRA*.—The Meadow Brown Butterfly. Abundant in Grass Wood.

84. *LYCENA ALEXIS*.—The Common Blue Butterfly. On the banks of the Wharfe, Mason Plains, below Grass Wood.

85. *PROCRIS STATICES*.—Has occurred at Kilnsey Scar

86. *NUDARIA MUNDANA*.—Howgill, near Barden.

87. *AMPHIDASIS BETULARIA*.—The Peppered Moth. In Grass High Wood.

88. *ABRAXAS GROSSULARIATA*.—The Magpie Moth. Abundant at Appletreewick.

89. *ABRAXAS ULMATA*.—The Clouded Magpie Moth. Abundant in Grass Wood.

90. *BOARMIA REPANDATA*.—Grass Wood.

91. *MELANIPPE MONTANATA*.—Abundant at Conistone and in Grass Wood.

92. *LARENTIA CÆSIATA*.—Abundant on the moors, summit of Simon's Seat, Earl Seat, Burnsall Fell, &c.

93. *CIDARIA PRUNATA*.—Near Grassington.

94. *TANAGRA CHEROPHYLLATA*.—"The Chimney-sweeper." Between Penyghent and Malham.

95. *CHARÆAS GRAMINIS*.—Grassington.

96. *CELENA HAWORTHIL*.—On Hebden Moors, and no doubt wherever the Cotton grass grows.

97. *PLUSIA GAMMA*.—Abundant in Grass Wood and elsewhere.

98. *TALÆPORIA PUBICORNIS*.—Has been taken by Thomas Allis, near Grassington, where it was scarce in June more than 30 years ago.

99. *BUTALIS FUSCO-ZENÆA*.—Has occurred near Grassington, also more than 30 years ago.

BETTERLES AND OTHER INSECTS.

Of the great order Coleoptera or Beetles, only one species has been noted:

100. *TACHINUS RUFIPENNIS*.—One was beaten out of a dead grouse on a moor, near Kettlewell, April 9th, 1872, by Mr. W. C. Marshall.

Of other orders of insects as little, or even less is known. Of the Hymenoptera, or stinging insects, we have

101. *FORMICA RUGA*.—The Horse Ant. This insect is abundant in Grass Low Wood, where it makes large mounds or nests.

102. *VESPA VULGARIS*.—Common Wasp. Common at Grassington.

103. *BOMBUS LAPIDARIUS*.—Red-tailed Humble-bee. Common at Grassington, Ghaistrills, &c.

104. *B. LUCORUM*.—Ditto.

105. *APIS MELLIFICA*.—Hive Bee. Common.

Of the Diptera, or two winged flies, we only know one species.

106. *HEMATOPOTA FLUVIALIS*.—The "Cleg." Abundant in the valley at Grassington, Ghaistrills, &c.

Of the Dermaptera only one species has been recorded.

107. *FORFICULA AUBICULARIA*.—Earwig. Abundant in the valley.

Of the class Myriapoda there are various species of centipides, millipides, &c., but only one has been definitely named:—

108. *LITHOBIUS FORTICATUS*.—Grassington.

We have thus arrived at the end of the enumeration, an enumeration which is made with the direct purpose of showing up in strong relief the the great deficiencies which characterise the present state of our knowledge of a fauna so interesting and so remarkable as that of the upper basin of the Wharfe. It is hoped that naturalists who can in any way contribute towards the completion of an investigation, of which the which the present paper is one of the milestones marking its progress, will lose no time in communicating their lists, or even detached observations, records, or specimens, to the officers of the Leeds Naturalists' Club, who will at all times be pleased to receive them. For the information of of such it will be useful to indicate what extent of ground the district covers. First, then, it may be stated that the upper part of it includes the hills called Cam Fell, Cush Knct, Penyghent, Fountains Fell, High Mark, Buckden Pike, and Great Whernside, at the foot of which are situated the hamlets and towns of Oughtershaw, Yockenthwaite, Buckden, Starbotton, and Kettlewell, on the Wharfe, and Litton, Arncliffe, and Hawswick on the Skirfare. On the right bank of the united streams the district takes in Kilnsey, Skirethorns, Linton, Threshfield, Threapland, Thorpe, Burn-sall, and Drebley: while on the left or northern bank is included a wide range of country, including Conistone, Hebden, Grassington, and Appletreewick Moors, together with the villages from which these names are derived. The line which separates Upper Wharfedale from the lower

portion of the Wharfe Valley is drawn from Stump Cross Caverns along the crests of Simon's Seat and Earl Seat hills; thence crossing the Wharfe, near Drebley, it is traced along the water-parting on Burnsall Fells and towards Cracoe. The boundary in every other direction is traced along the watershed lines which separate Wharfedale from Malhamdale on the south, from Ribblesdale on the west, and from Yoredale and Nidderdale on the north.—L.N.C.

NOTES AND OBSERVATIONS

THE ALPINE SWIFT IN NORTHUMBERLAND.
—A specimen of that rare bird, the Alpine Swift (*Cypseles alpinus*), was shot at Alnmouth, a few days ago, by Mr. Wm. Rogerson, of Newcastle-on-Tyne. It measures 9½ inches in length, and 21 inches across the expanded wings. The specimen was named by Mr. Hancock, of Newcastle-on-Tyne, and is in the hands of Mr. Duncan, St. Andrew's Court, Pilgrim Street, Newcastle, for preservation. Murray's hand-book mentions only five specimens of the Alpine Swift, as having been taken in the British Isles. Morris records five in England and two in Ireland, though one of the latter was obtained "some miles from land." It is new to the North of England, the most northerly occurrence hitherto being a specimen shot in Norfolk, in 1831. Mr. Hancock's valuable catalogue of the "Birds of Durham and Northumberland," enumerates 266 species. The Crane (*Grus cinerea*), recorded since its publication, and the present species bring up the number to 268.

ASSISTANT NATURALISTS.

J. P. SOUTTER, Clyde Terrace, Bishop Auckland. All branches of Botany except microscopic.

JOHN A. TATE, 61, Merlin Street, Liverpool.

Inhabitants of the Aquarium, Terrarium.

DR. ELLIS, 101, Everton Road, Liverpool, Coleoptera.

BRITISH ANTS—By G. C. BIGNELL.

(Concluded from page 319.)

Tapinoma gracilescens.

The Rev. W. F. White, writing about this ant, says, "There is yet another species of ant which has established itself in London, and may be found always at home in my brother's rectory in the city. It is a native of Madeira." "The presence of this ant in the heart of the great city is a most interesting fact. It is many years ago since I first observed this ant in my brother's house. I noticed it in large numbers in the rectory kitchen in 1876. The workers are very small, of a black colour, with very long thin legs and antennæ. They run very rapidly, and are very difficult to capture, except when satisfying their hunger."

Have been also found at the Crystal Palace, Sydenham; and at St. Leonards-on-sea.

OVA.

In the foregoing papers I have not mentioned anything about the ova. The great difficulty arises from the fact that ants do not like to be disturbed. Whether in activity or in a state of nature, they strongly protest against having their nests meddled with by man, or any other intruder.

Sir J. Lubbock has paid great attention to these very interesting creatures. Some of his observations I shall presently mention after quoting a little from a very old book on English Ants, by the Rev. William Gould, A.M., printed in London, in 1747. It is stated therein that "The Queen Ant lays three different sorts of eggs, the male, female and neutral. The two first are deposited in the spring; the last in July, and part of August." The following note is appended to these remarks:—"These experiments have been generally confined to the common yellow and small black colonies; but from many circumstances, it appears that the process of the others is analogous to it" (pp. 33, 35). The writer of these papers has great veneration for old authors and their books, but he is sorry to say he cannot confirm the latter portion of this sentence.

The late Mr. F. Smith's remarks on *Lasius flavus* (which is the common yellow ant, to which Mr. Gould refers in the first portion), are partially corroborated; for he says, *L. flavus* appears to differ in one point of its economy from all our native species: the last brood of workers are carried down into the deepest recesses of their subterranean dwelling. I have found numbers in this situation in the depth of winter; and such larvæ are much more pubescent than we

find during the summer months. We have frequently inspected the dwellings of other species, *F. nigra*, *fusca*, and *cunicularia* in winter, but never found either eggs or larvæ."

The writer can confirm these remarks; and he has also searched the nest of *Formica rufa*, during the winter, with the same result; but on the 11th May last he was fortunate to find a batch of newly deposited ova in a nest of *rufa*. Five days before, he observed ova in the nests of *Formica fusca*, *Lasius niger*, and *Myrmica ruginodes*, and newly-hatched larvæ in the nests of *Tetramorium cæspitum*.

Sir J. Lubbock, on the 14th August, 1876, isolated two pair of *M. ruginodis*, captured in his garden. The first eggs were laid between the 12th and 23rd April, and some were hatched during the first week in June. The first larva turned into chrysalis on the 27th, and a second on the 30th June. On the 22nd July the first worker emerged, and a sixth larva had changed. On the 25th a second worker appeared, and on the 28th a third. This not only shows that the eggs are laid in spring, it also proves that the queen of *Myrmica ruginodis* had the instinct of bringing up larvæ, and the power of founding communities.

With regard to the laying three different sorts of eggs, this is still a disputed point. Mr. Dewitz is of opinion that queens and workers are produced from different kinds of eggs; others are of opinion that the same cause (viz., feeding), as applied to the development of queens and males in the hive of the honey-bee, will hold good with the ants. Sir John Lubbock has partly proved this, but it requires further experiments. He says, in one of his lectures, "I was much interested last year to find five queens developed in one of my nests of *Formica fusca*;" and he attributes the cause to having been "richly supplied with animal food." Another nest, which does not appear to have been so well fed, contained two queens, and they produced only workers during the seven years he had them.

LONGEVITY OF ANTS.

Sir John Lubbock obtained a nest of *Formica fusca* from the woods, in December, 1874, and he says, "It then contained two queens, both of which are now still alive (25 Sept., 1881). I am disposed to think that some of the workers now in the nest were among those originally captured, the mortality after the first few weeks having been but small. This, of course, I cannot prove. The queens, however, are certainly seven and probably eight years old." He also had a nest of *Lasius niger* (workers only) for six years.

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RAGWORT.

RAGWORT (*Senecio jacobææ*) is a very common plant in most of places, and for some time longer its large flat clusters of golden-hued flowers will be very conspicuous. For a plant of such general distribution, but few larvæ seem to make choice of it for food. Several eat it occasionally, or will do so in confinement, but those that make choice of it, as *Euchelia jacobææ* (the Cinnabar) or *Eupelthecia centaureata*, appear to prefer the flowers to the leaves. Both these may still be found, though the season is getting over. But it was specially of its attractiveness to the perfect insect that we proposed to speak of it now, and if any of our young readers have never collected at ragwort flowers they had better do so before it is too late for this year. The equipment needed for ragwort collecting is not large: a good lantern is the only thing needed, except an ample supply of pill-boxes. Some prefer a bull's-eye lantern, but we rather recommend one that will throw a larger light. If you go alone

you must have a belt or something similar to which you can hook your lantern, so as to have both hands free, and from which it can be readily detached again. If you "hunt in couples" one should take the lantern and the other the boxes, and share you captures afterwards. In some places moths, such as *C. graminis* and *H. nictitans*, will be found imbibing the honey from the flowers quite early in the afternoon. Those members of the genus *Miana* that are not yet over (*litesosa*, *furuncula*, and *strigilis*) may also be found upon it before dark. After dark it is visited by a much larger number of species. All those of the genus *Agrotis* that are yet on the wing appear to frequent it:—*obelisca* and *aquilina* where they occur, *tritici*, *cursoria*, *valligera*, *præcox*, &c., on the coast. Many of the genus *Noctua*:—*Zanthographa* far too frequently, *umbrosa*, *baja*, *augur*, *rubi*, *dahlia*, and *neglecta* (in birch woods), *glareosa*, and others. *Triphaena janthina*, and *interjecta*, as well as the two common species: *interjecta* seldom comes to it till late at night. A little

further on in the season the autumn moths muster in great force upon it;—all the *Xanthias*, the genus *Anchocelis*, *Orthosia*, *Cerastis*, &c., &c. All these, it will be observed, belong the *Noctuina*, but its visitors are not by any means confined to this group. Several of the *Geometrina* are equally regular in their attendance, but they seem more easily disturbed, and the light from the collector's lantern, which is seldom noticed by the *Noctuina*, generally causes them to take flight. It would be an interesting list, had we a complete one of all the species that frequent ragwort, with notes on their abundance, and regularity of attendance. Too little attention has been paid to this branch of collecting. We have lists of larvæ feeding on all the various plants, but systematically prepared lists of insects frequenting particular flowers, are yet to be compiled. Will our readers help us to commence by sending a full list of all the species they take this season at ragwort. To be of much value it should be complete, and include all that are found upon it, common as well as rare, with such notes as may seem to be important or interesting. If every one would say what they know, a valuable list would soon be compiled. We shall be pleased to hear from our readers on this season's doings.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now past due, and we will be glad to have remittance from those who have not yet sent them. Weekly numbers or monthly parts, post free, 6/- per annum, or 1/6 per quarter, *in advance*. Coloured plates, 2d. each extra. These can only be had direct from the conductors as above, but any one procuring them through the booksellers can have them coloured on application.

G.T.M.—Doubtless the eggs, larva, and empty pupa cases are all *Apiformis*. The larva is cream-coloured, with a reddish-brown head, and the second segment also reddish brown, but paler. The segments are very distinct. Give it a fresh-cut piece of poplar.

EXCHANGE.

I am in want of a few specimens each of the following, and shall be glad to do my best in return:—*Bruchus granarius* (bean beetle), *Silpha opaca*, *Authomia beta*, *A. brassica*, cocoons of parasites on *P. brassica*, *Aleyrodes proctella*, *Ceuthorynchus sulcicollis* and galls, *Psila rosæ* or maggots, *Tephritis onopordinis*, or any other insect found injuring crops (see "Economic Entomology.")—S. L. MOSELY, Huddersfield.

NOTES AND OBSERVATIONS

BIRMINGHAM NOTES.—Plants in flower:—Knotgrass (*Polygonum aviculare*), lesser scullcap (*Scutellaria minor*), common fumitory (*Fumaria officinalis*), pale willow herb (*Epilobium roseum*), pearlwort (*Sagina procumbens*), forget-me-not (*Myosotis palustris*), round-leaved bell flower (*Campanula rotundifolia*), at Yardley Wood on 15th July; restharrow (*Ononis arvensis*), figwort (*Scrophularia nodosa*), burdock (*Arcetia lappa*),

hoary pliantain (*Plantago media*), arrowhead (*Sagittaria sagittifolia*), St. John's wort (*Hypericum dubium*), white water lily (*Nuphar lutea*), spreading caucalis (*Caucalis infesta*), common mallow (*Malva sylvestris*), at Cleve Prior, near Evesham, on 29th July; common ragwort (*Senecio jacobæa*), common angelica (*Angelica sylvestris*), agrimony (*Agrimonia odorata*), great burnet (*Sanguisorba officinalis*), water mint (*Mentha aquatica*), procumbent helosciad (*Helosciadium nodiflorum*), St. John's wort (*Hypericum perforatum*), amphibious persecaria (*Polygonum amphibium*), upright caucalis (*Caucalis anthriscus*), near King's Norton on August 7.

Found the following shells in a pool near King's Norton on 7th August:—*Sphaerium lacustre*, 4 (only one alive); *Pisidium fontinale*, 6; *Paludina vivipara*, 4; *Bythinia tentaculata*, 16; *Planorbis nitidus*, 5; *P. albus*, 4; *P. vortex* (very numerous; the water had gone down about three feet, and under the debris at the sides I could have picked up hundreds); *P. corneus*, 3 (when I dropped these in boiling water they all gave off a red fluid, which quite tinged the water and made it look like blood); *Limnæa auricularia* (found some very large dead shells), and, of course, *peregra* and *stagnalis* in abundance.—GEO. F. WHEELDON, Birmingham.

NATURAL HISTORY NOTES FROM WEYBRIDGE & WISELY.

July 2nd.—Saw some fine old cedars with a large quantity of young cones (green) about the size of large walnuts. I was told there are comparatively few squirrels about here this year.

July 3rd.—Saw a dove's (*Columba palumbus*) nest. What loose nests they make: I wonder they are not oftener blown down. Took two wasps' nests not far from each other in a bank. *Ranunculus lingua* is in flower in an artificial pond we have: what a fine showy thing it is!

July 4th.—I noticed a great lot of blight on the oaks here, and watched a pair of flycatchers hawking flies all the morning on the lawn in front of the window.

July 5th.—I found the following plants in flower:—Common hypericum (*Hypericum perforatum*), bladder campion (*Silene inflata*), marsh lousewort (*Pedicularis palustris*), lesser stitchwort (*Stellaria graminea*), wild mustard (*Brassica sinapistrum*), yellow rocket (*Erysimum barbarca*), common fumaria (*Fumaria officinalis*), corn marigold (*Chrysanthemum segetum*).

July 7th.—Saw a fine stag-beetle (female); also two kingfishers, each with a small fish in its mouth. Heard a corncrake (*Ortygometra crex*). What a good ventriloquist he is.

July 8th.—Observed water parsley (*Cicuta virosa*), forget-me-not (*Myosotis palustris*), common skull-cap (*Scutellaria galericulata*), and heartsease (*Viola tricolor*).

July 9th.—Noticed a great many young birds flying about pecking the grass seeds in a meadow that had been recently cut, and the following plants:—Trailing hypericum (*Hypericum humifusum*), common mallow (*Malva sylvestris*).

July 11th.—Found great broom-rape (*Orobancha major*), and a bee dead inside a flower of *Cypripedium spectabile*, the same flower out of which I had freed one only the day before.

(To be continued.)

BUTTERFLIES.

PIERIS DAPLIDICE.

THE BATH WHITE.—A rare visitor to this country, and one that has not yet established itself in any part of the island. Naturally, it is double brooded like the common whites, but only the autumn brood ever appears to reach our shores. Specimens of this brood are found in August and September, and those who wish to find it must seek it on the coasts nearest to France.

7. PIERIS NAPI.

THE GREEN-VEINED.—Common in country lanes, railway embankments, &c. The first brood appears in April and May; the second in July and August. The larva is seldom seen, feeding less on plants of cultivation than the other common whites. It should be looked for on cress, rocket, &c. The pupa from the second brood remains over the winter.

8. PIERIS RAPÆ.

THE COMMON WHITE.—Abundant everywhere, particularly in the neighbourhood of towns where suburban kitchen gardens provide an abundant supply of food. The first brood appears in April and May; the second in July and August. The larva is abundant on cabbage, and also on garden mignonette (*Reseda odorata*). It is not so gregarious as that of the next species. The pupa may readily be found under copings of walls, on rails, &c. It is said to vary in hue in harmony with the colour of the place to which it is attached. The pupæ of the second brood remain over the winter.

9. PIERIS BRASSICÆ.

THE LARGE WHITE.—The remarks made respecting the last species apply equally well to this, except that the spring brood emerge rather later, and the larvæ are frequent on nasturtium instead of mignonette.

10. APORIA CRATÆGI.

THE BLACK-VEINED WHITE.—Only in the south, but generally abundant where it does occur. It flies in June. The larvæ are gregarious when young, and spin a white web, into which they retire for rest and hibernation. In spring they separate, and are full fed by the end of May.

11. LEUCOPHASIA SINAPIS.

THE WOOD WHITE.—Is generally distributed in the south of England, rare or more local in the north, and does not occur in Scotland. Not uncommon in some parts of Ireland. Like the common whites, it is

double brooded, appearing in May and August. It flies in open places in woods, or shady lanes, and is rarely seen to settle. The larva feeds on vetches, but is seldom found.

(To be continued).

BRITISH BIRDS, THEIR NESTS AND EGGS.

BY S. L. MOSLEY.

25. FIELDFARE.

Turdus pilaris, Linn.

Bjork trast (Sweden).

Baflerastes (Lapland).

PILARIS.—"Like a ball" (Nich. Dict.). I do not see what reference this word has to the fieldfare.

Size.—Length, 10 in.; expanse, 1 ft. 5 in.

Plumage.—Bill brownish at the tip and yellow at the base; eyes dark brown; eyelids yellow; top of head slaty blue, each feather with a black centre; a light streak over the eye, and a dark one from the bill to the eye; back of neck and ear coverts slaty blue; back and wing coverts brown; rump slaty blue; tail bluish black; primaries blackish, edged with paler colour; throat, breast, and flanks buff, with blackish spots and markings; belly white; legs dark brown; claws black. The sexes differ very slightly.

YOUNG.—The young of the fieldfare is marked very like the young of the missel thrush of the same age, except darker.

VARIETIES.—Several pied varieties are recorded, and do not seem rare. One is in Mr. Bond's collection, and another very handsome pied bird is in the possession of Mr. T. H. Briggs. Others are recorded by Jardine as having the whole colour of a paler tint. Mr. Bond has seen two specimens very dark, approaching melanism.

Note.—The ordinary note is "Yack, yack," uttered both on the wing and after the birds alight. During the breeding season they utter a harsh chatter, and Yarrel

says that they have also a song which is soft and melodious.

Flight.—The flight is easy, slightly undulating, and performed in companies of from ten to fifty generally, but sometimes in very large flocks numbering a thousand or more.

Migration.—This species is a true migrant, arriving in this country about the middle or end of October, and remaining to the end of April, middle of May, or even June. When they leave this country they go to the pine forests of Norway and Sweden, Lapland, &c.

Food.—The food, like that of the other thrushes, consists of insects, snails, worms, and fruit. In this country they seem particularly fond of the fruit of the hawthorn. In hard winters they sometimes do considerable damage to turnips by picking holes and feeding upon the roots.

IN CONFINEMENT.—Yarrel says it soon becomes reconciled and sings agreeably.

Habitat.—Very common throughout this country in winter, frequenting meadows, &c., on being disturbed flying to the hedges, and isolated trees, and is generally very wild, and difficult of approach.

ABROAD it is found throughout the continents of Europe and the northern parts of Asia, migrating southward in the winter as far as parts of Africa. Rare in India.

Nest.—This thrush generally breeds in colonies, but occasionally singly, in pine forests. The nest is composed of sticks and coarse grass with a little clay, and lined with finer grass. It has been recorded as having bred in this country, but probably under a misconception, as no authentic eggs or nests are known to have been taken in this country.

Eggs.—From four to six eggs are laid, described as subject to much variation, resembling those of the ring ouzle, black-bird, redwing, or missel thrush.

BRITISH FRESH-WATER FISH.

By H. ANDREWS, Aldborough.

