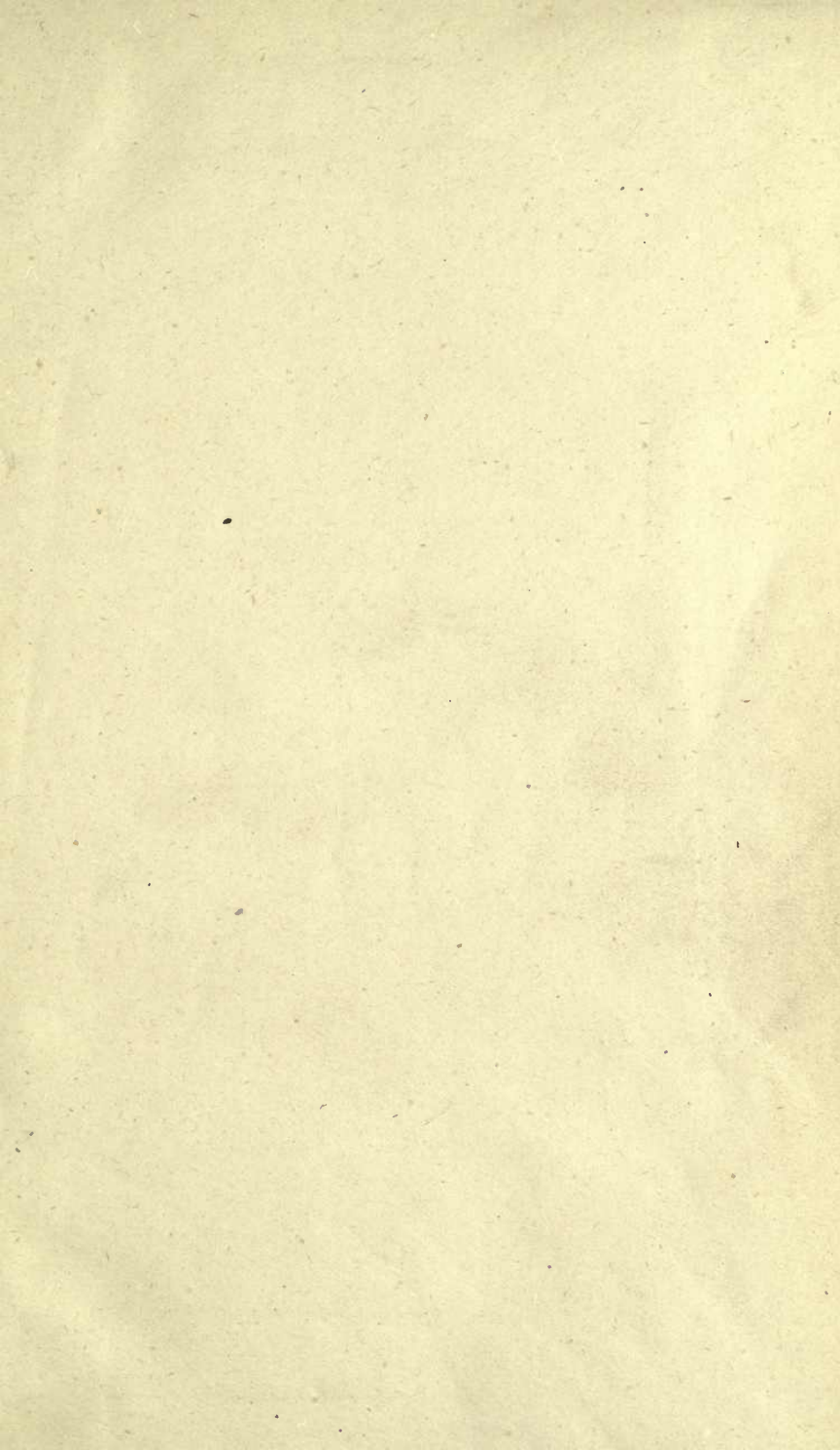




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2.



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POPULAR MISCELLANY

NATURAL HISTORY.

REVISED BY

EDWARD MANTON, F.R.S.

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THE
ZOOLOGIST

POPULAR MISCELLANY

NATURAL HISTORY

The love of nature's works
Is an ingredient in the compound man,
Infused at the creation of the kind.
And, though the Almighty Maker has throughout
Discriminated each from each, by strokes
And touches of his hand, with so much art
Diversified, that two were never found
Twins at all points — yet this obtains in all,
That all discern a beauty in his works,
And all can taste them : minds that have been formed
And tutored, with a relish more exact,
But none without some relish, none unmoved. — COWPER.