IN presenting this brief account of our British Fresh-water Fish before the readers of the *Young Naturalist*, it is only necessary to mention the positions and names of the fins in order to assist in recognising the various species.

Dorsal fin, extends along the back.

Pectoral do. on each side of the head.

Ventral do. on the abdomen (belly), between the pectoral and anal.

Anal do. is nearest the caudal fin.

Caudal do. is the tail fin.

The Perch (*Perca fluviatilis*) is one of our handsomest river fish. In colour it is greenish-brown above and silvery-white below, with a series of dark brown bands over the sides. It is a common fish in our rivers, very bold and voracious, feeding on worms, insects, and small fishes, such as the minnow, dace, and gudgeon. The perch frequents deep holes in rivers, lakes, and ponds. You may distinguish it from any other fish by those bands (previously mentioned) and the first dorsal fin (nearest the head) being very spiny or prickly. I have taken perch of 2½ lbs. in weight, but have seen one recorded of 4½ lbs.

The Pope or Ruff (*P. F. minor*) is a small fish, generally about four or five inches long, and is most plentiful in the middle of canals, where the bottom is sandy or gravelly. The two dorsal fins are continuous, the former part being spiny.

The Bullhead (*Cottus gobio*) belongs to the next family, and is a very common and peculiar-looking fish, having a very large head for the size of its body. It is known by the name of "Miller's Thumb." It is about four or five inches, and its food consists of water insects, larva, and worms. It generally locates itself under loose stones, and may be found in almost any brook or stream.

The Three-spined Stickleback (*Gaster-osteus spinulosus*) belongs to a family

of small fishes specially admired for their nest-building propensities. This species ranges in size from two to three inches, and is found in almost every brook, ditch, or stream. It is known by having three spines placed conspicuously on the back (as the name indicates). Its brother, the ten-spined stickleback (*G. pungitius*), is a migratory species that visits our rivers in the spring of the year, and is distinguished by having nine or ten spines on the back, by the sides being perfectly smooth, and only an inch and a half to two inches in length.

The Flounder (*Flatessa flusus*) is the only representative of the flat-fish family we have in our rivers. It is also a fish migratory and resident, frequenting our rivers far beyond the reach of the tide. It is very partial to mud, and is sometimes called the "mud-flounder." The general colour of the upper part is a pale brown, sometimes mottled with yellowish or brown spots, and has a row of tooth-like tubercles surrounding the sides. In weight it seldom exceeds 3 lbs. Varieties of it are common.

The Pike (*Esox lucius*) is one of the largest, and certainly the most ferocious and voracious, of all our fresh-water fish. It feeds upon fish of every kind, and can eat an enormous quantity in a small space of time. The pike is the king of the waters, and kills every fish that happens to come near, none seeming able to escape except the perch, whose spiny dorsal fin protects it from capture. It is not necessary to describe so common a fish which is so well known. The pike grows to an enormous size, reaching over 30 lbs. in weight. One recorded as taken in the Broad of Norfolk, April 2nd, 1870, weighed 32 lbs, the roe (included) weighed 5 lbs., and consisted of no less than 595,200 eggs. One taken in the river Ure, at Boro Bridge (1881), reaching 17 lbs. in weight, is the largest I have seen.

The Salmon (*Salmo salar*). Although the salmon is considered to be a sea-fish, never-

theless, this sea-fish ascends our rivers and streams in order to deposit its eggs, and, therefore, may be called a migratory salmo. It is scarcely necessary to describe this well-known "King of Fish."

(To be continued.)

ECONOMIC ENTOMOLOGY.

[Much of the following information is taken from Miss Ormerod's Manual* as being the most recent modes of prevention.—S.L.M.]

V.—Insects injurious to Field and Garden Crops.

Asparagus.—The grub of a beetle—*Crioceris asparagi*—is, some years, very destructive to asparagus, especially in the south, by gnawing off the young shoots.

REMEDIES.—Syringe the grubs with warm water; they will then fall to the ground, and if soot be thrown over them plentifully they will be unable to rise.

Bean.—THE BLACK FLY (*Aphis rumicis*) is a well-known pest to bean tops.

REMEDY.—Top the plants as soon as the insects appear and destroy them.

BEAN BEETLE (*Bruchus granarius*).—The grub of this beetle feeds inside the fresh bean, remaining there through the winter, and changing to a beetle in the spring.

REMEDY.—The chief remedy recommended is care in the selection of seed to see they are not infested.

Beet.—BEET CARRION BEETLE (*Silpha opaca*).—The larva of this beetle feeds on young beet, and has been known to destroy entire crops.

REMEDIES.—Manure in the autumn instead of at the time of sowing. Treating the grubs as turnip fly, or laying animal matter about the fields that have been infested: this will attract the perfect beetles,

* "MANUAL OF INJURIOUS INSECTS, by Miss E. A. Ormerod, F.M.S." Sonnenschen and Allen. Price 3/6, post free. A book well worth the money.

and they may then be found and destroyed.

BEE T FLY (*Anthomyia betæ*).—The grub of this fly mines the leaves of beet and marigold, causing large blotches and weakening the plants.

REMEDIES.—Dressing with anything to cause a vigorous growth. Cutting off infested leaves and destroying them.

Cabbage — **CABBAGE APHIS** (*Aphis brassicæ*).—These plant lice weaken the plants by sucking away the juices. They breed very fast. The mature insects have wings.

REMEDIES.—Syringing with tobacco and lime water, or soft soap suds. Encourage ladybird beetles, &c. (see "rose.")

CABBAGE WHITE BUTTERFLIES (*Pieris brassicæ* and *rapæ*).—The caterpillars of these two butterflies feed upon cabbage and other things.

REMEDIES.—Hand picking. A small ichneumon fly (*Apanteles glomeratus*) is a natural enemy of the former, laying its eggs in, and killing the caterpillar. The yellow cocoons of this fly may be found in clusters about the old larva skin, and should not be destroyed.

CABBAGE FLY (*Anthomyia brassicæ*).—The grub of this fly eat into the stem and roots, causing disease and letting in water which rots the stem.

REMEDIES.—Applications of lime water or superphosphate of lime. The insects propagate most rapidly where the ground is cropped with cabbage from one year to another.

CABBAGE MOTH (*Mamestra brassicæ*).—The caterpillar of this moth bores into the heart of the cabbage, eating the leaves and filling it with filth.

REMEDIES.—Hand picking. Throwing a gas lime upon the plants. Digging up the pupæ in the autumn from the ground about.

POWDER WING (*Aleyrodes proletella*).—This small powdery white insect lives by

sucking the juices of the plants, and is sometimes very numerous.

REMEDY.—Cutting off the infested leaves and destroying them.

CABBAGE GALL WEEVIL (*Ceutorhynchus sulcicollis*).—The grub of this beetle forms galls on the underground part of the stem and root.

REMEDIES.—Burning old infested plants, and dressing the ground with gas lime after a crop has been infested.

Carrot.—**CARROT FLY** (*Psila rosæ*).—The grub of this two-winged fly bores into the carrot root, causing diseased rust-coloured marks.

REMEDIES.—Well manure the ground in the autumn, and after with salt or gas lime before sowing. Sow sparingly, so as not to require thinning, as this seems to attract the fly; should thinnings be needed, it should be done while the plants are young. Water the ground with a mixture of two wine-glass-fulls of paraffin to a gallon of water, or with alum water. Lime, wood-ashes, spirits of tar mixed with sand, and soot are also recommended as useful dressings.

The caterpillars of several species of small moths (*Depressaria*) sometimes attack the leaves or flowers of carrot. They draw the parts together by silken threads.

REMEDIES.—The parts affected may be plucked and the caterpillars destroyed, care being taken that they do not wriggle out and fall to the ground.

Celery.—**CELERY LEAF-MINER** (*Tophritis onopordinis*).—The grub which produces this fly mines the leaves, making large puckered blotches.

REMEDY.—The surest remedy is to gather infested leaves and burn them. This, and all kinds of infested leaves, should not be thrown upon the rubbish heap, as the flies go through their transformation and reappear to destroy the next crop.

(To be continued.)

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VOL. 3.

EXCURSIONS.

WE have recently had to decline an unusual number of papers which gave an account of excursions to various interesting districts. Some of these papers were well enough worth printing elsewhere than in a natural history magazine ; but as they contained no natural history notes, were quite unsuited to our columns notwithstanding their merits. It has been in our mind some time that we ought to give a paper to help our young friends in this matter, for with all the willingness in the world to "try again," we know that repeated "declined with thanks" or "not suitable for our columns" are very discouraging. We have sometimes rather stretched a point rather than reject a paper, as we are extremely desirous to encourage beginners to put their observations on paper. But the merest tyro must see that it is not sufficient for a natural history magazine, when the account of an excursion is confined to the times when the trains started and arrived ; how many miles were walked, in how many hours ; what towns or villages were passed

through, and what objects of interest they contained. We do not object to all or any of this in passing, but they must not be the only things, nor even the main things written about. Of course, we do not expect young naturalists to observe with the practised eyes of old naturalists, nor yet to know so well how to describe their impressions and observations, but there are one or two things that should be remembered. First, what is the object of your excursion ? Do you go to collect insects, plants, shells, birds' eggs, or what ? Most of our readers are lepidopterists. Let us suppose that your excursion is intended to increase your knowledge and your collection of butterflies and moths. What then do you want to note ? Every matter connected with the main object of your excursion. The train service, and distance to be travelled on foot, are only interesting to others who may desire to travel the same journey. What you see, and what you obtain, are the most important matters to note. Never be above jotting down anything that strikes you, even about the com-

monest species. If you see a tortoise-shell butterfly, observe what flowers it frequents, whether there is anything peculiar in its flight, how it behaves when other butterflies approach it, or others of its own kind; see whether it takes any notice of bees or other insects not lepidopterous that come in its way. If you beat a moth from a hedge or bush, observe the species if possible; notice whether it falls to the ground as if dead or flies away; see when it falls if it is really torbid or only shamming to escape; take notice how it gets back to concealment. These and a thousand other things are worth observing, and the more you add to your stock of knowledge the more will you find there is to observe. In larvæ hunting the same rule obtains. Everything pertaining to the economy of the species is worth noting down, for it is only by the patient accumulation of small facts that any general conclusions can be reached. A beginner knows nothing, or, perhaps, even less, for much of what he thinks he knows, may be erroneous. He finds one insect in a garden, another in a lane, a third in a wood, a fourth on a breezy moor. These are beginnings of knowledge, and when he knows more, he will be able to say why he finds a white butterfly in a garden, and a tortoise-shell in a lane whose hedge banks are filled with nettles. On your excursion then, be on the look-out for

something you did not know before, and when you have seen it note it down. Never mind whether other people know or not. What is new to you will be new to someone, probably to many. Noting it down will fix it in your own mind far more certainly than if you pass on and think you will try and remember that. Besides, when it is once down in black and white it can be referred to, fresh as when first made. No hazy remembrances much effaced by time—there is the record made while your mind was yet impressed with what you had seen. Again, the very fact that you are looking for something new will help you to the object of your search, and your powers of observation will be greatly increased by their exercise. Every new discovery paves the way to others, and though you may be travelling in a well-beaten track, there is sure to be something to learn upon the journey. Even if what you see has been noticed before, it may not have been published, or may have escaped the attention of those who read your notes. In any case it is better to be told the same thing twice or even half-a-dozen times than never be told at all. Even if everything you notice is old to every one but yourself it is new to you, and will pave the way for further observations, some of which may be new to somebody. Do not then be discouraged because we have declined your article. Go over the same ground again, bear-

in mind constantly that you are going for a particular purpose, and note down everything bearing on that purpose. Very likely when you get older and wiser you will think your juvenile notes very crude, and perhaps imagine that they display great ignorance; but please remember these were the first steps from darkness to light, and but for these you would never have got any light. Should anyone criticise your attempts in what you now think to be an unkind manner, never mind a bit about it. The superior knowledge he assumes may perhaps be looked down upon by you, when you have gained his experience. The time may come, too, when you will feel glad your paper was rejected, if its rejection spur you on to do better; but, in any case, we say—

“Try, try, try again.”

TO CORRESPONDENTS.

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EXCHANGE.

Will give several numbers of the August part (No. 3) of the *Birmingham Naturalists'*

Gazette for several back numbers of vol. i. of *Young Naturalist*. Apply, W. HARCOURT BATH, Sutton Coldfield, Birmingham.

NOTES AND OBSERVATIONS

S. APIFORMIS.—I took a larva of this clearing from a poplar-tree (*P. nigra*) a few days ago. Since its removal from the tree it has changed its skin, and is at present about an inch and a quarter long; yellowish white in colour, except the last segment which is dirty brown; head retractile and of a shining brown; dorsal vessel visible through the skin.

Three empty pupa cases were observed protruding from holes in the tree from which the larva was taken, and about twenty reddish brown eggs found deposited in batches of three or more upon the bark. There are evidently several larvæ feeding in the trunk, their presence being indicated by the ejection of frass, or what appears to be chewed wood, from their burrows.—T. T. DOUBLEDAY, Team Villas, Gateshead.

THE RUBY TIGER

(*Arctia fuliginosa*)

IMAGO.—Wings semi-transparent, fore wings pinkish brown, hind wings a deep pink bordered with black spots on a band. Head and thorax brown. Abdomen pink, with a series of black stripes down the centre of the back, and a row of black spots on each side. Expanse about one inch.

OVA.—Creamy pinkish colour, and turns black a few days before hatching. They are laid by the female moth in May and August.

LARVA.—In a few days time the young larvæ are hatched and commence feeding almost directly after. *Food Plant*: Dock grasses and several other plants; but in confinement they seem to prefer lettuce to anything. When full-grown they are about about one inch in length and of an um-

brous brown colour and very hairy, but some specimens are rather lighter than others. The larvæ of the second brood are full fed about the middle of July, but numbers hibernate before they are half grown, and continue to feed next spring and emerge in May, thus forming a first brood.

PUPA.—The caterpillar spins an oval-shaped smoky white cocoon mixed with its hairs, wherein it changes to a yellowish white pupa which afterwards turns black.

The moth is double-brooded, and appears in May and August, and is diurnal in its habits. The scientific name is *Arctia fuliginosa*.—W. HARCOURT BATH, Birmingham.

(We print these notes on the Ruby Tiger as they are sent to us, with a view to elicit additional information. Further north the insect is only single brooded, and the full-fed larva hibernates. We would be glad of notes from observers further south than Birmingham, and also from Scotland or the north of England. Will Mr. Bath also kindly tell us what becomes of those of the second brood that feed up in the middle of July. He scarcely appears to show two distinct broods, but rather that part of the larvæ feed up and the imagines emerge in August, while the remainder grow slowly to feed up in spring. Are the August imagines barren?—EDS. Y.N.)

BUTTERFLIES.

12. ARGYNNIS PAPHIA.

THE SILVER-WASHED FRITILLARY.—Perhaps the commonest of the Fritillaries, and found in almost every large wood in the country. It flies at the end of June or in July. It passes the winter as a small larva, but is seldom seen in that state. It feeds on dog violet. The pupa of this and following species are suspended by the tail only.

13. ARGYNNIS ADIPPE.

THE HIGH BROWN FRITILLARY.—Not so common as the last, but occurring in similar places and appearing at the same time. It is much more abundant in the south than in the north, and rarely occurs in Scotland. It feeds on violets, and hibernates as a young larva.

14. ARGYNNIS AGLAIA.

THE DARK GREEN FRITILLARY.—Almost, if not quite, as common as *Paphia*, appearing at the same time and in similar localities. The last two are very much alike and not easy for a beginner to separate, but *Adippe* has a row of red spots between the two outer rows of silver spots that are wanting in *Aglaiia*.

15. ARGYNNIS LATHONIA.

THE QUEEN OF SPAIN.—One of the greatest rarities. Seldom found far from the coast in the south of England only. It is most frequently found in August and September, but it is probable that nearly all the specimens taken in England are immigrants. Why it fails to establish itself is not easy to determine. It may be readily recognized from all other fritillaries by the silver spots on the underside, which are very large and brilliant.

16. ARGYNNIS SELENE.

THE SMALL PEARL-BORDERED FRITILLARY.—A wood butterfly, occurring probably in every large wood in England, and equally widely distributed in Scotland and Ireland. It appears on the wing in May, and an odd larva sometimes passes through its changes and emerges in autumn. The larva is rarely found; it feeds on dog violet.

17. ARGYNNIS EUPHROSYNÉ.

THE PEARL-BORDERED FRITILLARY.—Also a wood butterfly, and even commoner than the last. It emerges in May and continues on the wing during June. The larva, which is not often met with, it feeds on dog violet.

(To be continued.)

BRITISH FRESH-WATER FISH.

By H. ANDREWS, Aldborough.

(Continued from page 342.)

The Trout (*Salmo fario*), is one of our handsomest river fish, and is very voracious, eating not only insects in all their stages, and worms, but also small fish. The colour is golden brown above, with a number of reddish brown spots, and the sides are covered with many spots of carmine. The lower part of the sides is yellow, and below is silver white. The Trout is found to inhabit retired spots, either in banks, or under large stones in the stream. There are a number of varieties of this species.

The Grayling (*Thymallus vulgaris*), is a small species found in Derbyshire, Hampshire, Yorkshire, and some other counties, and seldom weigh more 2 lbs.

Char (*Salmo ?*), consists of several small species of the salmon family, found in the lake of Windermere, &c. in Westmoreland.

Pollan (*Coregonus pollan*), an inhabitant of the lakes in Ireland.

Powan (*C. lacepedii*) and **VENDACE** (*C. marcenula*), inhabiting the lakes and lochs of Scotland.

The Carp (*Cyprinus carpio*) belongs to a family, with which, I dare say, most of us are acquainted who take an interest in angling. This fish is thick in shape, and the general colour is olive-brown, tinged with gold, and its scales are very large and shining. The mouth has two barbules on each side, the candal fin is forked, and the dorsal fin is much longer than that of the Barbel. The food of the Carp is the larvæ of insects, worms, &c. It may be found in rivers, lakes, and ponds, and will grow to an enormous size, weighing as much as 20 lbs.

The Barbel (*Barbus vulgaris*), called the bearded-fish, from the barbs or wattles at its mouth, is frequent in our rivers. It is

distinguished from the preceding species by the upper jaw protruding over the lower one, has a more slender body, and the dorsal fin is placed in the centre of the back. In colour it is greenish-brown above, greenish-yellow on the sides, and white below. The food is slugs, worms, and small fish. The maximum weight is about 14 lbs. The Barbel lives in rapid rivers, retiring in cold weather to deep waters.

The Bream (*Cyprinus brama*). This fish is an inhabitant of large lakes and deep rivers. Its food consists of worms, and other soft food. It is a thick fish, of a rounded form, the dorsal fin gradually tapering from one end to the other, forming almost a triangle, the candal fin is forked, and the anal fin elongated. It varies from 3 to 7 lbs. in weight, and is rather rare.

The Tench (*C. Tinea*). This fish is short and thick in shape, and the colour seems to vary according to the locality in which it resides, but may be recognized by the very small barbules, small scales, and abundant secretions of the body. It inhabits little lakes, ponds, and other still and muddy waters. Its heaviest weight is about 5½ lbs.

The Chub (*Leuciscus cephalus*) is a common fish in many rivers of England. All the fins are of a rounded form, except the candal fin, which is forked. It is not a large fish, reaching only 4½ lbs.

The Rudd (*L. erythrophthalmus*) is said to be plentiful about Norfolk,—“The fauna of Norfolk, 1845,”—but I am unacquainted with it.

The Roach (*C. rutilus*).—The roach is a small fish seldom exceeding 2 lbs. in weight. It is greyish-green above, with a blue gloss, and white below; several of the fins (ventral and anal) are decidedly red, also the eyes. The back has a graceful curve, and the snout somewhat rounded. It is common

in lakes and still deep rivers. One taken in the Trent weighed 2 lbs.

The Dace (*C. vulgaris*) is very similar in appearance and habit to the roach, but smaller and longer in form, and rarely exceeds 1 lb. in weight.

The Bleak (*C. alburnus*).—This fish is said to be plentiful near Oxford, but I don't know anything about it.

The Gudgeon (*Gobio fluviatilis*) is a pretty little fish which is only five or six inches long, and has a single barbule at each angle of the mouth. It is fond of gentle streams and rivers with gravelly bottoms.

The Loach (*Cobitis barbatula*), or, as it is sometimes called, Beardie, may be easily distinguished from other small fish by having six barbules about the mouth. It is very fond of lurking beneath stones in our rivers and becks.

The Minnow (*C. phoxinus*).—This gregarious species, which is to be found in every shallow stream, is so well known as to need no description. It is the smallest fish inhabiting this country.

The Common Eel (*Anguilla acuti-rostris*).—The Common Eel is the characteristic representative of a family destitute of ventral fins. It may be found in our rivers, ponds, and even in clay-pits. It is very partial to mud, and is often called the mud-eel. It has a very sharp nose, by which it is distinguished from its near relative. In the Ouse (Hunts), one was taken in 1869, weighing 7 lbs., and another in the Arun, 9 lbs., which is the heaviest I have seen recorded.

The Broad-nosed Eel (*A. latirostris*) is almost as common a species as the preceding. It differs in having a much broader head, the nose blunter, and the skin thicker, and rarely exceeding 5 lbs. in weight.

The Snig Eel (*A. mediorostris*.) This Eel is said to be found in the Avon, in

Hampshire, but I am not acquainted with it. It is said to weigh only half-a-pound.

The Sea Lamprey (*Petromyzon Marimum*) is a migratory fish, which makes its (in spring) up our rivers for the purpose of depositing its spawn. The peculiarity of this family is that the species are devoid of both pectoral and ventral fins, and belong the lowest in the scale of organization among vertebrate animals. Length 18 ins.

The River Lamprey (*P. fluviatilis*), is a permanent resident in our fresh water. It has a rounded head, a slender pipe-like body and compressed toward the tail. Seldom exceeds 15 inches in length.

The Sand-pride (*Aminocetes branchialis*) is a smaller species, usually found deeply buried in the mud; its length about 8 inches, and the thickness of a clay-pipe stem.

BRITISH BIRDS, THEIR NESTS AND EGGS.

By S. L. MOSLEY.

26. SONG THRUSH.

Turdus musicus, Linn.

Aderyn Bronfraith (Anct. Brit.)

MUSICUS (L), Tuneful.

Size.—Length, about 9 in.; expanse 1 ft.

Plumage.—Bill dark horn colour, lighter at the base of the lower mandible. Eyes hazel brown. A few black bristles before the eye, and longer ones at the gape. Top of head and whole of upper surface brown tinted, with greenish; wing coverts tipped with paler colour. An indistinct dark streak runs through the eye, and a lighter one over it. Under parts bluish white, tinted with buff at the breast, and spotted with dark brown. Under wing coverts orange, paler than in the Redwing. Legs and toes yellowish brown. The sexes are similar.

THE YOUNG when they leave the nest have the dark parts varied with lighter colour, as in the Missel Thrush, but not so distinct.

VARIETIES.—Many white and cream-coloured ones are recorded. A young bird in my own collection is pure white. Two others are recorded by Mr. Gunn (Nat. I. pp. 145 and 170). Another is reported on the same page, having "crown of head, back, and upper surface, light reddish brown, under parts white, the breast with spots of a pale reddish brown, bill and legs yellow." Another, reported in the same place, had the upper parts pale yellowish brown, the feathers on the back and wings edged with yellowish; throat and breast yellowish, spotted with light brown; abdomen white." Another is reported by the same gentleman, and in the same magazine (Vol. I. p. 207), having the "upper parts yellowish brown, margins of the feathers darker; throat white; breast and sides very pale yellow; margins of feathers darker; abdomen white." A curious variety is figured upon the plate, from Mr. Bond's collection.

Note.—This bird is one of our richest songsters, beginning generally in February. Its notes are loud, clear, and flute-like, usually a set of from four to six notes are run over three or four times, and then varied in a new arrangement, which are again run over several times, then varied again.

Flight.—Strong, performed by quick flappings of the wings.

Migration.—Resident. Their numbers, however, seem to be augmented on the approach of winter, probably by arrivals from the north, which depart again before the breeding season.

Food.—Berries, fruit, insects, worms, and snails. The shells of the latter are broken against a stone selected by the bird for that purpose.

IN CONFINEMENT this bird is a great favourite on account of its beautiful song. It may easily be reared from the nest upon bread and milk. After five or six weeks it should be gradually accustomed to bread crumbs and lean beef. When older it may be fed upon barley meal made into paste with milk and water, with occasional bits of lean meat, hard-boiled egg, snails, or worms. The cage should be large and have plenty of coarse sand and water for drinking and bathing.

Habitat.—Common throughout the British Islands, frequenting gardens, woods, plantations, and shrubberies. It, however, is said not to occur in the Shetlands.

ABROAD it is found throughout Europe and the western portion of Asia. Abundant in some parts of Africa during the winter. It has also lately been introduced into Australia.

Nest.—The nest is placed in a holly or other bush generally about five or six feet from the ground. Sometimes it is placed at a greater elevation against the side of a tree, and occasionally upon the ledge of a rock, even sometimes upon the ground. It is composed of dry grass and moss, lined very smoothly inside with a coating of mud and fibre of rotten wood or cow dung. The nest is commenced early in March or even sooner, and in fine weather is completed within a week.

Eggs.—From four to six eggs are laid, blue-green, with a few largish black spots, generally placed at the large end, but occasionally at the smaller end.

VARIETIES.—Sometimes the spots are entirely absent; they also vary much in size. A curious shaped one (fig. 2) is figured from Mr. C. S. Gregon's collection, and two more from the same, marked in an unusual manner (figs. 1-3). A remarkable variation is recorded (Zool. 187) having the ground white with dark red spots.

THE YOUNG NATURALIST.

F. G. MEEK,

NATURALIST,

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VOL. 3.

OBSERVATIONS.

“WRITE another article,” says one of our correspondents, “on Notes and Observations, and urge your readers to send more of them. Without undervaluing the other portions of your paper, which I always digest at my leisure, I like the Notes and Observations best, and always turn to them first.” We have in various ways urged our readers to send us more notes; and we have often thought they were rather negligent in not letting us have a more abundant supply. But when we look at other magazines, we find the same thing obtains with them. A few correspondents send their notes with the utmost regularity. Whatever they do of importance, whatever they take that is worth noticing, is duly recorded in the pages of the magazine they favour. But the large number of readers that each must have, appear to be content to benefit by other people’s communications, without adding anything of their own to the general stock of knowledge. No doubt many collectors get into a groove, as far as their collecting is concerned,

and go over the same ground year after year. These, no doubt, feel that having once or twice recorded pretty freely all their doings at the collecting ground, it is like twice slaying the slain to go over it year after year. Yet an intelligent observer could make very interesting notes if he would, though he collected on the same ground year after year. One insect abounds one year, and another, another. New species crop up occasionally, some continuing to appear afterwards, others never being taken again. The writer has collected for more than twenty years on one particular piece of ground, and a season has rarely passed over in which he did not meet with something new. Even this year, bad as it is said to have been, *Noctua bella* has occurred at sugar, for the first time it has been taken in the neighbourhood. In fact, we are under the impression that carefully prepared notes from a collector who stuck to one ground year after year, would prove of more value in the end than the notes of the most intelligent observer from a district where he had never been before. It

is no doubt true that much is noticed by the stranger, who visits a ground for the first time, that escapes the observation of those to whom most of the features of the place are familiar. Still, careful notes, made year after year, by one familiar with the scene, and with all its fauna; though they would be limited in scope, would probably add more to our stock of knowledge, than the same power of observation, expended each year in a new place. When the eye has become accustomed to certain objects, any slight departure from what is usual, at once attracts attention. We really know more about the habits, &c., of some of the rarest species than we do about those of the commonest ones. Who takes notice of the common white, who seeks the larva of the meadow brown? To this point we have often urged attention. But it may be that our readers are somewhat in doubt as to what they should send us. Certainly there are notes and notes. We have spoken much in this strain before, but as school lessons are repeated over and over again until they are mastered; so we may, with advantage, repeat over and over again the same thought, until our young readers comprehend our meaning. Moore says—

“At first, though mute, she listened, like a dream
Seemed all he said, nor could her mind,
whose beam
As yet was weak, penetrate half his scheme.”

A white butterfly in a cabbage garden is not very interesting, yet we could imagine that notes on such a subject might be made of great interest. How does the butterfly recognize the plant on which to deposit her eggs? Is it by sight, by use of her proboscis, or in what way? Does she ever make a mistake? Does *Rapa* ever lay its eggs on Nasturtium, or *Brassicæ* on Reseda? If not, why not? Do two butterflies lay their eggs on the same leaf? If not, how does the second one know that it is already occupied? *Mamestra brassicæ* is very destructive in cabbage gardens: is it ever found on the same plants as the white butterfly larvæ? We could go on for some time longer asking questions of this sort, very few of which could be answered. Sir John Lubbock has a high opinion of the intelligence of ants, but is it that ants are really more intelligent than all other animals, or that they have been more observed, and their intelligence is better known. It may well be that they are most intelligent, but we are decidedly of opinion that as our knowledge of other animals extends we will find more intelligence than we now calculate upon. Will our readers then try to add to the general stock of knowledge, anything that comes under their range of observation. We will return to the subject again and yet again, but do your best in the meantime.

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F.N.P., Liverpool.—*Injury to Carnations*.—Are you sure the ants make the holes? Are they not made by the earwigs, and the ants then avail themselves of the holes to get at the nectar. If this be so, you have only the earwigs to cope with. Make traps by inserting a short stick in the ground, and an inverted flower-pot with a little dry grass in it on the top: examine these traps every morning and kill all the prisoners. Also try dusting your carnation beds with powdered sulphur. Make further observations as to the ants, and we shall be glad of any further information or of specimens found doing injury.

G.H., Liverpool.—Thanks for beetles sent. The weevils are *Cleonus sulcirostris*; the others are *Gastrophysa polygoni*. We should be glad of any further information as to the nature or extent of the injury caused to beet by these latter.

G. McG., Glasgow.—*Gall Flies*.—The gall you send down from willow is one we have not noticed before. The flies are one of the gall midges or *Cecidomyia*, but we cannot at present determine the species: the specimens were very much broken. We are always glad to hear of persons taking an interest in "neglected orders." The article you ask for shall appear shortly.

NOTES AND OBSERVATIONS

DOUBLE-BLOOMING OF THE PLUM AND APPLE TREES.—I wish to record the double-blooming of the plum and apple trees, as it may not have been observed by some of the readers of the *Young Naturalist*, which has occurred rather frequently this summer; and as both blooms are producing fruit, we are having in the first instance blossom and fruit, and afterwards ripe and unripe fruit.—H. ANDREWS, Aldborough.

BUTTERFLIES.

18. MELITÆA CINXIA.

THE GRANVILLE FRITILLARY.—The members of this genus are without the silvery markings on the underside that is so striking a characteristic of the last genus. This butterfly is confined to a few localities in England, mostly on the south coast. It appears on the wing during May and June. The larvæ are easily found and easily reared. They feed on the common plantain (*Plantago lanceolata*), and are most active in the warm sun. They are spiny, black, and have red heads.

19. MELITÆA ARTEMIS.

THE GREASY FRITILLARY is a very local butterfly, but generally abundant where it occurs. It is very widely distributed, and should be looked for in May or June, in damp meadows or on hill sides where the devil's bit scabious (*S. succisa*) abounds, on which the larva feeds. It varies greatly in appearance according to locality, North of England and Scotch specimens being smaller and darker than those from the south of England. Irish specimens are very beautifully varied.

20. MELITÆA ATHALIA.

THE HEATH FRITILLARY.—This butterfly is found in heathy places and open parts of woods in June and July. It is more frequent in the south of England than in the North, and does not occur in Scotland. The larva

feeds on plantain, wood-sage, germander speedwell, &c.

21. PYRAMEIS CARDUI.

THE PAINTED LADY.—A species of most uncertain appearance. Sometimes it abounds all over the country; sometimes it is scarcely seen for years. It may be met with anywhere, but is most likely to be taken among thistles, on which the larvæ feed. The butterfly is generally found in autumn, when it hibernates, to reappear in the spring. It may be double-brooded in certain seasons.

22. PYRAMEIS ATALANTA.

THE RED ADMIRAL.—A common butterfly all over the country, but so strong on the wing that it is not easy to capture. It appears in August and hibernates, but is rarely seen in spring. It is oftenest obtained by breeding, the larva being easily found among nettles. It is solitary and conceals itself from observation by spinning together the edges of a nettle leaf, forming a secure retreat, from which it only emerges to feed, and in which it changes to a pupa.

23. VANESSA IO.

THE PEACOCK.—A most beautiful butterfly, similar in habit and times of appearance to the last, but not occurring so far north. Like the Red Admiral, the larvæ feed on nettle, but they are not solitary, and are found in large numbers on one plant. The larva is shiny black and spiny, with white spots. It generally leaves the food to pupate, and suspends itself under a wall coping or any slight shelter.

24. VANESSA ANTIOPA.

THE CAMBERWELL BEAUTY.—A great rarity in most of seasons, but at intervals it occurs rather freely. It is very doubtful if it really perpetuates its kind in this country, many good Entomologists believing that large swarms of it sometimes reach our shores from Sweden. It is generally taken in the autumn, but occasionally hibernated specimens are found. The larva, however, has never been found in this country. It is said to prefer the

white willow to any other food, but others are named: birch, poplar, and even nettle being mentioned by continental writers.

25. VANESSA POLYCHLOROS.

THE LARGE TORTOISE-SHELL.—A common butterfly in the south, but becoming rarer northward, and only an accidental wanderer into the most northerly counties of England; while no specimen has yet been recorded from Scotland. The larva feeds on elm, and is generally found in large batches. It has occasionally been found on other trees. The butterfly is most frequent on the borders of large woods, or shady lanes. It has been noticed to evince a partiality for sweets.

26. VANESSA URTICÆ.

THE COMMON TORTOISE-SHELL.—One of our most abundant butterflies, always plentiful. The larva feeds in large companies on nettle and sometimes two or even more batches of eggs appear to be laid on one plant. They keep together, opening a web about the nettles, until they are full fed, when they generally wander away to pupate under a wall coping or similar shelter; but sometimes they hang up on the underside of the nettle leaves. It has generally been considered to be a single brooded species, but it certainly has two broods sometimes. It may be found everywhere, and is very partial to the flowers of the thistle.

27. VANESSA C. ALBUM.

THE COMMA.—Most abundant now in the hop producing counties—Herefordshire, &c. It seems to be gradually disappearing from the north. The hibernated butterfly appears in early spring, and deposits its eggs on currant, gooseberry, nettle, &c. From these larvæ the butterflies appear in July, or late in June. The larvæ of the second brood seem to prefer hop, and are often found in large numbers by the hop-pickers. From them the perfect insect emerge in September or October, or even as late as November.

large numbers are destroyed when the hops are gathered. The larva is very peculiar, having a long white blotch on the back, exactly as if a drop of white paint had fallen on it, and was still wet and shining.

28. LIMENITIES SIBYLLA.

THE WHITE BUTTERFLY.—A butterfly that only occurs in the South of England, scarcely reaching the midlands. It has never been recorded from Scotland or Ireland. It is a wood insect, and is particularly noticed for its graceful flight. The larva is thickest in the middle, rather resembling in shape the common black snail *Arion ater*, but bluish-green in colour. The pupa is very much angulated, and has two peculiar ear-like projections on the head.

29. APATURA IRIS.

THE PURPLE EMPEROR.—The desire to possess this monarch of the woods is always strong with young Entomologists. It is a butterfly that appears in July, and is found in extensive woods in the South and South-east of England. It is said only to occur in oak woods, though the larva feeds on poplar and sallow. It disports itself about the tops of the loftiest trees, and is very difficult to capture. But it is attracted by carrion, or striking puddles, and it is curious enough to follow down a sod or similar article thrown up to the tree tops where it flies, and may sometimes be taken in this way. The larva, similar in shape to the last, is pale green, with a yellow line at the sides. It hibernates quite small, and is full fed in May or June.

30. ARGE GALATHEA.

THE MARBLED WHITE. This butterfly is also very appropriately called "The Half Mourner" in some places. It only occurs in England, where it extends as far north as Yorkshire. It frequents rough pastures, and is always very local, though generally abundant where it occurs, swarming perhaps in one field and nowhere else near. The larvæ hibernates quite small, and feeds up

in spring. They are smallest at each extremity, green in colour and feed on grasses.

31. EREBIA EPIPHRON.

THE MOUNTAIN RINGLET.—The only English locality are hills, in what is called the Lake district. In Ireland, it is found at Craigh Patrick, near Westport; and in Scotland there are several known localities for it, in Perthshire, Invernesshire, &c. It is not at all improbable that the Scotch and English insects may ultimately prove to be different species. They are very different in appearance, much more so than some species, that are recognised as distinct. The larva is scarcely known, but feeds on grasses or small *Junco*, on the mountain sides. The butterfly is on the wing before the end of June, and those who go for it should get it as soon as possible, as it is so delicate that it soon looks worn. Perhaps this is better known as "Cassiope."

32. EREBIA MEDEA.

THE SCOTCH ARGUS.—Better known among collectors as *Blandina*. In the North of England it is very abundant in the few places where it occurs, but extremely local. If you go to its haunts, you may take it by hundreds, but might be within a few yards of where it was plentiful and never see it. It frequents open places in woods, grassy banks, &c. The larva tapers slightly to each end, is pale stone colour, with longitudinal stripes. The butterfly appears in the last week in July, and should be looked for at once, as it is easily damaged. The larva hibernates to feed up in spring.

33. CÆNONYMPHA PAMPHILUS.

THE SMALL HEATH.—A most abundant little butterfly, occurring freely everywhere from May to August. There seems to be a succession of broods, and the larva, which is green, hibernates in all stages of growth. It feeds on grass.

34. CÆNONYMPHA TYPHON.

THE LARGE HEATH.—This species frequents damp moors and mosses in the

North of England, in Scotland and Ireland. It is darkest in colour in its most southerly habitats, becoming paler, and having fewer eyed spots further north. The larva is not well known, is dark green and feeds on either Beak rush or Cotton grass, perhaps on both.

SETTING SMALL FLIES.

A correspondent recently sending us some gall midges, suggested that we should give an article on setting these minute insects. We have great pleasure in giving the plan that was recommended to us by Mr. Fitch, and one we have found to answer admirably both for these and small ichneumons. First procure a saucer or dish containing hot water; quickly open the box containing the insects over it, and give the box a smart tap, when all the flies will drop upon the hot water and be killed instantly. Most of them will drop with their wings expanded. Then get a sheet of writing paper and cut it up into pieces about one inch long and half-an-inch broad. Take one of these pieces between the finger and thumb and carefully insert it under one of the flies floating on the surface of the water; lift it out, and the fly will adhere to the paper. The legs, wings, antennæ, &c., may now be put into position with a needle upon the wet paper, and allowed to remain for a few hours. When all the moisture has evaporated and the limbs become stiff (not hard), the flies may be lifted from the paper by the point of a needle and transferred to a card smeared over with gum tragacanth, in which a small piece of clear gum arabic has been dissolved. It will be of advantage to gum a few of the specimens up-side-down, so that the under parts can be seen. The cards should be uniform small squares, each containing one species only. A pin is put through the bottom end of the card, particulars written either at the foot or on the underside, and the whole is ready for the cabinet.

NATURAL HISTORY NOTES FROM WEYBRIDGE & WISELY.

(Continued from page 339.)

July 12th.—Took a specimen of the Cinabar (*E. jacobaa*), also Poplar Hawk (*Smerinthus populi*), the latter apparently just emerged, the wings not being properly expanded.

July 14th.—Saw some large plants of Vipers Buglass (*Echium vulgare*), also an Orobanche (*Broom rape*) growing on clover, which I could not identify, as it withered before I got home.

July 15th.—Found the beginning of a hornet's nest and killed three hornets.

July 16th.—I went for a walk along the river Wey and observed the following plants in flower:—Willow herb (*Epilobium Hirsutum*), balsam (*Impatiens noli-me-tangere*) not in flower, meadow-sweet (*Spiræa ulmaria*), hemp agrimony (*Eupatorium cannabinum*), cow wheat (*Melampyrum pratense*), *Stachys silvatica*, bird's foot (*Ornithopus perpusillus*).

July 20th.—The gardener killed a brown snake about two and a half feet long, its belly being white, handsomely mottled with black. It was not a viper, so I suppose it must have been a green snake. Do green snakes have any green about them really, as, I'm ashamed to say, I don't know?

July 24th.—Noticed a large quantity of *Lysimachia vulgaris*. What a fine plant it is with its large heads of yellow flowers. Watched their wasp grubs in various stages of hatching. How quickly they seem to be in arriving at the perfect insect from the grub.

July 26th.—It is a very curious fact, one of course, well known to botanists) the way in which the stinging nettle (*Urtica dioica*) sheds its pollen; but I should advise any of your readers who may not have observed it to do so.

July 28th.—Saw a house sparrow with

the upper part of the wings (near the shoulder) quite white.

July 29th.—I saw a reed sparrow trying to catch a dragon fly, who, at the third attempt, was driven away by a willow wren. The latter bird, after doing so, quietly flew back to the bush by the side of the river on which it was perched before.

August 1st.—Skinned a young kestrel (female) which the keeper shot yesterday. Also found a small brown moth *alive* inside the tube of North American *Sarracenia* (pitcher plant) which we have growing out of doors.

August 2nd.—Observed the following:—Purple Loose-strife (*Lythrum Salicaria*), Toadflax (*Linaria vulgaris*), Eyebright (*Euphrasia officinalis*), *Convolvulus sepium*, *C. avense*, Comfrey (*Symphytum officinale*), Alkanet (*Anchussa sempervirens* and *Hieracium sphondylium*).

August 3rd.—Observed *Epilobium hirsutum*, *Viola arvense*, *Mimulus luteus*.

August 6th.—Saw a *herald* moth by the river Wey looking as if recently emerged.

ECONOMIC ENTOMOLOGY.

By S. L. MOSLEY.

(Continued from page 343.)

Corn.—**CORN APHIS** (*Aphis granaria*). This aphid attacks all kinds of grain, both in the young state, and when the grain begins to form. Sometimes the ears are so badly infested as to materially injure the crop.

REMEDIES.—Two small flies are parasitic on this aphid, and should be encouraged. The artificial remedies are dusting with lime; early sowing and manure, so as to ensure strong forward plants.

CRANE FLIES (*Tipula*).—The grubs of these flies are generally most hurtful in soft land, injuring the roots of corn, grass, cabbage, &c.

REMEDIES.—Drainage; clearing away all unnecessary herbage and burning it; well

manuring, so as to give the young plants a good start. Ground infested by the grub may be watered with a strong solution of sulphate of copper or iron, when the plants come off.

GOUT FLY (*Cholorops teniopus*).—This fly attacks barley chiefly. The injury is caused by the maggot eating a part of the ear and causing a stunted growth.

REMEDIES.—Guano and superphosphate applied at the time of sowing; or nitrate of soda and salt applied when an attack is discovered.

WHEAT MIDGE (*Cecidomyia tritici*).—The grub of this fly is orange, and infests the ears of corn, causing imperfect growth.

REMEDIES.—When a crop has been infested, the stubble should be ploughed up deep, the corn thrashed, and the chaff and all refuse swept clean up and burned.

WIRE WORM (larvæ of click beetles *Agriotis*). These grubs are perhaps the most hurtful of any of our insect pests, and are difficult to get rid of when once established.

REMEDIES.—The natural enemies of the wire-worm are the mole, rooks, plovers, &c. On farms it is best to dress the land with fresh gas-lime in the autumn, and allow it to remain empty till spring. Nitrate of soda, salt, and soda-ash as said to be of service, and any stimulating manure. In gardens traps may be made by burying carrots and potatoes, a few inches deep, and examining them every few days. Paraffin is also of service, either diluted with water, or mixed with sand and strewn about.

Hop.—**HOP APHIS** (*Aphis humuli*).—This insect is the most destructive one to hop, some years doing considerable damage.

REMEDIES.—All kinds of aphid-eating larvæ should be encouraged. The usual plan adopted by growers is to wash the plants with a solution of soft soap; this should be begun directly the fly appears, and every leaf thoroughly washed.

(To be continued.)

THE YOUNG NATURALIST.

E. G. MEEK,

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 149.

SEPTEMBER 16TH, 1882.

VOL. 3.

MISTAKES.