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MINGOELL

PREFACE.

'THE ZOOLOGIST,' during the past year, has met with most unequivocal success. Contributions have poured in from all parts of the kingdom in a manner, I believe, wholly unprecedented in the annals of any other Natural-History Magazine: indeed, so great, so overwhelming is the supply, that I have lately been unable to publish more than half the communications I have received. In making my selection I have experienced great difficulty, and it cannot be supposed that I have given entire satisfaction. I trust, however, that correspondents whose communications remain unpublished, will consider them delayed, rather than declined. In no instance has the name of the writer exercised any influence on my choice; my aim has been to publish facts as early as possible, but to reserve histories. Thus, in birds, the occurrence of rarities, or any new observation on their migration, nidification, change of plumage, food, &c., has taken precedence of detailed accounts of their appearance and habits, provided these have been previously well ascertained, and accurately described. This course will, I trust, be considered in perfect accordance with my original design, of making 'The Zoologist' the chronicle of Natural-History facts.

I have been truly gratified by the receipt of numerous letters from all parts of the United Kingdom, and from many naturalists on the Continent of Europe, expressing the most perfect cordiality with my undertaking, and entire approbation of the mode in which it is conducted.

I am able to report an increased and increasing sale; both the gross sale of the year, and the average monthly sale, during 1844,

greatly exceeding those of 1843. I therefore feel myself quite justified in continuing 'The Zoologist' for another year, yet scarcely so in making that addition to the quantity of letter-press and number of illustrations, which appears desirable, in order to keep pace with the increase of contributions. I am particularly unwilling to increase the price, since I consider myself pledged to continue at that originally proposed, so that no other resource exists for providing for a permanently increased outlay, but the exertions of my friends, in procuring a permanently increased sale. Circulars will shortly be issued, and placed in their hands, which will enable those whose good will I have gained, to render me most important assistance in this matter.

In conclusion, I beg subscribers and contributors to receive my best and warmest thanks for their exertions in my behalf. May health and happiness be the attendants of their labours for another year, and may we then meet under circumstances still more cheering.

EDWARD NEWMAN.

9, Devonshire Street, Bishopsgate,
January, 1844.

CONTENTS.

ALPHABETICAL LIST OF CONTRIBUTORS.

- ATKINSON, REV. JOHN, M.A.**
Anecdote of a hare, 420; Anecdote of a robin's nest, 566.
- ATKINSON, REV. J. C., B.A.**
Keen scent of the stoat, 490; Moorhen, 497; Dabchick, 499; Notes on fishes, 524; Nomenclature of British birds, 552, 553; Ringdove, 660; On the habits of the moorhen, 756; Note on the water-rail, 766; Notes on the moorhen and dabchick, 767; On the hedgehog, 791.
- BABINGTON, C. CARDALE, M.A., F.L.S., F.G.S.**
Bees and laurel trees, 609.
- BANISTER, REV. J. D.**
Black-headed gull, 577; Instinct in wild web-footed birds, 578; Summer birds at Pilling, 720.
- BARCLAY, A. F.**
Gordius aquaticus, 396; Cuckoo in confinement, 655.
- BARCLAY, E. E.**
Bullfinch breeding in confinement, 453.
- BARCLAY, H.**
On the black rat, 616; Summer birds at Layton, Essex, 651.
- BARCLAY, J. GURNEY.**
Habits of the hawfinch, 569; Correction of the above, 659.
- BARTLETT, J. PEMBERTON.**
Goatsucker, or night-hawk, 445; Nesting-place of the Swallow, 446; Wryneck, 449; Singular noise made by a sparrow, 452; Guinea-hen's eggs in a partridge's nest, 454; Hoopoe nesting in Surrey, 564; Torpidity in a bat, 613; Ornithology of Kent, 617; On the water-rail, 669; Trochilium Ichneumoniforme, 683; Corrections on the birds of Kent, 718; Summer-birds on Barham Downs, 719.
- BARTON, STEPHEN.**
Clytus 4-punctatus near Bristol, 476.
- BATES, HENRY WALTER.**
Habits of Coleoptera, 410; Epaphius Secalis, 476; Ocys melanocephalus, 476; Hylesinus Fraxini, 610; Variety of Pamphila lineata, 683; Clear-winged Spingidæ near Leicester, 683; Conops flavipes, 688; Coleoptera in Leicestershire, 699.
- BEDELL, GEO.**
Lepidopterous insects at Charlton, 735.
- BELL, R. J.**
Late stay of the swallow, 565; Snow-bunting at Derby, 569; Red-throated diver near Derby, 576; Summer birds near Derby, 652.
- BELL, THOS., F.R.S., F.L.S.**
British specimens of the edible frog, 727.
- BENTLEY, WM.**
Description of Pseudotomia Artemisia, 774.
- BLADON, JAMES.**
Change of colour in a fowl, 726; Kittiwake near Pontypool, 727; Singular application of a spider's thread, 728.
- BOLD, THOS. JOHN.**
Honey-buzzard, 562; Habits of a pigeon, 659; Acarus found on a moth, 680.
- BOND, FREDERICK.**
Edible frog in Cambridgeshire, 393; Colias Edusa and Hyale, 397; Anthus petrosus, 447; Kestrel hawk, 491; Summer birds at Kingsbury, 650; Missel thrushes, 656; Hen changing her colour, 667; On the edible frog, 677; Rare waders at Kingsbury reservoir, 767.
- BOOTH, MARK.**
Osprey, &c., near the Swale, in Yorkshire, 443.
- BOWERBANK, J. S., F.R.S., F.G.S.**
Halisarca Dujardini, 750.
- BREE, REV. W. T., M.A., F.L.S.**
Colias Edusa, var. Helice, 472; Capture of moths by sugar, 736; Toads in stone, 769.
- BRIGGS, J. J.**
Migration of birds in Derbyshire, 440; Seeds sown by animals, 442; Song of birds, 442; Wood-wren, 451; British birds in Derbyshire, 553,