NOTHING is so easy as to make a mistake. It is recorded of Kepler, in his investigations into the laws regulating the distances of the planets and their periods of revolution, that an error in his calculations delayed the final discovery for many a weary month. Newton, too, could not satisfy himself that his law of gravitation was correct until a more accurate measurement of the diameter of the earth was substituted for that he had used. So in natural history many an error has been unintentionally committed that has delayed and hindered progress. But while mistakes of this class are really few and far between, however important may be their effects, there is another class of errors that can be guarded against in most cases—the mistake of coming to a conclusion without sufficient knowledge. Some people imagine that they know everything, or so nearly everything as to amount to the same thing. These people are generally densely ignorant and scarcely know anything at all, but what they lack in knowledge is abun-

dantly made up in conceit. They will name a bird on the wing with unerring certainty; tell you what a plant is so soon as the cotyledons are above the ground; there is no moth they do not know, and but few larvæ; and, in short, the difficulty is to puzzle them. But the perfect confidence these sort of people have in themselves is very likely to mislead a beginner. A captured pug is taken to them,—a cursory glance is taken at it,—“Oh! yes! it is *lariciata*.” The same specimen is taken to a much better entomologist: it is carefully examined, compared with two or three different species, questions asked as to where and when it was taken, and then he declines to say what it is until he has an opportunity of examining it in daylight. Now if the owner of the pug, as is most probable, knows nothing of the difficulty of naming a worn *Eupithecia*, he would naturally conclude that the person who professed to recognize it at first sight knows most about them, and that what was easy to him was a puzzle to the other. Yet it was probably not *lariciata* at all, perhaps not even like it.

The beginner calls it *lariciata*, and the specimen so named misleads him for many a day, until he learns for himself the characteristics of the species. These very knowing people make mistakes innumerable in their ignorance, but the mischief does not end there. The beginner offers a species for exchange, whose name he obtained in this way. He sends his specimens away—many of them to beginners like himself; they are accepted as correct, and the specimens marked off as not required in their exchange lists. But examples reach one who knows the species, and are returned. If the receiver is short-tempered, perhaps an abusive note comes with them. If he is the reverse, he will try to point out the differences between the species sent and that offered. Yet again, the advertiser may still have doubts when so many have accepted the specimens as being correctly named and only one has objected to it. We know a case of this sort ourselves, where a wrongly-named insect was sent us in exchange. We, of course, were of the amiable type of collector, and returned the specimens with the correct name, and an attempt to show where the two differed. In reply we received an abusive note. So many collectors had been satisfied with the specimens sent and had returned good exchanges, and, to begin with, the insect was named for them by an entomologist who was "well

up," and so on. But the specimens were wrongly named for all that. No doubt it is difficult for beginners to discriminate as to who is best qualified to help them, and the officious ignoramus will very likely be preferred before the really intelligent entomologist who does not obtrude himself on every possible occasion. We advise beginners then to take special pains to have their unknown insects correctly named for them, and never to accept the dictum of anyone until they have verified it by a careful comparison of the insect with a description of it in some standard book such as Stainton's Manual. To have an insect named for you, even correctly, helps you very little. You want to study and understand its markings yourself. It is quite right for you to get it named when you can, but, in the first place, endeavour to have it correctly named; and in the second, when you have got that done, go to your book and compare the insect line for line and mark for mark with the printed description. If they agree, you may conclude you are right; if they do not, then you must seek further information before you are satisfied.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15, Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now past due, and we will be glad to have remit-

tance from those who have not yet sent them. Weekly numbers or monthly parts, post free, 6/- per annum, or 1/6 per quarter, *in advance*. Coloured plates, 2d. each extra. These can only be had direct from the conductors as above, but any one procuring them through the booksellers can have them coloured on application.

EXCHANGE.

W. HARCOURT BATH, Manor Villa, Sutton Coldfield, has a great stock of Moths and Butterflies for exchange, including many rare specimens. Please write quickly.

DUPLICATES.—*Bradycellus distinctus*, *Dichrotrichus obsoletus*, *Philonthus albipes*, *P. nigritulus*, *Stilicis orbiculatus*, *Haltica ericeti*, *Plectroscelis aridella*, *Thyamis lurida*, &c. DESIDERATA.—Numerous lepidoptera and coleoptera.—S. HUME, 4, Overton Terrace, Ashburnham Road, Clive Vale, Hastings.

NOTES AND OBSERVATIONS

THE RUBY TIGER (*Arctia fuliginosa*).—The imagines of the first brood emerge in October and the beginning of September. They are *fertile*. I have had quantities of eggs from them. The young are hatched in about a fortnight's time, and feed a little after which they hibernate, and emerge the following May. It seems very strange, some that were hatched in June, quite four months before others, should not in one sense be any older. There is no proper distinction between the first brood and the second; some of the second brood go towards forming the first.—W. HARCOURT BATH.

SUGAR AT BIRMINGHAM.—The following is the result of sugar this year. 18th April, sugared in a wood a Selly Oak, but not an insect of any kind turned up. 12th July, sugared in same place with Mr. Deakin, and the result one *Noctua augur*. 22nd July,

we sugared again at Selly Wick, but nothing turned up. This was so discouraging that we have not tried since. It would be very interesting if correspondents from other parts would send you the results of sugar this year. I might add that one of our best Entomologists here has only taken one moth at sugar this year, although he has tried three times at Sutton.—GEO. F. WHEELDON, Birmingham.

THE ELDER GROWING ON A YEW.—I noticed two young Elder trees (*Sambucus nigra*), one about two feet and the other about nine inches high, growing on the branches of a very old yew tree (*Taxus baccata*), in Clieve Churchyard, near Evesham, on 2nd September. They were growing out of niches in the bark, one on one side of the tree, and the other on the other side. I have heard of whitethorn, growing on Oak trees, but never of the elder growing parasitical. Have any of your correspondents noticed this before?—G. F. WHEELDON, Birmingham.

CONTRIBUTIONS TOWARDS THE FAUNA OF PLYMOUTH.

(By permission of the Author.)

By Mr. G. C. BIGNELL, M.E.S.

[Reprinted from the Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society, 1881-82.]

HYMENOPTERA; ICHNEUMONIDÆ.

Arranged according to the Rev. T. A. Marshall's Catalogue, published by the Entomological Society of London, 1882.

PART II.*

- ICHNEUMON cyaniventris*. Captured at Bickleigh, 20th August
leucocerus. Captured at Bickleigh, 2nd September
lineator. Bred in May
molitorius. Bickleigh, 2nd September
vaginatorius. Plymbridge, 5th August
minorius. Bickleigh, 5th August
latrator. Bickleigh, 2nd September

* Part I. will be found in Vol. II. of the Y.N.

- cessator*. Bickleigh, 8th June
saturatorius. Bickleigh, 20th August. I have bred it from *Nonagria typhæ* larva, taken in Essex
varipes. Plymbridge, 24th September
leucomelas. Stoke, 15th August
vestigator. Bickleigh, 6th September
bilunulatus. Bickleigh, 20th August
albicinctus. Plymbridge, 24th, September
AMBLYTELES *armatorius*. Bickleigh, 8th June
margineguttatus. Bred from *Noctua brunnea*, 31st May
notatorius. Stonehouse, 27th May
Panzeri. Bred from *Agrotis exclamationis*, 16th July
alticola Bickleigh, 2nd September
PLATYLABUS *phedenii* (Holmgr.) Bickleigh, 2nd September. This is a new British species
pedatorius. Bickleigh, 16th September. Has been bred from *Eupithecia subnotata*
errabundus. Bickleigh, 2nd September
GNATHOXYS *marginellus* (Holmgr.) Plymbridge, 24th September. This is a new British species, and the first of the genus taken in England
 (To be continued.)

ECONOMIC ENTOMOLOGY.

By S. L. MOSLEY.

(Continued from page 343.)

Grass.—The chief enemies to grass-land are the larvæ of the Cockchafer and Crane Fly.

REMEDY.—Watering the ground with diluted paraffin, will be found of service in both cases.

Onion.—**ONION FLY** (*Anthomyia ceparum*).—The grub of this fly feeds upon the bulb of the onion, eating portions and causing others to decay.

REMEDIES.—Paraffin is recommended as one of the best remedies, either mixed with

water or sand. Soapsuds, soot, wood ashes and old gas-lime have also been used with some success.

Pea.—**PEA AND BEAN WEEVILS** (*Sitona*). These beetles eat away the leaves, and are sometimes very numerous, attacking the young plants and preventing a proper growth.

REMEDIES.—Wood and coal ashes at the time of sowing. When the beetle has begun its attack, soot or lime may be strewn over the plants after rain.

Turnips.—**FLEA BEETLE** (*Haltica nemorum*).—This and several other kinds of small jumping beetles are the worst enemies of the turnip crop, gnawing away the leaves of young plants.

REMEDIES.—All weeds, such as charlock and others, should be cleared away and burnt, as these harbour the beetle. Anything such as manure or watering in dry weather to bring the young plants forward will be of service. The following is given as the best remedy in bad attacks:—"1 bushel gas lime, 1 bushel lime from kiln, 6 pounds sulphur, 10 pounds soot," well mixed and reduced to a powder, and strewn over the plants while the dew is on them. This is sufficient for two acres. In gardens sulphur and lime may be used.

TURNIP MOTH (*Agrotis segetum*). The caterpillar of this moth eats into the bulb of the turnip.

REMEDIES.—Partridges and rooks destroy large quantities of this grub. Soot placed round the stems, or old gas-lime placed a little distance from it have been found of service.

NIGGER (*Athalia spinarum*).—This is the larva of a saw-fly, It is often many years between its appearances, but when it does come it is generally so numerous as to destroy the crop.

REMEDIES.—When the young plants are found to be infested, they should not be

thinned. In bad attacks the best plan is to buy a lot of ducks, and turn them into the infested fields.

Aphides are also very liable to attack turnips, but it is generally when the plants are so far advanced that the insects make little impression upon them. (For remedies see "Cabbage," &c.

BRITISH BIRDS, THEIR NESTS AND EGGS.

By S. L. MOSLEY.

27. REDWING.

Turdus iliacus, Linn.

Rodvinge trast (Sweden).

Miestag rasters (Lapland).

ILIACUS, *Iliia* (L.). The flanks—probably from the red colour being on the sides or flanks.

Size.—Length, about $8\frac{1}{2}$ in.; expanse 1 ft. 2 in.

Plumage.—Somewhat similar to the Song Thrush, but the upper parts much darker, the light streak over the eye more distinct, less buff upon the breast, and the feathers under the wings, *brick red* in the Redwing, and yellow in the Thrush.

THE YOUNG is spotted and marked like the young of the common Thrush, but darker.

VARIETIES. A white one is recorded, *Zool.* Vol. xxi., p. 8484. One which lately belonged to Mr. Alfred Beaumont, of Huddersfield, was very similar in colour to the variety of Song Thrush, figured from Mr. Bond's collection.

Note.—The ordinary note of the Redwing is a rather long drawn sibilous whistle, often used when on the wing. Just before the breeding season, however, it has a song which is described as very melodious. It is said to be the most beautiful songster of the forests of Northern Scandinavia, where,

from its habit of singing in the night, it is known as the "Nightingale." It has sometimes been heard singing in this country.

Flight.—The flight is performed by quick flappings of the wings, and periods of cessation. In this country they remain somewhat in companies, either by themselves or with Fieldfares.

Migration.—This species is migratory between this country and the north of Norway and Sweden. They arrive here at the end of October, and depart again at the end of April.

Food.—Insects, worms, slugs, &c., form the chief part of its food; in hard weather it will eat haws and other berries.

IN CONFINEMENT it may be treated like the Thrush, except that it should be kept in an out-door aviary.

Habitat.—Very common in winter in all parts of Britain.

ABROAD it is found in the greater part of Europe, breeding in the north; it moves to the south on the approach of winter, and is then found in parts of Asia and Africa.

Nest.—The breeding home of the Redwing is in the pine forests of the north. The nest is smaller and more neatly built than that of the Fieldfare, and is composed of moss, dry grass, roots, &c., mixed inwardly with clay, and lined with fine grass. It is placed in a bush, and often near to some stream, and is commenced as soon as the birds arrive at their breeding place. It has been reported as breeding in England, but it is doubtful if the reports are correct.

Eggs.—From four to six. They somewhat resemble those of the Fieldfare, but Mr. Wheelwright gives the following distinction:—"The egg of the Redwing is always smaller, neater, and purer in colour than that of the Fieldfare. It has, moreover, when fresh, a peculiar green tinge, which, however, fades soon after the egg is blown."

A RAINY DAY AT SALFORD PRIORS.

By P. T. DEAKIN.

On the Midland line, at about an hour and a half's ride from Birmingham, lies the little village of Salford Priors. The country hereabouts is situated on the limestone formation, and besides being tolerably well-wooded, has the rivers Arrow and Avon running through it, so that it is a very desirable place for a naturalist to ramble about in; and the following sketch represents a Saturday afternoon excursion spent there with a party of Conchologists.

Immediately on leaving the station we turned to the right and continuing our way for a few hundred yards, past green hedges and thatched cottages built of limestone, we were soon in the haunts of the molluscs, principally *Helix aspersa* and *memoralis*, both of which are exceedingly plentiful and very rich in variations. *Bulimus obscurus* also occurs sparingly along the hedge banks. A little farther up the lane past the church, we came to the "Bell Inn," and after passing through the house and garden found ourselves in a path leading across the fields, along which we went, stopping, however, for a few minutes by the side of an old ditch, with willows and flags on the banks, here we found *Bythinia tentaculata* and *Planorbis complanatus* in abundance, with an occasional *P. vortex*.

We next climbed a few stiles, crossed the railway line (Salford to Evesham), and a small river where *Pisidium fontinale* and *B. tentaculata*, were found in small quantity, and had proceeded across two or more fields, when it came on to rain rather sharply. We turned up our collars, put up umbrellas, and then commenced to ransack a couple of nearly dried up ditches and succeeded in finding plenty of good specimens of *Succinea putris*, climbing up the grass and rushes, which grow round the edge. Another ditch

farther on yielded a few *Limnæa palustris* and *peregra*. The confluence of the river Avon and Arrow next came into view, and we had to cross a slippery single plank bridge, with a wire hand-rail, and the water rushing and foaming down a waterfall not a foot below. The bridge is about 60 yards long, and is a rather shaky place for nervous people to venture across, but there were none belonging to our party that were troubled that way. The place is the boundary between the counties of Warwick and Worcester, so when we got on to the other side we found ourselves in the latter county and in the Cleve Prior District. Stopping for a few minutes by the mill, which stands on the Cleve side, we took off our coats, turned up our shirt-sleeves, and, kneeling down on the stonework of the mill-dam, set on to find *Neritina fluviatilis* and *Bythinia tentaculata*, which fix themselves between the chinks of the stones and among the water weed, and managed to find a fair supply of each. The former is not very abundant round about here, so I thought myself lucky to get half-a-dozen. We then marched down to the river-ford, and fishing up with our colanders a few specimens of *Sphærium rivicola*, *Unio tumidus* and var. *radiata*, and a dead *Anodonta* or two. There were plenty of dead *Dreissena polymorpha* and *Paludina vivipara*, but they were all worn and chipped, so not worth carrying home.

Past the mill there is a set of rudely made stone steps, leading up the hill towards the village of Cleve Prior, and we took that direction, not without sundry falls over wet and slippery stones, and after about ten minutes climbing up a steep muddy track managed to reach the top. Here on a fine day the view is grand—the slanting hill-side, with the river wandering at its foot and the wooded country for a background, makes you feel as if you could sit down for a day or two to take it in.

As time it was not a fine day, so we were
 ne out of our view and had to push on.
 The first time I paid a visit to this part of
 the country, and stood on the top of the hill,
 I thought, as a matter of course, we should
 go down the other side. But there is no
 "other side" to it, for the top is a regular
 level land and the level country stretches
 away for miles, till it reaches another hill
 not perceptible in the distance. What
 caused this peculiar feature I leave for the
 geologists to find out, so we will resume the
 thread of the story as the novelists say.
 Well, we pushed open a gate and entered a
 corn-field, where the corn, having been cut,
 was piled up in sheaves here and there.
 Amongst the stubble crawled *Helix virgata*,
Caperata, *Limax agrestes*, and *L. maxi-*
mus. The spreading caucalis (*Caucalis in-*
ta), also grew here, but had gone to seed,
 so we took a few seeds as they are good ob-
 jects for the microscope. On the other side
 of the cornfield was the village of curious
 houses, built of grey limestone and
 walled. We had now got into a fine
 country for shells, viz.: the limestone walls
 that surround the fields and gardens, and
 having obtained the necessary permission,
 we set to work. On lifting up the topmost
 of these slabs of the walls we found *Helix pul-*
chella and the var. *costata*, *H. rupestris*, *H.*
vicida, *Pupa marginata*, and *Clausilia*
rosacea in abundance. We next passed
 through the village and examined some
 of the walls, taking *Pupa marginata*, var.
virgata, a rare and good variety, and *Helix*
tescens. After the village was passed and
 we emerged into the open country, the
 habitat of *Helix concinna* was reached.
 They are found at the foot of grass and
 other plants, especially in damp places. We
 found plenty, among which were several of
 the var. *albida*, and also *Succinea putris*,
elegans, *Zonites cellarius*, *Arion ater*, and
 other species, which is either *Limax*
gates or *marginata*, I think it is the former.

We next made our way towards Cleve
 Church, and passing through the church-
 yard noticed a fine old yew tree, and the
 weather-beaten gravestones, with the fossils
 sticking out of them where the stone was
 worn away by frost and rain, and making
 our way down another lane, called Broady
 Lane, till we came to the hillside again.
 Here the grass and banks were covered
 pretty thickly with *Helix virgata* and *cape-*
rata, with an occasional *H. ericetorum*.
 This latter shell is like *virgata* in colour,
 but is flat instead of conical, slightly larger
 in size and the umbilicus very wide and
 deep. *Virgata* and *caperata* were also very
 abundant down Broady lane, and we took
 several pairs in copulâ. Our time being
 limited we had to make our way towards
 the mill again, which we did in a round-
 about direction, and took another or
 two of the last mentioned species on our
 way. No other incident occurred till we
 reached the "Bell," where we stayed and
 refreshed ourselves while a passing storm
 came on. When it had abated a little, we
 started for the railway station, and on our
 way saw something of mollusc life. The
 heavy rain had "brought out" *Helix nemo-*
ralis from their concealment under the
 hedges by hundreds, and all along the road
 you could hardly walk without smashing
 some. We took some prettily marked vari-
 ations of the type, and also the vars. *horten-*
sis, *hybrida*, and *minor* in smaller quantities.
 Reaching the railway station in good time
 we found an empty carriage which our
 party just managed to fill comfortably, and
 journeyed on towards "Old Brum," whiling
 away the time by telling anecdotes and
 jokes. The day had not been exactly *lovely*,
 except for snails, which seem to like the
 wet; but I think none of us were dissatisfied
 with our half-day's out in the rain, in fact
 more than one made up his mind to spend
 some more time there on the earliest
 opportunity.

THE YOUNG NATURALIST.

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TOO LATE.

“I was just too late for the species I promised you, it was quite over when I got to the locality. There was a worn specimen or two left, but none worth setting. I had intended going for it about a fortnight before, but one thing and another seemed to come in the way, and but for my promise to you I would not have gone at all, for I felt sure there would be few, if any left on the wing.” So writes a correspondent, and how many more could say the same thing? A day seemed of no consequence, and we put off till to-morrow; to-morrow was an unsuitable day; the third day we really could not go; the fourth it rained; on the fifth we had promised to go elsewhere, and as we had a companion we could not get off the engagement. And so on day after day, till we could look back and see that the first day was really the only chance we had. In Entomology, as in other branches of Natural History, it is as the old Ballad says—

“He that will not when he may,
When he would, he shall have nay.”

We did not avail ourselves of the chance we had, and another never came. Look back, you Young Naturalists over the past season. It has been but a bad one on the whole. Insects have been scarce, many have not been seen at all, but as you look over your record for the last few months, how many of you must admit, that bad as the season has been, you have made it very much worse by putting off till the morrow that never came, a capture that ought to have been made to-day. It was a forward season, and in some respects a curious one, for so far as our own experience goes, we found one species out rather earlier than usual, and another rather later, and this anomaly obtained all through the summer, on the whole however, insects were true to time, and if they were less abundant than usual, that was all the more reason why we should look after the few there were, in extra good time. It is too late now. All the good resolutions in the world would not give back the missed opportunities of the past months of spring and summer. It is easy to look back on the past with

regret, and equally easy to make a firm resolve to do better in the future. But the past is irrevocably gone, and the future is not ours to deal with as we would. The only time we really have at our disposal is the present time—to-day, not to-morrow—certainly not yesterday.

“Let the dead past bury its dead,” and do not waste time in vain regrets for what has not been done, and cannot be done now. Let us

“Act in the living present.”

What are you doing to day? Do not let it even be what are you *going to do* to day, but, what are you doing? The season is not yet over. There are all the autumn insects still to be taken. Who will take the *Vanessa Antiopa*; that glorious butterfly that so rarely gladdens the eye of a collector, and makes his heart beat with expectation and exultation? Who will secure *Dasyampa rubiginea*, that pretty little noctua that far too seldom is to be found sipping the sweets of autumnal sugarers. Do not put off till spring to try for a hibernated female and impregnated ova. Try for cabinet specimens now; and if, when spring comes, the opportunity of obtaining (or trying for) an impregnated female is afforded you, embrace it by all means, but do not lose the present chance, for the sake of the future; when by taking that now offered, you may have both. Who wants *Dasypolia templi*? In a month or six weeks

this species will be on the wing, and those who live in its localities can get it if they like. This is the only species we know of that you have really to work for. As most of people know, it hides in stone heaps; and those who would obtain it must turn over a ton or two of stone for every specimen secured. Well, it is worth the labour. But do not put off till next spring to get an impregnated female. Get them this autumn and keep them in a cool place, till they deposit their eggs next spring. You have missed your opportunity all through the spring and summer; miss them no longer, but set earnestly to work now. The most successful collectors are those who do things at the proper time;—a habit is easily formed, and difficult to shake off when formed. It is as easy to be in time, as to be too late. Your habits are yet to form, let them be such that you will never have to say “Too late.”

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

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CONTRIBUTIONS TOWARDS THE FAUNA OF PLYMOUTH.

(By permission of the Author.)

By Mr. G. C. BIGNELL, M.E.S.

[Reprinted from the Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society, 1881-82.]

HYMENOPTERA; ICHNEUMONIDÆ.

Arranged according to the Rev. T. A. Marshall's Catalogue, published by the Entomological Society of London, 1882.

(Continued from page 364.)

PHÆOGENES stimulator. Bickleigh, 2nd September

fulvitaris. Bickleigh, 6th September

ÆTHECERUS—(?) This is a genus new to Britain, and, I believe, an undescribed species. It was taken by the writer at Exminster, on the 3rd September, 1881

PHYGADEUON dumeetorum. Bickleigh, 20th August

areus. Bickleigh, 8th June

plagiator. Liskeard, 28th August

vagabundus. Laira, 3rd July

graminicola. Maker, 27th August

nycthemerus. Bickleigh, 2nd September

erythrinus. Bickleigh, 6th September

CRYPTUS obscurus. Liskeard, 1st September

ornatus (Grav.). Bickleigh, 2nd September. This is a new British species

migrator. Weston Mill, 31st August

HEMITELES micator. Bickleigh, 6th Sept

fulvipes. Bickleigh, 16th September

areator. Bred 21st February from Saw-fly cocoon (*Trichiosoma betuleti*), found at Bickleigh

castaneus Bickleigh, 16th September

NOTES AND OBSERVATIONS

BIRMINGHAM NOTES. August 18th.—A beautiful specimen of the green sandpiper (*Totanus ochropus*) was shot at Solihull. It is rather uncommon about here, as it generally frequents the sea-shore. It has been sent to Mr. E. F. Spicer, the taxidermist, Birmingham, for preservation, and is the property of Mr. Edginton, an amateur naturalist of Solihull.

While taking a quiet row down the river Yare at Norwich, I saw something swimming in the water a few yards in front of the boat. At first sight I thought it was a rat, but being anxious to gratify my curiosity I gave a strong pull, stopping its passage. It came boldly up to the boat, I struck at it with one of the oars, when it dived clean under the water. Thinking it would come up the other side of the boat, I got ready for a second attack, when my friend drew my attention to it getting out of the water on the same side that it had started from. It proved to be a very fine specimen of the stoat. I had evidently wounded it, as his movements were very slow; but as it was getting late I did not trouble to follow it. Is it a common occurrence for a stoat to take to the water? I never saw one do so voluntarily except when very hard pressed.

September 2nd.—A beautiful specimen of a young wryneck (*Junx torquilla*) was picked up in a wood near Kidderminster by Mr. Seeley of Moseley. He succeeded in keeping it alive for a week, when it succumbed for want of its proper food, of which ants are its favourite. In quest of them it traverses the trunks of trees, examining every crevice, and picking them up by means of its long tongue, which is covered with a glutinous secretion. While feeding, the body is quite motionless, the head only is turned to every side, and the motion of the tongue is so rapid that an ant's egg, which is of a light colour and more conspicuous than the tongue, has somewhat the appearance of moving to the mouth by attraction as a needle flies to a magnet. They very seldom use their bill, and the action of their head is most extraordinary. It seems to turn completely round and round as though on a swivel when any one approached it. The wryneck is one of our summer visitors. It arrives here about April and returns early in autumn.—A. G. DAVIS, B.N.F.C., Birmingham.

"MISTAKES."

Your excellent, but not exhaustive, leader in No. 149, Y.N., has forced a few observations from me on this subject, which otherwise were only latent. No man has had so much to unlearn as me, that I am aware of. In my early days I swallowed all that our books told us, errors and all; and in these days they were pretty nearly all errors, sometimes wilful. To prevent anyone getting a species, a wrong food-plant or name was given, at others the errors arose from want of knowledge, or from too hurried observations; and it seems to me this is a growing evil of to-day. I have no desire to damp any of our young friends' ardour, but it is not right to let such remarks as appear at page 347, and at 363, go uncontradicted; or our present race of Young Naturalists will, like the old race, have to spend fully half their time unlearning. At page 347 we are told of the "Ruby Tiger,"—"wings semi-transparent, fore-wings pinkish brown, hind-wings a deep pink, bordered with black spots on a band. Head and thorax brown; abdomen pink, with a series of black stripes down the centre of the back; expanse, about one inch.... The moth is double-brooded, and appears in May and August." Then at page 363 there are some further remarks, which I will not quote, but ask our young friends to compare for themselves. Like Newman, our friend, the writer, seems to be colour-blind, and calls *red*, pink; &c.; but if our young friends will compare this description with "*Arctia fuliginosa*," after "wings semi-transparent," they will find that the whole description fails to represent the moth. In my series of over thirty specimens I have only one small specimen, it measures exactly one inch, but in the series are many fully 1½ inches in expanse; I name this to show hardly anything in the quotation is correct. As to the species being double-brooded, all the genus *Arctia* can be bred out in confinement—if kept in an even temperature, on a kitchen chimney-piece is the best

place to keep them; but in my experience I never knew a "Tiger" double-brooded in a natural state. I have bred *fuliginosa* three broods, *plantaginis* three broods, and *caja* two broods; have set a dozen *caja* on Christmas Day, but this does not make them other than single-brooded. If our young friends will run their pen through the two articles, as I have done, it will be the shortest way to settle the question.

Then I think there is another mistake implied at page 363. It is here supposed by the writer that the two young Elder trees he saw growing "on the branches of an old Yew tree were parasites." No doubt the Elders were growing in old decayed vegetable matter in some interstice, but not parasitic upon the tree! Will our friend go and try to pull one of the elders up by the roots, and let us know the results?—C. S. GREGSON, Fletcher Grove, Liverpool.

NOTE.—If your correspondent has got an *arctia* with "hind-wings a deep pink, bordered with black spots on a band," then he has got a new species, and we shall all be anxious to hear more about it.—C.S.G.

BUTTERFLIES.

35. SATYRUS ÆGERIA.

THE SPECKLED WOOD.—Said to be common everywhere, but not nearly so abundant as it perhaps was formerly. It is not found in many places now where it used to abound. It frequents woods and shady lanes from the end of April. The larvæ are full fed in July, and the second brood is on the wing by the end of that month. There is some doubt as to whether the second batch of larvæ feed up and pupate in the autumn, or pass the winter as larvæ and feed up in spring. Do any of our readers know?

36. SATYRUS MEGÆRA.

THE WALL.—Formerly common everywhere, but it has disappeared from many of

its old haunts in the north of England and perhaps elsewhere. It frequents grassy lanes and banks, the first brood appearing in May and the second in August. The larva feeds on grass, and is full fed in July for the first brood. Probably those of the second brood hibernate, but the evidence is rather conflicting.

37. SATYRUS SEMELE.

THE GRAYLING.—Widely distributed throughout the country, but rather local where it occurs, frequenting rocky places and dry banks where the ground is but sparingly covered with herbage. It may be found in July and August, and loves to sit on the bare ground. The larva, which is pale stone colour with longitudinal stripes, hibernates small to feed up in spring. It is easily found in May at the latter part of the day. The pupa is subterranean—the only instance of a butterfly with a subterranean pupa in England. Unlike other butterfly pupa, it is mahogany brown in colour, and smoother and more regular in shape than others of the genus.

38. SATYRUS JANIRA.

THE MEADOW BROWN.—A very common butterfly abundant almost everywhere. It does not appear on the wing till near the end of June, and may be found till August is nearly over. It frequents grassy places, the larva feeding on grass. The butterfly has a peculiar flight, sailing along at times with its wings closed, looking like a leaf blown by the wind. The larva may be found before or after dark on grass. It is green with a white stripe on either side; it tapers towards the tail which is bifid.

39. SATYRUS TITHONUS.

THE GATE-KEEPER.—This butterfly like the last frequents grassy places. It is most abundant in the South of England, getting scarcer in the North, and not visiting Scotland. It appears in July and August, and seems to us to be rather partial to place where bramble

is growing. The larva hibernates small, and may be found in May or June at dark, feeding on grass.

40. SATYUS HYPERANTHUS.

THE RINGLET.—Though this butterfly is a grass feeder like the preceding, it appears to prefer open places in woods, or their vicinity, to meadows and pastures. It is very generally distributed in the better wooded parts of England. In the north, and in Ireland, it is more local; and in Scotland it is far from frequent. It appears on the wing in July, and looks very dark when flying. The larvæ hibernate and are to be found in May and June. They feed later at night than the species last named.

41. NEMEOBIUS LUCINA.

THE DUKE OF BURGUNDY FRITILLARY.—This little butterfly is the only European representative of the family *Erycinidæ*. It is generally distributed over England, except in the counties of Northumberland and Durham. It appears on the wing in June, and the larva feeds up in September, and passes the winter as a pupa. It feeds on cowslip and primrose, and should be looked for where these abound. The pupa may be found through the winter, attached to the underside of a leaf.

42. LYCÆNA DISPAR.

THE LARGE COPPER.—Alas! this only was a British insect. It occurred formerly at Whittlesea Mere in Cambridgeshire, and at Yaxley Fen in Huntingdonshire; but none have been taken for about thirty years. It was one of our most glorious insects, and is still retained in the British list, as numerous specimens are in existence in collections, and may occasionally be obtained by purchase, but as a fine pair will bring between three and four pounds, our young friends must be content for the present with European examples, which may be bought for a shilling. To guard the inexperienced, who might have so much money to spare, it is as

well to say that the British *dispar* was larger than the Continental form, and the spots in the female were larger.

43. LYCÆNA PHLÆAS.

THE SMALL COPPER.—This brilliant little gem is an abundant insect everywhere. It appears on the wing as early as April, and there appears to be at least three broods during the season, and it may be taken as late as October. It passes the winter as a small larva, and it is a fine exercise for the patience of the young collector, to hunt for it in the early spring, on the dock. The Butterfly (or larva) may be found in lanes, on railway embankments or other waste places.

ECONOMIC ENTOMOLOGY.

By S. L. MOSLEY.

(Continued from page 365.)

VI.—Insects injurious to Fruit Crops.

Apple.—**AMERICAN BLIGHT** (*Schizoneura lanigera*.) The presence of this insect may be known by the white cottony growth upon the parts affected. It is troublesome when once established.

REMEDIES—The main point is not to neglect the blight on its first appearance, when a strong wash of soap-suds is often enough to disperse the insects. For stronger attacks a wash of tobacco water is recommended, and afterwards smearing the affected parts with a paint made of soft soap and lime.

APPLE APHIS (*Aphis mali*.)—This kind affects the leaves, and may be known from the last by being black, and without the white cottony appearance.

REMEDIES.—Syringing with tobacco water, or brushing with soap-suds.

CODLING MOTH (*Carpocapsa pomonana*.)—This moth is a tortrix, and the larva eats

into the heart of apples and pears rendering them unfit for use.

REMEDIES.—The best plan is to examine trunks of trees, walls, &c., every morning in June and July, for the newly-hatched moths and destroy them. Sometimes a smart shake will dislodge apples which have grubs in, and these should be gathered and destroyed at once: The pupa may be found under a web in crevices of the bark through the winter.

MUSSEL SCALE (*Aspidiotus conchiformis*.)—This is a scale insect. The scale is shaped something like a miniature mussel. It attacks the bark of apple and pear.

REMEDIES.—Soaking the parts with soap-suds, and scraping with a blunt knife or piece of coarse canvas. Other remedies are soft soap mixed with water and flour of sulphur; clay made into a paint, to which a little sulphur has been added.

APPLE-BLOSSOM WEEVIL (*Anthonomus pomorum*.)—The beetle eats the unopened flower buds, preventing them from coming to maturity:

REMEDIES.—Clearing away any rubbish or loose bark that may harbour the insect in winter. Placing tar or other nauseous substance round the bottom of the stem to prevent the beetles crawling up at the time of egg laying; that is just before the flower-buds open.

WINTER MOTH (*Cheimatobia brumata*.)—The larva of this moth feeds on various trees, and is sometimes troublesome in orchards.

REMEDIES.—The females of this moth are wingless, and their ascent up the tree can be easily prevented by placing tarred bandages round the tree trunk. The moths appear October to January.

Gooseberry.—**SAWFLY** (*Nematus ribesii*.) The grub of this fly is very troublesome to gooseberry and currant, sometimes devastating the trees of their leaves.

REMEDIES.—The best remedy is to watch for the appearance of the young grubs when they just begin to eat holes in the leaves. By

picking these leaves a large quantity of larvæ may be destroyed. Other remedies are tobacco water, quick-lime, and sulphur, dusted on when the foliage is wet with dew. It is also advisable to remove the surface soil very early in the spring from ground that has been badly infested, as it will contain the pupæ. It is also a good plan to light smoky fires and allow the smoke to blow over the trees in April when the females are depositing their eggs.

Raspberry. — **WEEVILS** (*Otiorhynchus sulcatus* and *picipes*).—These two beetles are particularly destructive to raspberry, vine, and other plants, by gnawing away the tender parts.

REMEDIES—Take a sheet *at night* and very carefully place it under the bushes (or better place it there the day before) and shake the beetles into it. Destroy by boiling water. The beetles lurk by day in the soil at the foot of the trees and may be found and destroyed.

(To be continued.)

COLEOPTERA, 1882.

Thinking that a list of the beetles that I have collected in this district may be of interest to your readers, I subjoin the following list of some that I have collected. I have not inserted all the species that I have met with, only some of the more uncommon ones; nor inserted any localities for reasons that I do not care to explain. I may say that any coleopterist of this district can be informed of the locality of any particular species, and I shall be only too happy to supply types of any species that I have collected in abundance:—

| | |
|-------------------------------|------------------------------|
| <i>Haliplus obliquus</i> | <i>Holmalium nigriceps</i> |
| " <i>confinis</i> | " <i>cæsum</i> |
| " <i>fulvus</i> | " <i>florale</i> |
| " <i>flavicollis</i> | <i>Proteinus brevicollis</i> |
| <i>Hyphydrus ovatus</i> | " <i>brachypterus</i> |
| <i>Hydroporus reticulatus</i> | <i>Megrathrus depressus</i> |
| " <i>inaequalis</i> | " <i>affinis</i> |
| " <i>septentrionalis</i> | " <i>denticollis</i> |

| | |
|-------------------------------------|------------------------------------|
| " <i>depressus</i> | <i>Micropeplus margarita</i> |
| " <i>memnonius</i> | <i>Tychus niger</i> |
| " <i>planus</i> | <i>Eumierus tarsatus</i> |
| " <i>nigrita</i> | <i>Agathidium seminulum</i> |
| " <i>augustatus</i> | <i>Anisotoma calcarata</i> |
| " <i>lineatus</i> | <i>Choleva agilis</i> |
| <i>Laccophilus minutus</i> | <i>Hister carbonarius</i> |
| <i>Ilybius ater</i> | <i>Gnathonus rotundatus</i> |
| <i>Agabus sturmi</i> | <i>Saprinus nitidulus</i> |
| " <i>uliginosus</i> | " <i>quadristatus</i> |
| " <i>paludosus</i> | <i>Onthophilus sulciatus</i> |
| <i>Philydrus melanocephalus</i> | <i>Rhizophagus ferrugineus</i> |
| <i>Enochrus bicolor</i> | " <i>parallelocollis</i> |
| <i>Hydrochus augustatus</i> | " <i>dispar</i> |
| <i>Ceryon obsoletus</i> | <i>Silvanus surinamensis</i> |
| " <i>aquaticus</i> | <i>Cryptophagus saginatus</i> |
| " <i>flavipes</i> | " <i>scanicus</i> |
| " <i>lateralis</i> | <i>Atomaria pusilla</i> |
| " <i>terminatus</i> | " <i>fuseata</i> |
| " <i>minutus</i> | " <i>nigripennis</i> |
| <i>Homalota nygrotopora</i> | <i>Monotoma spinicollis</i> |
| " <i>vicina</i> | " <i>brevicollis</i> |
| " <i>plana</i> | <i>Sathridius ruficollis</i> |
| " <i>trinitata</i> | <i>Corticaria denticulata</i> |
| " <i>triangulum</i> | <i>Mycetæ hirta</i> |
| " <i>nigra</i> | <i>Aphodius sardius</i> |
| " <i>fungi</i> | " <i>nitidulus</i> |
| <i>Conurus lividus</i> | " <i>porcus</i> |
| <i>Cilea silphoides</i> | <i>Cryptohypnus quadripustu-</i> |
| <i>Megacronus cingulatus</i> | <i>Limonium cylindricus</i> [latus |
| <i>Bolitobius trinotatus</i> | <i>Cyphon variabilis</i> |
| <i>Mycetoporus lucidus</i> | <i>Telephorus lituratus</i> |
| " <i>splendens</i> | <i>Ptinus lichenum</i> |
| " <i>lepidus</i> | " <i>fur</i> |
| * <i>Quedius semiaenus</i> , Steph. | <i>Rhizopertha pusilla</i> |
| " <i>boops</i> | <i>Cis boleti</i> |
| <i>Leistrotrophus murinus</i> | " <i>villosulus</i> |
| <i>Philonthus cephalotes</i> | <i>Tribolium ferrugineum</i> |
| " <i>ebeninus</i> | <i>Gnathocerus cornutus</i> |
| " <i>bipustulatus</i> | <i>Alphitobius piceus</i> |
| " <i>trossulus</i> | <i>Rhinosimus viridipennis</i> |
| " <i>nigritulus</i> | " <i>planirosters</i> |
| <i>Xantholinus ochraceus</i> | <i>Nacertes melanura</i> |
| <i>Leptacinus babychrus</i> | <i>Phyllobius pyri</i> |
| " <i>linearis</i> | " <i>oblongus</i> |
| <i>Othius punctipennis</i> | <i>Tropiphorus mercurialis</i> |
| <i>Stenus junco</i> | <i>Hypera fasciculata</i> |
| <i>Platystellethrus arenarius</i> | " <i>polygoni</i> |
| " <i>cornutus</i> | <i>Hydromomus alismatis</i> |
| <i>Holmalium lævisculum</i> | <i>Scolytus destructor</i> |
| " <i>fossulatum</i> | |

*Not in Sharp's list, it being a new species, it should be marked 945 A.

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 151.

SEPTEMBER 30TH, 1882.

VOL. 3.

ONCE A MONTH.

MORE than a year ago we suggested the propriety of changing the issue of the *Young Naturalist* from weekly to monthly. We were quite aware when we made the suggestion that there were advantages in a weekly paper that could not be secured with a monthly issue. The prompt record of captures, we knew, might be of service to those who wanted the species so recorded; the opportunity of offering ova in exchange might frequently be had; and various other advantages seemed to obtain over a monthly issue. To counterbalance these, there were matters to be taken into consideration on the other side. The weekly issue necessitated haste in the preparation of each number. The careful revision necessary for the spelling, &c., was not easy to secure at all times. The brevity of each number often made it imperative to break up into two or three parts, a paper whose consecutiveness gave no suitable place for such breaks, or else compelled writers to concentrate their ideas more than was desirable in papers specially intended

for beginners, who are not always ready to take up a new suggestion when very briefly enunciated. But when we laid the matter before our readers with reference to the proposed change, the almost unanimous opinion expressed by our readers was in favour of the continuance of the *Young Naturalist* as a weekly paper. We were of opinion that advantage had not been taken of the weekly issue in these ways we have named, but hoping that when attention had been called to the points we should see a different result in the future, we gave up our own opinion for that of our readers and continued the weekly issue. The question now arises, has the opportunity been embraced since that time of making prompt records, offering ova in exchange, or in any other way where early publicity was imperative or advantageous. We are of opinion it has not, and that, with certain exceptions, nothing has appeared in our pages that would not have been as useful in a monthly. We think then that all the advantages of a monthly issue have been sacrificed without the gains the

other way that might have made up for such sacrifice. Now, when we are approaching the close of the third volume, we have to decide what shall be done for the future; and after weighing every point carefully over, and consulting those of our friends who dispose of the largest number of copies, we have decided that the weekly issue shall cease with the close of the present volume, and that from that date the *Young Naturalist* will only be issued monthly. This will enable us, in the first place, to remove the page of advertisements that so many of our readers think spoils the appearance of the book when bound. These will be placed on the cover of the monthly part, to which exchanges and business announcements will also be transferred. It will enable us also to bestow much more care in correcting the proofs of the various articles. We are aware that there has been some improvement in this respect, but we are aware also that there is still room for further improvement. Not that we hope entirely to eliminate error from our pages: typographical blunders have always been a fruitful source of annoyance to authors and amusement to readers, and will probably continue to be so to the end; but in the hasty revision of a weekly paper, mistakes are made or overlooked, oftener than would obtain where more time gave opportunity for greater care. In the third place, the

gain of the back page of each weekly number, the removal of announcements and exchanges to the cover, and the less frequent repetition of the heading will considerably add to the space at our disposal and enable us to make alterations which we hope will meet with general approval. Further announcements respecting the next volume will be made in succeeding numbers, and we shall be glad to receive suggestions or hints from any of our readers.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now past due, and we will be glad to have remittance from those who have not yet sent them. Weekly numbers or monthly parts, post free, 6/- per annum, or 1/6 per quarter, *in advance*. Coloured plates, 2d. each extra. These can only be had direct from the conductors as above, but any one procuring them through the booksellers can have them coloured on application.

NOTES AND OBSERVATIONS

THE CRANE AT BIRMINGHAM.—Referring to a paragraph on this subject, a correspondent writes:—"I have never heard of the crane being seen anywhere near here, but to make sure I have asked our two best ornithologists, both practical men, and they neither of them know of its being seen. The heron is occasionally seen here. I saw a pair fly over here a few years ago, and another pair were seen to pass over the town this morning (16th Sept.) by one of the above gentlemen. Perhaps the crane re-

corded was a heron after all." We confess we had doubts of the correctness of the statement when it was inserted, but expected if not right it would be corrected by some one knowing better than ourselves.

EARLY APPEARANCE OF HYBERNIA DEFO-LIARIA.—Last Saturday, September 16th, Mr. Firth took a female specimen of this species at Shipley Glen. So surprised was he that he could scarcely believe his own eyes until he had called my attention to it as it rested on the trunk of an oak. It is by far the earliest date on which we have seen the species, and, being a female, is more surprising, as my experience leads me to believe that the females of this species are as a rule much later in their appearance than the males.—J. W. CARTER, Bradford.

BIRMINGHAM NOTES.—September 10th.—Walked to Maxtoke (a distance of 13 miles) and back, and saw the following plants in flower:—White campion (*Lychnis vespertina*), which was fully open, contrary to its general habit of only opening at night; common sow thistle (*Sonchus oleraceus*), wood sage (*Teucrium scorodonia*), wood betony (*Stachys betonica*), eyebright (*Euphrasia officinalis*), and common linare (*Linaria vulgaris*), the latter was very abundant, and looked very pretty growing out of the middle of the hedges. The spikes of *Arum maculatum* with their red berries were very common and conspicuous objects in the hedge bottoms. The nuts of the hazel (*Corylus avellana*) were very plentiful, we getting over a pound in a very short time, and there was not an empty or bad one amongst them. The blackberries (*Rubus fruticosus*) are rather late this year, we only succeeding in getting about a dozen ripe ones, but unripe ones were very numerous.

The common bracken (*Pteris aquilina*) and the male fern (*Lastrea filix-mas*) were very plentiful and very large sized. The former was covered with spores, but the

latter was conspicuous by their absence, for although I searched doxens of ferns could not find a single one.

The only moth I saw was the Silver Y moth (*Plusia gamma*), which was very abundant; and one I noticed, when distributed it always alighted again on a leaf head downwards.

Partridges and rabbits were extremely numerous, we flushing several coveys of the former. As I was looking over a low hedge into a small coppice about ten yards wide, a couple of very fine partridges rose from under the hedge almost at my feet, leisurely flew across the coppice, settled, turned round and looked at us, then quietly walked along for a few yards and disappeared among the underwood.

The nests of house martins lined both sides of the narrow arches of the ruins of Maxtoke Abbey. The nests were all built close together, and the old birds were flying in and out feeding their young.—GEO. F. WHEELDON, Birmingham.

NOTES AND COMMENTS.

By S. C. GREGSON.

"Speckled Wood" (see page 372, Y.N.), "*Satyrus Ægeria*." This species occurs here, but is local. Near Liverpool it is confined to the Cheshire side of the Mersey, but is plentiful in all the shady districts, from Bromborough on the Mersey, across to the peninsula of Worrall to the River Dee, at West Kirby, within a triangle, the apex of which is at Motington; outside this triangle I do not know of its appearance. Within our district the larva hibernates. I have bred it from "Whetborough Scarr" and "Scoots Scarr," Westmoreland. Does not occur in South Lancashire that I am aware of, and never did so far as I can learn.

Satyrus Megera. — Plentiful everywhere down here. The green larva of this species is always found by me on the mountains in Wales, when I am searching for *Agrotis ash-*

worthii larva in March and during the early part of April, when it makes up amongst any old stems near. I was not aware there was any serious doubts about its habit of hibernating. It feeds on coarse grasses (doddering grass or quaking grass); "*Briza Media*" being a favourite food.

NOTE.—I think the remark at page 374, line 11, is misleading. I fear the exercise of hunting *Lycena phlaas* on "the Dock" would break the heart of most young naturalists; should you not have said *Rumex acetosa* or *acetosella*; Sorrels, not dock, these are the only plants I ever found it upon.

ECONOMIC ENTOMOLOGY. "Apple."—One of the most destructive insects to our apple crop is *Eupethecia rectangulata*. The larva of this species feeds upon the stamens and pistils of the flowers, often eating down to the young fruit, which have hitherto escaped injury, and destroying it. Especially is this the case on close-grown espalier grown trees, and in old over grown orchards. The remedy in small gardens is to pick the injured blooms off; in them will be found the smooth obese larva of this pug, and perhaps also the curled round larva of *Brumata*. In old large orchards nothing practical can be done, in fact these insects are Nature's corrective against the destruction of the trees from over-production. If all the blooms upon an apple tree came to fruit every year, at first the tree would be small, then the tree would be exhausted; it will be seen that there is good in even these nasty caterpillars. For the American blight, known by the white floss upon the trunk or stems of our apple trees, the following simple remedy is the only effective one I know. Dip a fowls wing feather into a bottle of petroleum oil, and smear every white place with the oil, and the evil will pass away. This remedy is cheap, easy of application, and effective for all such enemies as attack bark of trees or shrubs.

Rose Bank, Edge Lane, Liverpool.

[In order to justify our remarks on the hibernation of the two species, above referred to, we quote below what is said about them in a paper on the "Hibernation of British Butterflies," by Edward A. Fitch, published in the *Entomologist*, for January, 1879. Our own opinion agreed with Mr. Gregson's statements, but, unfortunately, ours is opinion only, and we do not believe in advancing opinions as facts. We are glad to have Mr. Gregson's facts. The passages referred to are as follows: the italics are ours:—"Satyrus Egeria. In the first record of the life-history of this species Newman says that it hibernates in the penultimate or pupa state, but this is altered (? corrected), in 'British Butterflies,' on what authority or for what reason we are not told. At *Ent.* iii., 217, we have: 'The larvæ are full-fed by the end of September ... Early in October the larva spins a slight silken covering on a stalk, stem, or blade of grass, and, suspending itself therefrom by the anal claspers, is changed to an obese pupa.... In this state it remains throughout the winter, the butterfly appearing on the wing from the 10th to the 20th of the following April.' At *Brit. But.*, page 86, we have: 'The caterpillars hibernate early, and are full fed by the end of the following March.' From present information the earlier appears to be correct."

"*S. Megæra*.—Two or three Continental authors say this species 'über-wintert' as a pupa. The genus *Pararge* includes *P. Mara*, *P. Hiera*, *P. Megæra*, *P. Egeria*, &c. Professor Zeller says that in 1875, in the Allula Pass, he found *P. Hiera*, as early as the 24th May; remarks that the snow was only just melting, so that the larva must have changed under the snow and the imago have been rapidly developed, or, differing from *Megæra*, the penultimate state was reached in the autumn (*Stett. Ent. Zeit.*, xxxviii., 307)."]

We would also add that the collectors here find the larva of *Phlaas* on dock.—Eds. Y.N.

BUTTERFLIES.44. **POLYOMMATUS ÆGON.**

THE SILVER-STUDDÉ BLUE.—This pretty little butterfly passes the winter in the egg state, which hatch in March. The larva is full fed by the end of June, and the butterfly may be taken in July. It is widely distributed in Britain, and may often be passed over for the Common Blue, which is on the wing at the same time. It is smaller than the first brood of the Common Blue, and has no spots on the underside of the forewing, between the central spot and the base of the wing. The larva is only known with any certainty to feed on bird's-foot, but is said also to feed on bird's-foot trefoil, but perhaps the similarity of the name have misled writers copying from one book to another.

45. **POLYOMMATUS MEDON.**

THE BROWN ARGUS.—A widely distributed butterfly, known in Scotland as the Scotch White Spot, from the disc spot which is black in southern specimens, being white in Scotland. It appears in May or June, and the second brood is on the wing in August. In Scotland, however, there appears to be but one brood. The larva feeds on the Sun Cistus, and hibernates very small. It is said also to feed on the heron's bill, but it seems doubtful if it really does so in this country.

46. **POLYOMMATUS ALEXIS.**

THE COMMON BLUE.—An abundant butterfly everywhere, appearing first of May, and continuing on the wing till quite late in the year. It is found in lanes and meadows, on railway and other banks, &c., &c. The larva feeds on bird's-foot trefoil, and may be found almost all through the summer, for there appears to be a succession of broods. The larva hibernates small.

47. **POLYOMMATUS ADONIS.**

THE CLIFTON BLUE.—This, the prettiest of all the blues, is only found in the South

of England, and there principally on chalk or limestone. It appears on the wing in May, and again in August. The larvæ from the second brood hibernate to feed up in the spring. The food plant does not seem accurately known. The only specific plant we have seen named is *Hippocrepis comosa*, the tufted horse-shoe vetch, a plant confined in this country to the southern counties.

48. **POLYOMMATUS CORYDON.**

THE CHALK HILL BLUE.—This butterfly is more widely distributed than the last, and does not appear to be so exclusively an insect of calcareous soils. It does not occur in Scotland or Ireland. It appears on the wing in May, but though it is a common butterfly we really do not know, from all the books to which we have access, whether it is single or double brooded. It seems to fly as late as August, which it scarcely could do unless there were two broods. The larva feeds on vetches, and passes the winter small.

49. **POLYOMMATUS ACIS.**

THE MAZERINE BLUE.—A very rare species, and exceedingly local where it occurs. It flies often with the common blue, and is so like that insect in appearance, that only a practised eye could detect the differences on the wing. *Acis*, however, is distinctly darker in hue than *Alexis*. It would appear to be single brooded only, and may be found in June and July. We do not know if the larva has ever been taken.

BRITISH BIRDS, THEIR NESTS AND EGGS.

By S. L. MOSLEY.

28. **BLACKBIRD.**

Turdus merula, Linn.

MERULA (L.)—a blackbird.

Size.—Length, 10 in.; expanse, 1 ft 3 in.

Plumage.—Adult male jet black; bill and eyelids bright orange; eyes hazel; legs dark brown.

THE FEMALE is very variable and difficult to describe. The plumage is generally umber brown; the chin and under parts lighter brown, and more or less spotted or striped. Sometimes the under parts are tinged with orange. The bill is only yellowish at the base in old birds.

THE YOUNG at first are similar to the female in colour but duller, and the full adult plumage of the male is not attained until the second or third year.

VARIETIES frequently occur, generally pied with white. A very pretty one of this form is given upon the plate from Mr. Bond's collection. One in my own collection is entirely of a pale grey, and another of a reddish clay colour is probably a female. A female is recorded of a cream colour, with yellow bill and feet. Pure white specimens also occur. Several varieties are recorded in the *Naturalist* (1864), vol. i., p. 146: one a male, all reddish brown; another male having the upper surface light buff, and the under surface cream colour; one pure white.

Note.—The blackbird is a songster a little inferior to the thrush. Its notes are more varied, though not so musical, yet in other respects similar. It has been known to imitate the notes of other birds. Some years ago, one which frequented the Zoological gardens learned the note of the cock jungle fowl so well as to be undistinguishable. The song is generally commenced about the middle of February. It has also a chatter, used when alarmed, and a call note resembling the syllables "chuck, chuck," generally used when it takes wing.

Migration.—Resident throughout the year, though more numerous in the winter, probably caused by arrivals from the north.

Flight.—The blackbird flies generally in short jerks, rarely leaving the cover; and

if obliged to do so in order to cross a park or field, the flight across is straight and hurried.

Food.—The food of this bird consists of insects, worms, snails, seeds, and fruit. It makes havoc in the fruit garden when in season, but fully compensates for the trouble of keeping it out by the large quantity of caterpillars and other insects destroyed during the time the young are in the nest. In the winter it feeds on the berries of the hawthorn mountain ash, pips of roses, and renders service to gardeners by destroying any kind of vermin found in the garden.

IN CONFINEMENT the blackbird is a favourite bird, and will learn to whistle tunes. It should have a roomy cage, but is best, as indeed most birds are which are kept in confinement, in an aviary where it can have plenty of room and water to bathe. One is recorded which belonged to a lady, which came and perched upon her pillow every morning and awoke her with a song.

Habitat.—Common throughout Britain, frequenting woods, shrubberies, gardens, and similar places.

ABROAD it is found throughout Europe, in the northern parts of Africa, and Western Asia.

Nest.—The nest is placed in a bush, hedge, against a tree trunk, on a bank, or even on the ground. It is composed of small sticks and dry grass, plastered internally with mud, and lined with finer grass.

Eggs.—From four to six eggs are laid of a pale greenish blue, spotted with reddish brown. Sometimes the spots are fine and rank; at other times they are large, more like those on the egg of the ring ouzel. Generally they are more numerous at the thick end, but sometimes they are confined to the small end. Fig. 1 represents the general form.

VARIETIES.—Extreme varieties are not rare. Fig. 2 is from my own collection. Figs. 3, 4, and 5 are from specimens in Mr. C. S. Gregson's collection. Sometimes the red-brown spots are collected into a large brown patch at the large end. I have seen one with the ground colour nearly white. Others are recorded of a uniform pale blue resembling those of the thrush, without spots. Mr. Doubleday noticed that most of the blackbirds in one part of Epping Forest laid blue eggs.

ECONOMIC ENTOMOLOGY.

By S. L. MOSLEY.

(Continued from page 375.)

VII.—Insects injurious to Forest Trees.

Ash.—ASH-BARK BEETLE (*Hylesinus fraxini*).—This beetle and its larva injure ash-trees, sometimes to a considerable extent, by boring galleries between the wood and bark.

REMEDIES.—Remove all decaying branches, keep the trees as healthy as possible, and if small holes like shot-holes be observed in the bark, stop them up by giving a coating of soft soap.

Elm.—ELM-BARK BEETLE (*Scolytus destructor*).—This beetle injures elm in the same way as that on ash.

REMEDIES.—Never allow felled trunks to remain about with the bark on. When a tree is badly attacked, it has been found of service to pare off the outer bark and brush on a mixture of lime and cow-dung.

Oak—COCKCHAFFER (*Melolontha vulgaris*). This and a smaller species is sometimes injurious in the larva state to roots of young trees and other crops, but does not often exist in sufficient quantities to be of great injury.

REMEDIES.—In gardens, digging up the grubs and destroying them; and on farms,

all birds which follow the plough, such as rooks and gulls, should be encouraged.

GALLS.—A large number of galls may be found on the oak, but it is questionable if they have any great deteriorating effect upon the trees.

THE PEA-GREEN MOTH (*Tortrix viridana*), and the larvæ of several geometers of the genus HYBERNIA, &c., sometimes entirely strip the oak-trees of their leaves.

REMEDIES.—The encouragement of all insectivorous birds should be encouraged. Thrashing the boughs over a sheet or inverted umbrella will also dislodge a great many.

Pine.—PINE BEETLE (*Hylurgus piniperda*).—This beetle injures young trees by boring tunnels up the centre of young shoots, and also by mining between the wood and bark.

REMEDIES.—Clearing the ground of all loose branches or bark; nipping off infested branches and burning them.

Several species of Tortrices also injure young pine in a similar way by eating the young shoots, and no better plan of removing them seems to be known than hand-picking.

SIREX GIGAS.—The larva of this large fly bores galleries into the solid wood of pine and fir, but seldom appears in sufficient numbers to cause any alarm.

REMEDIES.—When a tree is found to be badly infested, the best plan is to cut it down and cut up the timber at once, destroying the grubs inside.

Poplar.—HORNET CLEARWING (*Sesia bembeciformis*).—The larva of this insect is very destructive to poplars in some districts, boring into the solid wood.

REMEDIES.—The best plan is to look for the newly-emerged moths on the trunks early in the morning in July, and also for any brown eggs that may have been deposited on the bark.

(To be continued.)

THE YOUNG NATURALIST.

E. G. MEEK,
NATURALIST,

56, BROMPTON ROAD, LONDON, S.W.

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The YOUNG NATURALIST :

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No. 152.

OCTOBER 7TH, 1882.

VOL. 3.

BIRD TROUGHS.

KIND regard for wild birds is much more common now-a-days than it was in years gone by. It was then thought that the blackbird that ate our cherries, or the sparrow that devoured our grain, were thieves only, and worthy of no better fate than to be shot or snared. Now we know that while the small birds may occasionally steal a little of our fruit or grain crops, the benefits they bestow in return in destroying injurious insects is of incalculable more value. Our purpose to-day is not to speak of the *quid pro quo* we receive in return for any kindness or protection we may bestow on our feathered friends, but more particularly to urge our readers to show that kindness through the coming winter in one of the best ways yet suggested. No doubt many of our young readers have erected "bird boxes" during the past summer, and have been interested in observing the various species that have made use of them for nesting purposes. But in summer time, when food is plentiful, birds can always find places to nest in and enough to eat and to

supply their young ones, so that however interesting the erection of "bird boxes" may be to those who like to watch the nesting process, it is perhaps not much real help to the birds themselves. But winter is coming on; the earth will soon be frozen hard or covered with snow, and these little wayfarers will find they have a hard struggle to preserve life. They have not learnt to lay up a store for winter use, so when winter comes they have to seek their daily bread as usual, though all the usual sources of supplies are stopped. Larvæ of insects of all sorts are hiding in hybernation, and the hips and haws are soon eaten up. As winter increases in severity, birds come from inland districts to the sea-side or the neighbourhood of towns in their search for food, and then is the time when it is easy to assist in their preservation. There are few drinking fountains without their trough at the bottom where the waste water serves for dogs or cattle. Birds have also been seen to take their share at times, but drinking fountains generally have their supply cut off during winter, and, in

any case, neither birds nor ourselves can sustain life upon drink. But in many places and by many people "bird troughs" are erected in winter and supplied with food, and it would be well if all our readers would try and help the little birds in the same way. What can be more pitiful than to pick up a dead thrush or other songster whose strains had delighted our ears in the golden days of summer, and see that the poor thing had been starved or frozen to death. Who is there that would not take in a weakly bird and try with warmth and nourishment to restore its failing strength? But how much easier to prevent it starving than to restore it after it is starved. A bird trough is but a simple affair. The pole of a disused bird-box will do, with a wooden tray or box attached. It is better if a cover can be affixed, so that it is protected from snow. Anything of this kind will answer, and we scarcely need enlarge upon it, as all that is wanted is a receptacle in which the food can be placed, so contrived that birds can alight to feed. One should be put up a few feet from the ground for the convenience of those birds that frequent trees and hedges, and another should be placed upon the ground, similarly protected from the weather. In these receptacles the bread crumbs and sweepings should be placed, a few bones will be greatly esteemed, a few cold potatoes or other vegetables—in

short, almost anything that we can eat will be gladly received by the birds; and if we only give them what would otherwise be thrown away, we will doubtless save the life of many a feathered songster during the inclemency of the coming winter. While we are thus administering to their necessities there will be many an opportunity for making observations as to their habits that would not otherwise be afforded us. These should be taken advantage of, and we will be glad to find space for any notes our readers like to send us. Even a list of the birds that frequent the troughs would be worth printing. It is astonishing how soon birds learn to come to be fed during winter. If regularity be observed in replenishing the supply of food, the birds will assemble with equal regularity and wait patiently for their meal. We always enjoyed to see the small birds assemble in this way, and felt sorry when the return of spring enabled them to provide for themselves, and they ceased to visit us, as though they would only trouble us while unable to keep themselves.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now past due, and we will be glad to have remittance from those who have not yet sent them. Weekly numbers or monthly parts,

post free, 6/- per annum, or 1/6 per quarter, *in advance*. Coloured plates, 2d. each extra. These can only be had direct from the conductors as above, but any one procuring them through the booksellers can have them coloured on application.

G. McG., Glasgow.—The flies are *Cec. salicis*, Sch.

F. S., Liverpool.—Thanks for your good opinion. The monthly series will be 6/- per annum, with coloured plate every month.

EXCHANGE.

I will be greatly obliged to correspondents who will forward me specimens of *A. fuliginosa* from their respective districts. I wish to compare specimens from different parts of the country for an article on the species. I will make the best return in my power.—JOHN E. ROBSON, 15, Northgate, Hartlepool.

I shall be glad to establish correspondents in any part of Britain, especially in the north of Scotland and Ireland, who will undertake to collect for me, *Diptera*, *Hymenoptera*, *Neuroptera*, and *Coleoptera*, in return for which I will send good *Lepidoptera* or named types of any other order of insects. Each specimen must have a small label attached with date of capture, and locality if collected at some other place from that at which the correspondent resides.—S. L. MOSLEY, Beaumont Park, Huddersfield.

DUPLICATES.—Larvæ of *C. caja* and *P. bucephala*. DESIDERATA.—Numerous; larvæ or pupæ preferred to imagines.—(Miss) R. PRESCOTT DECIE, Bockleton Court, Tenbury.

DUPLICATES.—*Præcox*, *Xerampelina*, *Occulta*, *Gilvago*, *Minos*, *Arundinis* (fair), and many other uncommon species; also preserved larvæ. DESIDERATA.—Fossil insects of all kinds only. Accepted offers answered.—CHAS. H. H. WALKER, 180, Falkner Street, Liverpool.

NOTES AND OBSERVATIONS

THE DEATH'S HEAD AT HARTLEPOOL.—A specimen of this insect was taken at Hartlepool last week by Mr. J. J. Dixon. It was flying about in a shop in Alliance Street, probably attracted by the light, and was knocked down and secured. A specimen was brought me on 30th Sept. by a young sailor, who took it a few days before on the mainsail of the "Amy" of Hartlepool as the vessel was crossing Boston Deep. It is in very good condition considering that it had lived two or three days in a small match-box.—JOHN E. ROBSON.

ARRIVAL OF THE SNOW BUNTING.—The snow bunting is very abundant now on our sand-hills, having arrived about three weeks ago. Skylarks are also unusually numerous. Is not the middle of September rather early for these birds to have reached us?—JOHN E. ROBSON.

GOLDEN EAGLE IN ROSSSHIRE.—As I was driving from Inverbroom to Garve, last Tuesday, I had the good fortune to see a Golden Eagle sailing round the top of the hill above Aultguish. There were a number of crows flying round it, and occasionally darting at it. A forester told me that an eagle was always followed by a lot of crows, and suggested that they ate up what the eagle left. But, then, why should they fly at him? It seemed to me that they were behaving more like little birds pursuing a hawk. Could anyone give me any information on the subject?—(Miss) R. PRESCOTT DECIE, Bockleton Court, Tenbury, 29th Sept., 1882.

ATTRACTIVENESS OF RAGWORT.—Insects have been a perfect failure in this locality this season. We have not taken any of the insects I named to you except *Dahlia* and *Olivata*—both somewhat worn. Of the latter insect my brother took about five in Shipley Glen. *Dahlia* swarmed at ragwort, but, strange to say, they did not make their appearance until this flower had been in

bloom a month, and consequently were worn. Last year they frequented the ragwort as soon as they emerged from pupa. *Suspecta*, which swarmed at the same flower last year, never put in appearance at all this year, not even a solitary specimen. Possibly they had done flying before the ragwort became attractive to insects. The ragwort was in bloom about the third week in July, but I found no insects at it until the end of August. Similarly in 1878 I watched this flower for three weeks without being rewarded with seeing an insect. Last year and the year before insects began to visit it as soon as the flowers expanded. Is its attractiveness so variable on the coast? How do you account for this? Possibly, in some way or other, the cause is connected with atmospheric conditions.—E. P. P. BUTTERFIELD, Wilsden, Bingley.

ELDER GROWING PARASITIC.—A few months ago I saw an elder bush growing *parasitic* out of the trunk of a sallow at Leiston in Suffolk. I also saw two elders growing in vegetable matter collected in forks of trees—one at Leiston on a sallow, the other on an acacia at Hacheston. The bush that was growing parasitic had its roots firmly fixed in the wood of the tree. I have also seen brambles and gooseberry bushes growing in matter collected in crevices of trees.—GEO. A. HARKER, 28, Brooke Road, Brundell Sands.

[Mr. Gregson has already called attention to the fact that shrubs growing in such situations as those mentioned above are not parasitic, but one of those named appears to be so. Will our correspondent take the trouble to examine the elder growing on sallow again and satisfy himself whether it is really drawing its sap from the sap of the sallow and then write us again.—EDS. Y.N.]

CAPTURES AT DERBY.—On September 20th I captured a fine specimen of *C. xerampelina* which came into my house to the light. I was rather surprised to see so

scarce an insect, as I am living in the centre of the town and am not aware of any ash-trees near. My friend, Mr. J. Hill, tells me he has found insects rather plentiful this last week or so: he has taken in two nights at sugar 32 *Rufura*, 3 *Litua*, 3 *Protea*, 1 *Miccata*, 2 *Tragopogonis*, and 7 *Ferruginea*. Up to lately sugar has been a failure this season here.—G. PULLEN, Free Library and Museum, Derby.

CONTRIBUTIONS TOWARDS THE FAUNA OF PLYMOUTH.

(By permission of the Author.)

By Mr. G. C. BIGNELL, M.E.S.

[Reprinted from the Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society, 1881-82.]

HYMENOPTERA; ICHNEUMONIDÆ.

Arranged according to the Rev. T. A. Marshall's Catalogue, published by the Entomological Society of London, 1872.

(Continued from page 371.)

APTESIS stenoptera. Bickleigh, 16th September

HEMIMACHUS rufocinctus. Bickleigh, 16th September

PEZOMACHUS carnifex. Bickleigh, 16th September

corruptor. Bickleigh, 20th August

insidiosus. Bickleigh, 6th September

intermedius. Exminster, 3rd September.

This and the two next species were recorded as new to Britain, in a paper read on the 6th April, 1880, by Mr. Bridgman, before the Entomological Society of London.

incertus. Exminster, 3rd September

Mulleri. Bickleigh, 6th September

wylochophilus. Exminster, 3rd September.

This and the next species were recorded in the *Entomologist*, on the 22nd December last, as new to Britain.

analis. Bickleigh, 6th September.

PANISCUS virgatus. Bred 26th April, 1881, from *Halias prasinana*; 2nd May, from

Odontopera bidentata; 19th July, from
Cosmia trapevina.

CAMPOPLEX eurynotus. Bickleigh, 8th June.
A new British species.

SAGARITIS latrator. Bickleigh, 20th August
and 2nd September. A new British
species.

(To be continued.)

BUTTERFLIES.

50. POLYOMMATUS ALSUS.

THE LITTLE BLUE.—The smallest British butterfly. It is rather local, but very widely distributed, and occurs in waste places, railway banks, &c. Various food-plants are named, but there is little doubt that the kidney vetch (*Anthyllus vulneraria*) is the one preferred, if not the only food of the species. Where this grows the little butterfly should be sought for. It is not very easy for an inexperienced collector to see.

51. POLYOMMATUS ARGIOLUS.

THE HOLLY BLUE.—A very distinct blue, and well distributed in the south of England, but scarce further north. It appears first in April and May, and the second flight in August. The larva feeds on the flowers of holly and buckthorn in May and June, and on the flowers of the ivy in the latter part of the year. But it occurs in many places where only one of these plants are found, and it would seem that the second brood may perhaps feed on the flowers of the bramble. This is an interesting point for young collectors to solve. It should be looked for where one or all of the plants named are plentiful.

52. POLYOMMATUS ARION.

THE LARGE BLUE.—This is a rare and local species. It occurs in several of the south-westerly counties of England, and need not be looked for outside this restricted range. It appears on the wing from about

the middle of June to the middle of July. The larvæ feed on wild thyme, a plant abundant enough for the butterfly to have a much wider range in this country, as it has abroad.

53. THECLA RUBI.

THE GREEN HAIR-STREAK.—This butterfly frequents open places in woods and waste places where there are bushes and shrubs. It is common all over Britain, but being small and inconspicuous may readily be overlooked. It is on the wing in May and June, the pupa remaining over the winter. The larva feeds on bramble and occasionally on other plants and may be found in July or August.

54. THECLA QUERCUS.

THE PURPLE HAIR-STREAK.—An equally common butterfly with the last, occurring wherever there are oak woods. It is not perhaps always easy to obtain as it flies about the oaks, often about the upper portion; the larvæ appear to prefer the upper branches. It is on the wing in July, the eggs remain on the oak twigs over the winter, and the larva may be found in May.

ARCTIA FULIGINOSA.

To the Editor of the "Young Naturalist."

Dear Sir,—I think that Mr. Gregson must admit that considering that he has "no desire to damp any of his young friends' ardour" he is certainly very hard on one of his young friends in his letter on page 372, No. 150 Y.N. It is true that Mr. Bath was not altogether correct in his statements about *A. fuliginosa*, his mistake as to the expanse of wing in that insect being certainly a bad one; but that he should be called "colour blind" for saying that the hind wings are a deep pink is surely rather absurd. Their colour must always be to some extent a matter of opinion, but for my own part I consider that if any one is "colour

blind " it is Mr. Gregson himself, for in none of my specimens are the hind wings red, but though they vary considerably they are still only different shades of pink. Let Mr. Gregson place a few specimens of *fuliginosa* and *caja* side by side and carefully notice the difference in colour, and then let him see if he still considers the hind wings of *fuliginosa* red. The flower of a red geranium or some vermilion out of the paint-box would do as well as, or better than, *caja*. I may mention that both Newman and Stainton agree with me in calling the colour pink.—Yours truly,

SUPPOSITICIUS.

OLD ENTOMOLOGICAL LOCALITIES, No. 1.

By S. C. GREGSON.

ULVERSTON my first collecting ground. In 1825-6 I first began collecting, and had then some glorious collecting grounds, close to school. The Churchyard and Ladies Walk were then open and free to the public, and here I took my first Blues and Coppers, and especially my first beetles. *Carabi* and especially *Blaps* abounded under some grave and other stones; and the Ringlet butterfly, together with the Meadow brown and the Gatekeeper, helped to keep a tailor, and to get me well caned for tearing my clothes, as I followed them over stone walls or hedges. "Gill Bank Woods" was another favoured locality; and "Outrick Wood" the best of all, for it was here the Ringlet, and the *Tortoise-shells, and the High brown had their home; whilst the Pearl bordered was common to both "Gill banks" and "Outrick." And upon the foot of the "Hoad," a large conical hill close to the town, *Io* was always to be found, along with Tortoise-shells, and Small coppers, and Small heaths. A few weeks ago I visited this locality, after 57 years absence. I wished

to see the grave of my brother, and I found the churchyard, the property of and the playground of the people in my day, a series of cattle pens, railed in every way and the various gates into those queer-shaped sheep pens locked with brass padlocks, and hay being made in one of the larger pens. The various walks between the enclosure, about five feet wide, led only to and from the church door, hence I could not get to see my brother's grave, much less hope to catch a butterfly in this locality. Disappointed I passed on to the Ladies' Walk, which used to be an open-raised walk, with stone seats overlooking the sea, along the head of very steep ground where our *blues* used to disport, and be captured by jumping down and chasing them on this waste land. It is now a close narrow passage, perhaps half a mile long, with a stone wall from 6 to 8 feet high, entirely shutting in anybody who is *forced* to take that road; nay, so dismal is it that I do not suppose any decently bred ghost, from the churchyard adjoining, would ever dare to venture through the Ulverston Ladies' Walk alone; but a very young naturalist might sugar in it *at noon*, in mistake for dusk. Having passed through, I wrote up at its end "Ghost Alley," and went through a new stile and on to the Hill of *Hoad*. This was little altered, except that a large monument has been built on its summit; and from sheep having been pastured upon it since it was enclosed, the herbage is much richer than it was when it was common. Looking from the summit of the hill I searched in vain for "Gutrick Wood," not a sign of a tree or shrub for a long distance. Then making for "Gillbank wood, where I had fished in the becks and hunted "wild cats" in the woods, I found no trace of any trees; the brook runs on for ever; but this grand old collecting ground is lost for ever so far as appearances go now.—Fletcher Grove, Edge Lane, Liverpool, 24th Sept., 1882.

* Scientific names were then unknown to me.

CAPTURING AND SETTING INSECTS.

By S. L. MOSLEY.

As I anticipate that many young beginners will take advantage of the "exchange" I have inserted in this weeks Y.N., a few notes on capturing and setting the various insects may not be out of place.

DIPTERA.—These may be taken on flowers chiefly, in the windows of houses and various other places. They may be pinned and set like Lepidoptera, using a setting-board with a wishish groove with a flat bottom, so that the fore and hind legs can be brought into position. Very small species may be set as recommended at page 358. I would particularly direct attention to those which produce galls on various plants. The galls may be gathered when mature and kept until the flies appear, and the galls should, in all cases, be sent along with the insects. Parasites on other larvæ should also have particular care.

HYMENOPTERA.—The larger species may be set on ordinary boards with wide grooves, or with cardboard braces below and above the wings. Often the wings are very rigid and cannot be got into position; in this case, press the wings forward and give them a nip just where they join the thorax. They are best killed with chloride of ammonia or the fumes of sulphur—cyanide makes insects very stiff. The small species may be set as given in No. 148. Ichneumons which are bred from lepidopterous larvæ should always have a note attached to the pin showing what species they were bred from. Larvæ of saw-flies should be forwarded in the larva state, with the name of the plant upon which they were found. Particular attention should also be directed to the gall-producers (see above). Galls often contain parasites which do not emerge until some time after the real gall-makers have flown.

Now is a good time to collect many kinds of galls, just when the leaves are falling, or after they have fallen from the trees.

NEUROPTERA.—The larger species may be captured and set in the usual way. Near water is best. The minute kinds may be carded as above. In the case of caddis flies, when any species is found in abundance the water near should be examined for the larva-case, which should accompany the perfect insect. Many a small species (*Psocus*, &c.) may now be beaten from fir and other trees into an inverted umbrella. Large bright-coloured dragon-flies should have a slit cut up under the body and the viscera scraped out and a piece of thin white paper rolled and placed inside, otherwise the colours will soon fade. These should be sent fresh, if possible, before the colours change in any way, as I am wishful to make drawings for future use.

COLEOPTERA.—Many beetles may now be found under stones, moss, loose bark, &c., where they have resorted for their winter quarters; and as we shall soon be making use of figures of these insects, workers in this order are particularly desired. When collecting, a wide-necked bottle with a large quill inserted through the cork is a very useful receptacle; a piece of rag should be put into the bottle so that the beetles may run among its folds, otherwise the carnivorous kinds will be liable to bite off each other's legs. A good many may be obtained by placing a piece of raw meat in a pickle bottle and inserting it in the ground in a wood, with the neck level with the earth: it should be examined every day or two. All beetles may be killed by upsetting them into hot water. They should then be taken out and placed upon blotting paper to dry. The larger species may be pinned through the right wing case, and the legs and antennæ set out. The smaller kinds must be carded on card about the thickness of "stout" post-cards.

THE YOUNG NATURALIST.

E. G. MEEK,

NATURALIST,

56, BROMPTON ROAD, LONDON, S.W.

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 153.

OCTOBER 14TH, 1882.

VOL. 3.

THE NEXT VOLUME.

AFTER much consideration we are at length able to announce the course to be followed in the fourth volume of the "*Young Naturalist*." As already stated, the weekly issue will cease with the numbers for the current month, and on 1st December will appear part 37, being the first of the next volume. The price will be sixpence monthly, or six shillings per annum post free. The new volume is not intended to vary much from those that have preceded it. The papers by the editors on British Birds, their Nests and Eggs, and on British Moths will be continued from time to time. Mr. Gregson promises a continuance of his "*Old Entomological Localities*." Mr. Soutter will contribute his interesting botanical papers at intervals. Excursions and rambles will be given as usual. Notes, Captures, and Observations will be continued. It is also suggested that queries should be inserted, not to be answered by the editors, but left for correspondents to reply to. The monthly parts will be

stitched in a neat cover, to which all advertisements, exchanges, and business announcements will be transferred, so that the body of the magazine will be entirely reserved for readable matter. This will meet the wishes of many subscribers who have considered that the frequently repeated advertisements spoiled the appearance of the bound volume. Besides these changes we propose to issue each month a coloured plate, and we trust that this will prove one of the most attractive features of the new volume. Our plates up to the present time have been produced under considerable disadvantage. Every one knows that it is not possible to produce a plate that will be equally good whether coloured or plain. But we have had that difficulty to contend with, and our plates could not be made so perfect as plain plates from the fact that some of them had to be coloured; and they could not be made so perfect as coloured plates from the fact that some of them had to be issued plain. This will now be avoided, and they will be prepared specially for colouring, and all will be issued so, without extra

price. The plates we are about to issue will commence an Illustrated Catalogue of British Insects, which, if it meet with the encouragement we anticipate, will be continued until they have all been figured. For this work we have long been collecting material, but it was not easy to decide how to commence it. We will now endeavour to explain to our readers how we propose to meet those difficulties. Our first thought was to figure the species in the sequence in which they follow in the generally accepted catalogue of the order. But with some orders there is no such catalogue, and with others there are doubts and difficulties respecting various species that we felt would be better avoided by us, who write and figure specially for beginners. It might also be that it was not possible to procure an authentic specimen of particular species, and thus the regular sequence of the order must either be broken or the plates on which such insects should appear postponed until examples could be procured. To avoid these difficulties we have decided to figure without regard to any particular sequence, but just as we procure the specimens. Thus, those we figure to begin with, will be those already obtained, and most of them will be comparatively common. This will be an advantage to beginners, as they will be the species they are most likely

to meet with, and they will not therefore have to wait for years to learn what their earliest captures are. But to enable those who wish to arrange their figures in scientific order, each plate will be marked off by faint lines into portions of uniform size, and one figure given in each: the plates can thus be cut up by these lines and re-mounted in such order as the possessor prefers. Each plate will be confined to insects of one order, and as few as possible to examples of one group of that order. Thus the plates of *Coleoptera* will not only be all of *Coleoptera*, but the *Geodephaga* will be given together, and other groups in the same way, as far as such arrangements can be carried out with advantage.

We are aware that our projected undertaking is a very great one and that it would have been better in abler hands; but it is much wanted, and as no one else seems likely to attempt it, or even part of it, we can only ask the best help and support of our readers and the kind consideration of our critics. If we only succeed in making a commencement, it will be better than nothing.

Plate 1 will consist of *Geodephaga*, and will be issued on 1st December. Subscriptions may be forwarded now, or the parts may be procured through the booksellers.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

Subscriptions for Vol. III. are now past due, and we will be glad to have remittance from those who have not yet sent them. Weekly numbers or monthly parts, post free, 6/- per annum, or 1/6 per quarter, *in advance*. Coloured plates, 2d. each extra. These can only be had direct from the conductors as above, but any one procuring them through the booksellers can have them coloured on application.

NOTES AND OBSERVATIONS

THE DEATH'S HEAD AT HARTLEPOOL.— Since the notice of the occurrence of this species here, Mr. Alfred Wood informs me a fine specimen was brought him by a labourer in the dock-yard about the same date. Like mine it was put in a small match-box, but was quite uninjured. Has this species occurred elsewhere this season? — JOHN E. ROBSON.

CONTRIBUTIONS TOWARDS THE FAUNA OF PLYMOUTH.

(By permission of the Author.)

By Mr. G. C. BIGNELL, M.E.S.

[Reprinted from the Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society, 1881-82.]

HYMENOPTERA; ICHNEUMONIDÆ.

Arranged according to the Rev. T. A. Marshall's Catalogue, published by the Entomological Society of London, 1872.

(Continued from page 389.)

- LIMNERIA *bicingulata*. Bred from *Hybernia progemma*, 1st July
cerophaga. Bickleigh, 8th June
chrysostricta. Maker, 27th August
crassicornis. Bickleigh, 20th August
conciuna (Holmr.). Maker, 27th August.
 A new British species.
cursitans (Holmr.). Bred from *Vanessa*

- atalanta*, 27th August. A new British species
erucator. Bred from *Hybernia progemma*, 30th June
Faunus. Bickleigh, 20th August; Maker, 27th August
fulviventris. Bickleigh, 20th August
insidiator. Maker, 27th August
mutabilis. Bickleigh, 20th August
rapax. Bickleigh, 20th August
ruficincta. Bred 8th July, from *Ellopia fasciaria*; 3rd August, from *Dianthæcia cucubali*; 13th September, from *Heccatera serena*; 28th September, from *Anarta myrtilli*
 CANIDIA *pusilla*. Bickleigh, 20th August
 ATRACTODES *bicolor*. Bickleigh, 20th August
properator. Bickleigh, 20th August
 EXOLYTUS *lævigatus*. Bickleigh, 20th August
 MESOCHORUS *strenuus*. Bickleigh, 20th August
confusus Bred from *Xylopoða fabriciana*, 7th September
fuscicornus (Brischke). Bred 6th June, 1879, from *Apanteles*—(?) cocoon, out of *Abraax grossulariata* larva; and 28th September, 1879, from *Apanteles nothus*, out of *Melanippe galiata* larva. A new British species.
aciculatus (Bridgeman). New species. Bred from *Apanteles glomeratus*, out of *Pieris brassicæ*, 18th February
formosus (Bridgeman). This is also a new species. Bred from *Macrocentrus thoracicus*, out of *Noctua triangulum*, 12th July
 EXETASTES *illusor*. Bickleigh, 28th June
 MESOLEPTUS *paludicola*. Bickleigh, 8th June.
Bignellii (Bridgeman). New species. Bickleigh, 1885
 MESOLEIUS *molestus* (Holmgr.) Bickleigh, 20th August. A new British species.
fallax (Holmgr.). Bickleigh, 20th August. A new British species
 TRYPHON *signator*. Bickleigh, 14th June

- POLYBLASTUS rivalis*. Bickleigh, 6th September
- CTENISCUS seacinctus*. Bickleigh, 2nd September
- picus*. Bickleigh, 5th August
- COLPOTROCHIA elegantula*. Bickleigh, 16th September
- EXOCHUS gravipes*. Bickleigh, 6th Sept.
- flavomarginatus*. Bickleigh, 6th Sept.
- BASSUS latatorius*. Maker, 27th August
- nemorialis*. Plymbridge, 24th September
- multicolor*. Liskeard, 28th August
- lateralis*. Bickleigh, 20th August
- biguttatus*. Laira, 10th July
- fissorius*. Maker, 27th August
- areolatus*. Bickleigh, 20th August
- dorsalis*. Maker, 27th August
- obscuripes*. Bickleigh, 20th August
- PIMPLA instigator*. Stoke, 15th August
- rufata*. Bickleigh, 16th September
- POLYSPHINCTA multicolor*. Bickleigh, 20th August
- tuberosa*. Bickleigh, 6th September
- CLISTOPYGA incitator*. Maker, 27th August
- GLYPTA bifoveolata*. Bickleigh, 20th August
- flavolineata*. Bickleigh, 20th August
- LYCORINA triangulifera* (Holmgr.). Bickleigh, 5th August. A new British species, and the first of the genus taken in England.
- LISSONOTA variabilis*. Bovisand, 13 August
- sulphurifera*. Weston Mills, 31st August; Marsh Mills, 13th September.
- MENISCUS impressor*. Marsh Mills, 13th September
- PHYTODIÆTUS segmentator*. Bred from *Tortrix viridana*, 20th May
- scabriculus*. Bickleigh, 6th September
(To be continued.)

BUTTERFLIES.

55. THECLA W-ALBUM.

THE BLACK HAIR-STREAK.—Rather a local butterfly in England, not occurring in the northern counties, nor in Scotland or

Ireland. It frequents woods and well wooded lanes. The butterfly may be taken in July, and the egg remains over the winter, attached to elm twigs; the larva, which feeds on Elm, may be found in June.

56. THECLA PRUNI.

THE DARK HAIR-STREAK.—This is a very local butterfly in England being restricted to the counties of Derbyshire, Huntingdonshire, Monmouthshire, Northamptonshire, and Suffolk. If any one meets with it elsewhere we shall be pleased to hear from them. The larva feeds on Blackthorn, so that there is no difficulty in it finding food anywhere. The butterfly frequents woods and lanes in June or July. The eggs remain over the winter, and the larva should be searched for in May.

57. THECLA BETULÆ.

THE BROWN HAIRSTREAK.—Considerably the largest of the Hair-streaks. It is widely distributed in England, but scarcely reaches the more Northern counties. Scotland is without the species, but it is found in many parts of Ireland. It should be looked for in Birch woods in July and August or September. Like the three preceding species the eggs remain over the winter. The larva feeds on Birch or Blackthorn, and may be found in May or June.

58. SYRICTHUS MALVÆ=ALVEOLUS

THE GRIZZLED SKIPPER.—Abundant in England and Scotland, but not known in Ireland. It may be looked for in waste places when Bramble and wild Raspberry grow freely. It has a peculiar jerking flight as have those following, whence the name "Skipper." The flies in May and June; the larva may be found in August and September, and the pupa remains over the winter. We say, "The larva may be found," but the larvæ of all the skippers are difficult to discover, as they conceal themselves in rolled up leaves, in which they change to pupa.

59. NISSONIADES TAGES.

THE DINGY SKIPPER.—A common butterfly except in the North of Scotland. It frequent railway banks, dry hill sides, and places where the food plant, Birdsfoot Trefoil grows, on which the larva feeds. The butterfly is on the wing in May and June, and is sometimes double brooded. There seems some doubt as to how it passes the winter, perhaps Mr. Gregson will enlighten us.

60. PAMPHILA PANISCUS.

THE CHEQUERED SKIPPER. A very-local butterfly. Only seven counties are named in which it occurs in England. It is not known in either Ireland or Scotland. It appears to frequent woods, but the larva is said to feed on the broad-leaved plantain, which is more of a wayside plant, The butterfly is on the wing in June, but when the larva is found appears more doubtful and we are not sure how it passes the winter.

61. PAMPHILA ACTÆON.

THE LULWORTH SKIPPER.—Formerly only known as occurring at Lulworth Cave, in Dorsetshire, but now taken also in Devonshire and Warwickshire. It flies in July and August, and the larva probably hibernates. It feeds on the Wood Small Reed, but does not appear to conceal itself until ready to change to pupa.

62. PAMPHILA LINEA.

THE SMALL SKIPPER.—This little butterfly appears to be generally distributed in the South of England and in the Midlands, but does not reach the most northerly counties, nor Scotland; though it is found in many parts of Ireland. It appears on the wing in July, and the larva hibernates to feed up in the spring. The food is grass.

63. PAMPHILA SYLVANUS.

THE ORANGE SKIPPER.—The commonest butterfly of the genus, and found in all parts

of Britain. It frequents open places in woods, &c., and flies in May or June. Most of writers say it is double-brooded, and occurs again in August or September, but so few people record the capture of common species that we can give no references. The larva feeds on meadow soft grass.

64. PAMPHILA COMMA.

THE SILVER SPOTTED SKIPPER.—No nearly so common as the last, and apparently more abundant in chalk, in the Eastern and Southern counties of England. It is not found in Ireland or Scotland. It flies in July and August, and the larva probably hibernates, to feed up in the spring. It feeds on Birdsfoot trefoil, &c.

Far too little is known from actual observation of the early stages of our British Butterflies. Would it not be worth while for the readers of the *Young Naturalist* to try and work out thoroughly their history? So much is copied from book to book, that statements are made for which no one knows the authority. It is far from creditable that with so many Entomologists in England, our knowledge of the few butterflies we have should be so scanty.

One statement made in these brief papers has been disputed by Mr. Gregson and others. We replied to Mr. Gregson, but have thought it well to quote what other writers have to say. We refer to the food plant of the Small Copper, *L. Phlaas*. "On *Rumex acetosa* (Sorrel)"—Stainton's *Manual*. "The egg is laid on several species of dock (*Rumex*) as *R. obtusifolius*, *R. pulcher*, *R. acetosa*, *R. acetosella*."—Newman's *British Butterflies*. "Mrs. Boley caught the butterfly in Guernsey, on the 23rd of September; it it laid on Dock on the same day. Food plants: Broad-leaved Dock, Fiddle-headed Dock, Sorrel, Sheep Sorrel, Ragwort."—O. Wilson's *Larvæ of British Lepidoptera*. "Sorrel, Dock, Ragwort,"—Merrin, *The Lepidopterists Calendar*.

BRITISH BIRDS, THEIR NESTS AND EGGS.

By S. L. MOSLEY.

29. RING OUZLE.

Turdus torquatus, Linn.

TORQUATUS, (L.). Zoned or ringed; from the white mark on the breast.

Size.—Length about 11 in., expanse 1 ft. 7 in.

Plumage.—Bill dark brown with some yellow at the base; eyes dark hazel, eyelids yellow. The whole of the plumage is brownish-black, the feathers more or less margined with grey, especially on the wings; a white crescent-shaped patch across the breast; legs dark brown.

THE FEMALE has the grey margins of the feathers broader, and the white crescent narrower, and less pure. Old females are like the males, and young males are like the females.

THE YOUNG from the nest are marked very like the young of the missel thrush, but the ground colour, of course, darker. After the first moult in the autumn the young birds are dull brownish-black, the feathers on the upper parts margined with lighter colour, on the under parts the feathers are margined with dull white, and where the gorget should be the feathers are margined as in the upper parts; bill dark brownish-black; legs rather lighter. The lower figure represents the bird in this stage from a specimen in my own collection.

VARIETIES.—I have seen several specimens with white feathers about the head, and Selby says that white and ashy grey ones have occurred.

Note.—The song consists of but a few notes, loud, sweet, and clear. It has also a note of alarm something like that of the blackbird.

Flight.—The flight is very similar to that of the blackbird.

Migration.—The ring ouzle is a summer migrant to this country. Its movements are just the opposite to that of the fieldfare and redwing, coming here to breed and moving southward in the winter; hence, although it seldom breeds in the southern counties, it is seen there regularly in its spring and summer migrations.

Food.—The food of this species consists of similar fare to that of the last; it is particularly fond of ivy and juniper berries.

Habitat.—Not rare in all the mountainous parts of the northern parts of the British Isles, breeding in all suitable places in the north, and visiting the cultivated parts in the spring and again in September after the breeding season.

ABROAD it is found in most of the hilly parts of Europe, and in winter in north Africa, and rarely in some portions of Asia, but the chief resort in winter does not seem to be known.

Nest.—The nest is very similar to that of the blackbird, but is either placed upon the ground or very near it, generally on a sloping bank under a tuft of heather, or against a rock side, always low down, and at a place where herbage grows from the rock.

Eggs.—Generally four or five eggs are laid; they greatly resemble the eggs of the blackbird, but are generally rather blunter at the small end, the spots never so small as in some of the blackbird's eggs, and the ground colour brighter (fig. 1).

VARIETIES.—The eggs of this species seem rather subject to vary. Figs 2, 3, and 4 are from Mrs. Battersby's collection. One is recorded with the whole of the large end chestnut brown, and the remainder clear blue. Mr. Bond has seen two or three, light blue without any spots.

FAMILY IV. SYLVIADÆ.

This family consists of all the small soft-billed birds or warblers, generally very sombre in colour, but excellent in song.

Genus I., *Accentor*, Flam.

ACCENTOR.—

The members of this genus are plain-coloured, generally brown; the bill tapers almost gradually to the point; first quill feather exceedingly short, the third the longest; the wings only reach to the base of the tail. One species is native, and another an occasional visitor to this country.

30. HEDGESPARROW.

Accentor modularis, (Linn).

MODULARIS (L.) to chant or warble.

Size.—Length, 6 in. to 6½ in.; expanse, 8½ in.

Plumage.—Bill and legs reddish horn colour; eyes dark brown; head and under parts sooty black, tinged with brown on the sides and ear-coverts; back wings and tail brown, each feather darker in the centre.

THE FEMALE is generally slightly spotted about the head and breast.

YOUNG BIRDS are lighter in colour and more mottled, but change to the adult garb the same year.

VARIETIES of this species are not uncommon. One, entirely sooty black, is given on the plate from a specimen killed by myself at Almondbury Bank, near Huddersfield. It is now in Mr. Bond's collection, who has also white, pied, and cream-coloured varieties. Two varieties are reported by Mr. Gunn in the *Naturalist* (1864), vol. i., p. 146, as having been obtained in Norfolk: one being pied with white about the head, and the other "being of a yellowish brown on the upper parts, the under surface of a pale slate colour, inclining to greyish under the throat." Yarrell records one with the "head, neck, body, and wing-coverts dull white, varied with a few markings of the natural brown; the wing and tail feathers pure white; beak and legs flesh colour." He also records another of a "uniform reddish buff."

Note.—The song of the hedgesparrow is only short, composed of a few notes, yet particularly soft and sweet. It commences early in spring, often in January, and continues up to the time when the young demand all the parental care. It has also a call-note resembling "che, che." Occasionally sings in the night-time.

Flight.—The flight is generally for short distances only. When it alights, it hops from branch to branch, or upon the ground, flapping its wings and uttering its plaintive call note.

Migration.—Resident throughout the year; in winter, however, it approaches nearer to the habitations of man.

Food.—The food consists of small insects seeds, bread crumbs, and almost any eatable matter. When the young are in the nest large quantities of Caterpillars are destroyed.

IN CONFINEMENT.—It is an interesting bird in an aviary, for its sociable habits and its early song.

Habitat.—Common in all parts of Britain, except the extreme north, where it is only an occasional visitor, or perhaps resident in more diminished numbers.

ABROAD.—Is found in most of the countries in Europe, and has been noticed in Persia, and Asia Minor.

Nest.—The nest is placed in a hedge or low bush, and is rather shallow, composed of moss with bits of sticks, or straw sometimes, or wool, lined with hair, and occasionally lined with feathers. The nest of this bird is much used by the cuckoo.

Eggs.—From four to six, very bright bluish green, very uniform in colour.

VARIETIES.—I never saw a variety except in size—odd specimens sometimes occur as small as peas, probably first eggs. One is recorded (*Zool.*, p. 434) of a bluish white colour, mottled and speckled with light brown, and much rounder than usual.

THE YOUNG NATURALIST.

H. G. MEEK,

NATURALIST,

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 154.

OCTOBER 21st, 1882.

VOL. 3.

REGRETS.

AS was to be expected, we have had numerous letters from our readers regretting that the weekly issue is to be given up, but such regrets come all too late. Our readers cannot feel more sorry about it than we do, for we have enjoyed its preparation quite as much as they can have enjoyed its perusal. The correspondence it has brought, and the new friends we have made through it, have all been sources of pleasure to us; but we venture to hope that none of these will be lost to us because the *Young Naturalist* ceases to appear oftener than once a month. One of our friends sends us a graphic description of the gathering of "young naturalists" at our agent's shop; their disappointed faces if the papers have not arrived, and the eager perusal of the contents if they have. We rather fancy he overdraws the picture, though we may imagine it to be "founded on facts." Many others express their personal feelings in terms that are very gratifying to us, but we had considered all that they say before we arrived at our conclusion. One young

gentleman, in giving his views, suggests that if we would double the size of the paper, add a cover, and give a coloured plate weekly, without increasing the price, our circulation would more than double in a twelvemonth. We need not reply to such a suggestion. The time has not yet come when such an undertaking could be ventured on with any hope of success. On the other hand even a larger number express approval of the change, and more particularly of the arrangement we have made respecting the plates. "It just exactly meets my views on the matter" says one gentleman, whose letter has reached us as we were penning these lines, and we are glad the change we are making is acceptable to so many. Still, there are regrets in our own mind, for the weekly issue is our preference. Remembrance of how eagerly we looked for *The Weekly Intelligencer* of our early days, and how much we were encouraged in our pursuit by the perusal of its pages, has made us long for a similar paper ever since that time; and in these days of telegrams and telephones, a month

is certainly a long time to wait for news. But with all our inventions for quickening communication with each other, the monthly magazine seems to come often enough for British readers. We trust the encouraging remarks of many of our readers will be borne out by the results. The announcement we made respecting plates has only brought favourable remarks. If any have thought us presumptuous for venturing on such a great undertaking they have not said so. But, without being told, we feel that it is presumptuous in us to attempt such a thing. Our knowledge is sadly deficient, and we must depend on assistance from others in many ways. We may very readily make mistakes—the best informed err sometimes,—and as we have not access to the large libraries that exist in the metropolis and one or two favoured places, we have not the opportunity of reference that others might have. All we can say about it is that we will do our best; that should we happen to get wrong, we will not be ashamed to own it; and that the plan we are adopting for the issue of plates will render the correction of an error a matter of no great difficulty, no matter what length of time may have elapsed before it is discovered.

EXCHANGE.

DUPLICATES.—*Notiophilus substriatus*, *Taph-
ria nivalis*, *Berosus affinis*, *Cercyon terminatus*,
Philonthus sanguinolentus, *Dianous cerulescens*,

Bledius longulus, *Psylliodes dulcamaræ*. DESI-
DERATA.—Numerous Coleoptera.—S. HUME,
4, Overton Terrace, Ashburnham Road,
Clive Vale, Hastings.

NOTES AND OBSERVATIONS

A pair of Dotterels (*Euromias morinellus*) were shot at Perry Barr, near here, by Mr. H. Pealingham. I believe the last one shot in this locality was at Cannock Chase some seven years ago. A cormorant (*Phalacrocorax carbo*) was shot near Coston reservoir, Olton, by Mr. James Hunt. The latter bird contained in the stomach a roach of about a pound weight. All three birds were shot at the end of September.—G. F. WHEELDON, BIRMINGHAM.

COLOUR OF FULIGINOSA.—I send you three varieties of Geranium from my greenhouse, illustrative of colour. "Christeni" is the parent of all the pink forms I know; *not of the salmon coloured ones*. "Wonderful" is a cross between *scarlet* and *lake*, or as some people call it *carmine*, the base of which is *lake* obtained from madder of peach wood, *precipitated* by muriate of tin. I call *fuliginosa* red brown or brown red, brick red is a good name for it. It can only be matched by an earthy or burnt ochre; or sienna which is only a fine ochre, sold as "terra de sienna." No scarlet or crimson in it whatever.—C. S. GREGSON.

(The proper name for many of the shades of red, depends so much on opinion that I would prefer to leave the question at present. None of Mr. Gregson's geraniums are of the same hue as the hind wings of Mr. Bath's *fuliginosa*, that marked "Scarlet and Lake," certainly comes nearest to it; "Christeni" is nothing like it at all.—J.E.R.)

L. BÆTICA AT BOURNEMOUTH.—I have just had a specimen of *L. Batica* presented to me by Lady Staples, which was caught by her daughter only about four hundred yards from my house. I think this is the best capture of the season, so far as I have heard.—W. McRAE, BOURNEMOUTH.

MISTAKES.

ELDER GROWING ON YEW.—I should have answered Mr. Gregson's remarks before, but have been out of town. With all due deference to him I am still inclined to believe that the two elders I saw were parasitical, for I think they derived their nourishment from the yew, as no soil or dead leaves could have lodged there—they appeared to be growing out of a rift in the bark of two perfectly bare horizontal boughs, and those not very large ones either. The next time I go to Clieve, which I am afraid will not be this year, I will try and pull one up, as suggested by Mr. G. I was with the party of naturalists mentioned in Mr. Deakin's paper—and amongst whom was a very good botanist—and called their attention to the above, and the question as to their mode of growth was discussed amongst them.

I think attention should be called to the following:—On page 43 Mr. Bath mentions *Helix ericetorum* as "having not yet hibernated"—at Sutton, I take it. Now this mollusc does not occur at Sutton, and is not found nearer Birmingham than Dudley, in quite another direction, and there very sparingly.—G. F. WHEELDON, Birmingham.

CONTRIBUTIONS TOWARDS THE FAUNA OF PLYMOUTH.

(By permission of the Author.)

By Mr. G. C. BIGNELL, M.E.S.

[Reprinted from the Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society, 1881-82.]

HYMENOPTERA; ICHNEUMONIDÆ.

Arranged according to the Rev. T. A. Marshall's Catalogue, published by the Entomological Society of London, 1872.

(Continued from page 396.)

APANTELES *solitarius*. Bred from *Tenio-campa stabilis* and *Orgyia antiqua* A new British species.
ruficrus. Bred from *Plusia iota* and *chrysitis*

congestus (Ns.) (= *intricatus*, Hal.) Bred from *Tryphæna pronuba rubripes*. Bred from *Geometra papilionaria*, *Cabera pusaria*, and *Notodonta ziczac*

glomeratus. Bred from *Pieris brassicæ spurius* (Wesm.) Bred from *Amphydasis betularia*. A new British species
juniperatæ. Bred from *Zygæna filipendulæ*, *Selenia illunaria*, *Hybernia defoliaria*, *Ephyra punctaria*, and *Cidaria fulvata*

difficilis (Ns.) (= *vestalis*, Hal.) Bred from *Euchelia Jacobæ* and *Amphydasis prodromaria*.

tenebrosus (Wesm.). Bred from *Acrolepia pygmaena*. A new British species

formosus (Wesm.). Bred from *Ourapteryx sambucaria*. A new British species

fulvipes. Bred from *Tryphæna orbosa* and *Noctua xanthographa*

notus (Rhd.). Bred from *Melanippe galata* and *Cidaria pyraliata*. A new species

MICROPLITIS *occlata* (Bè.) (= *ingratus*, Hal.)

Bred from *Smerinthus populi*

tuberculifer (Wesm.). Bred from *Polia flavocincta*. A new British species

flavipes. Bred from *Boarmia repandata*

MICROGASTER *subcompletus* (Ns.) (*annulipes*,

Curt.). Bred from *Vanessa Atalanta*

pubescens (Ratz.). Bred from *Thera obeliscata*

PERILITUS *deceptor*. Bred from *Crocallis elinguaris*

pulehricornis (Wesm.). Bred from *Cheimatobia brumata*

scutellator. Bred from *Tenio-campa stabilis unicolor*. Bred from *Orthosia lota*

ZELE *testaceator*. Bred from a very thin, smooth, white cocoon.

COPIDOSOMA *chalconotum*. Bred from *Depressaria nervosa*.

7, Carence Place, Stonehouse,
16th March, 1882.

THE YOUNG NATURALIST.

H. G. MEEK,
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56, BROMPTON ROAD, LONDON, S.W.

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The YOUNG NATURALIST :

A Penny Weekly Magazine of Natural History.

No. 155.

OCTOBER 28TH, 1882.

VOL. 3.

THE PAST SEASON.

AT the close of the volume and of the season it seems appropriate to look back once more and consider what has been done during the year. Insects all over appear to have been particularly scarce. Except in a few places, sugar was quite unproductive in the spring and summer. One correspondent tells us that after sugaring three times without obtaining an insect he gave it up altogether; others persevered longer than this, only to arrive at the same result in the end. But when August was over moths began to seek the sugared trees, and nearly every correspondent writes of his greater success in autumn. Still, we have heard of very little being taken that is really rare, nor do the other magazines record much of consequence. In September of last year we called attention to the meteorological aspects of 1881. We said "After a very open winter, severe weather set in about Christmas and continued almost until May. Then we had a summer of almost tropical heat * * * but St. Swithin brought rain; and when

the forty days were over, instead of the sky clearing and the sun shining out again, heavier rains set in * * * and still the rains continue." We then asked what effect this would have on insect life. We call attention to this now to ask the question, has the dearth of insects in the early part of the year been owing to the unfavourable autumn of 1881? It would almost seem so, yet the dearth of records of captures prevent a conclusion being arrived at with any degree of certainty. Insects pass the winter in one of the four states, and it would be interesting to know whether those wintering as ova, larvæ, pupæ, or imagines suffered most by the rains of last August and September. Correspondents, as we have already said, speak of greater success with autumn insects than with those appearing earlier, as though the species that emerged last year after the worst of the floods were over had thus escaped the disastrous effects that were experienced by the broods from those emerging earlier. To us it seems a pity that, while the information that

would enable us to understand these points is in the possession of everyone, there seems no way of getting at it. What each of us knows individually is of no value, but if we could only be persuaded to let everyone else know all we know, we would soon arrive at important conclusions. It is a pleasure to us to be able to say that there are an increasing number of collectors (mostly beginners) who do write us fully as to their doings; and it may be that by constant discussion of these points in our pages we may eventually persuade such a number of observers to send their notes as will enable generalizations to be arrived at on this and many another important point.

TO CORRESPONDENTS.

All communications to be sent to J. E. ROBSON, 15 Northgate, Hartlepool; or to S. L. MOSLEY Beaumont Park, Huddersfield.

In closing the weekly issue the Editors of the *Young Naturalist* would thank their numerous correspondents for the kind assistance they have rendered, which they confidently rely will be extended to them for the monthly issue. They would also thank their subscribers for the support they have given, without which the magazine could not have existed. They trust that support also will be continued to the *Young Naturalist* in its new form. They would especially thank those kind friends whose criticisms have always been of value, and whose suggestions have so often brought about what they hope have been improvements.

Those who have not yet remitted their subscriptions for Vol. III., and the few who still owe for the preceding volume, are requested to remit as early as possible, as it is desirable that all these matters be squared up.

EXCHANGE.

I will be greatly obliged for specimens of *Arctia fuliginosa* for purposes of comparison.

I will either return them or make the best exchange in my power. I have a quantity of bred *V. antiopa* from North America suitable for types.—JOHN E. ROBSON, 15, Northgate, Hartlepool.

DUPLICATES.—*Tritici*, *Valligera*, *Impura*, *Pallens*, *Gemina*, *Geryon*, *Chi*, *Literosa*, *Feruncula*, *furcula*, and many others. DESIDERATA. Very numerous.—TOM ROBSON, 15, Northgate, Hartlepool.

I have a few Duplicates of *H. Croceago*, *E. Lichenca*, and *T. Gothica*. DESIDERATA.—Numerous Macro-Lepidoptera. Please send own lists of duplicates. W. G. LIDSTONE, 79, Union Street, Plymouth, Devon.

NOTES AND OBSERVATIONS

A. ATROPOS.—Referring to your enquiry in last weeks Y.N. as to the occurrence of *Atropos* I may say that a specimen of the moth was found on a cement path in a garden at the Teams here, about the end of last May; and three weeks ago, while staying at Whitley, I was shown one alive, which the captor asserted he had found on the surface of the water. It was in pretty good condition, and did not appear any the worse for its "life on the ocean wave."—T. T. DOUBLEDAY, Team Villas, Gateshead, 19th October, 1882.

BRITISH BIRDS, THEIR NESTS AND EGGS.

By S. L. MOSLEY.

Genus II.—*Sylvia*, Linn.

SRLVIA.—*Sylva* (L.), forest.

The members of this genus are real insect feeders. The bill is slender; wings rather short; legs and toes long and slender. They are all song birds, some of them exceedingly rich in song. All are more or less birds of passage, mostly visiting this country to breed. Twenty species are native of this country, and eight or nine others have been obtained as accidental visitors.

31. ROBIN.

Sylvia rubecula, Linn.

RUBECULA.—*Ruber* (L) red.

Size.—Length, 5 $\frac{3}{4}$ in.; expanse, 9 in.

Plumage.—Bill and eyes black; top of head and back olive brown; tail and wings rather darker; greater wing-coverts tipped with buff; throat, breast, sides of neck, and round the eye orange red, encircled above by bluish grey; belly white; legs brown. The sexes are similar.

THE YOUNG before their first moult are brown, mottled with yellowish (fig. 2).

VARIETIES.—Mr. Bond has one pale drab, lighter on the back; another with white tail and wings; one slaty colour with ochre-coloured breast; one with white cap shot in Norfolk; and another white faintly tinged with local colours in different parts. Two are reported from Norfolk (Nat. (1864) i., p. 164), one "of a bluish slate colour, lighter on the breast and abdomen;" and the other "white, mottled with small patches of its usual colour." Another is recorded from the same county (Nat. ii., p. 26) having "the surface of its head, neck, back, and upper wing coverts dull yellow; the red throat and breast much paler than in ordinary specimens; upper surface of wings and tail of a pale yellow, gradually inclining to white at the tips of the quill feathers; the shafts of the same also white; under surface of wings and tail pale yellowish brown; belly white; flanks, thighs, and vent of a pale yellowish tint; iris light hazel; bill and legs pale yellow.—Female." Yarrell records having "seen one in which the part usually coloured red was a light bluish grey, the back and wings bluish green." A dun variety is reported (Zool., p. 8949), and numerous other pied ones are recorded.

Note.—The robin has a sweet and pleasing song, though composed of a very few notes. Its autumn song generally commences during the latter half of August and is continued far into the winter. It also sings very late in the evening.

Migration.—The robin draws nearer to the habitations of man as winter

approaches, and some leave England after the breeding season.

Flight.—The flight is rather quick, but only for short distances.

Food.—The food of the robin consists of insects, such as caterpillars and flies, bits of bread crumbs and kitchen refuse, also small fruits, such as currants, blackberries, elderberries, &c., &c.

Habitat.—Common in all parts of Britain, frequenting hedge banks, woods and gardens. In winter they approach human habitations in search of food, and will become exceedingly familiar, entering houses, and even hopping about the table where the family are assembled. When winter is over they seek their natural food in their usual haunts; but the same bird will again return to the house where it was welcomed before.

ABROAD it is found in all the temperate countries of Europe, North Africa, and Western Asia, also Malta, The Canaries, and Madeira.

Nest.—The nest is generally placed in a cavity on a bank, in a place where it is protected or hid by herbage or roots. Sometimes very strange situations are made choice of by these familiar birds: they have been known to build on the curtains of a bed, on a shelf in a room, in flower pots, in a human skull, and in various other queer places. The nest is composed of dry stems and leaves of plants, with a little moss, and lined with hair.

Eggs.—Five eggs are laid, sometimes six. They are very pale yellowish grey, with indistinct pale red-brown spots (fig. 1.)

VARIETIES.—These eggs vary much in the intensity of the spotting. Sometimes they are pure white without any spots. Figs. 2 and 3 are from eggs in Mrs. Battersby's collection, and fig. 4 is from my own collection.

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