- 644; Anecdote of a fox, 614; Badger near Melbourne, 615; On the Fomart, 615; Hunting the squirrel, 616; Summer birds at Melbourne, 652; Carrion crow, 656; On the rook, 656; Redwings and fieldfares, 656; Song thrush, 657; Skylark, 657; Tree pipit, 658; On the otter, 714; On the stoat, 714; Habits of the hedgehog, 714; Departure of the redwing and fieldfare from Melbourne, 724; On the starling, 724.
- BROMFIELD, W. A., M.D., F.L.S.**
Colias Edusa, 397.
- BROOKS, JOHN THOMAS.**
Passerine owl, 563.
- BROWN, WM.**
Black-headed gull, 455.
- BUCKLER, CHARLES.**
Red-breasted Tanager near Cheltenham, 444.
- BULL, HENRY.**
Early arrival of the fieldfare near Godalming, 724.
- BURLINGHAM, D. C.**
Grey shrike at Lynn, 444; Spoonbill at Lynn, 455.
- BURY, REV. C. A., B.A.**
Notes on the birds of the Isle of Wight, 516, 634; Summer birds at Bonchurch, 649; Remarks on Watterton's Essay on the oil-gland, 751; Mammalia of the Isle of Wight, 776.
- CHANT, J.**
Annual change of plumage in a gull, 768.
- CHENNELL, F. A.**
Carnivorous propensity of snails, 396; Crested grebe in Middlesex, 502; Food of the tadpole of the common frog, 579; Late departure of the swift, 762.
- CLIFFE, HENRY F.**
Swallows' course over the Atlantic, 565; On the Cape pigeon, 579.
- CLIFFORD, REV. FRANK.**
Greater tit, 449; Rose-coloured parrot at Thetford, 452.
- CORNISH, JAMES.**
Habits of the wagtail, 566.
- COUCH, JONATHAN, F.L.S.**
Description of the short sea-bream, 393; Description of *Natica intricata*, 770.
- COUCH, R. Q., M.R.C.S.L.**
Purpura lapillus, 533; Food of the tadpole, 676; Nidification of fishes, 795.
- DALMAN, GEO. J.**
Long abstinence in a beetle, 612.
- DAWSON, REV. J. F., M.A.**
Dovecot pigeon, 453; *Colias Edusa* in the Isle of Wight, 471; Note on *Pontia Metra*, 681, 729.
- DOUGLAS, J. W.**
Capturing moths with sugar, 399; Captures of Lepidoptera, 484; Genus *Cerura*, 540; Captures in the New Forest and Darenth Wood, 686; *Ichneumon's* eggs on caterpillars, 749.
- DOUBLEDAY, EDWARD, F.L.S.**
Lepidopterous insects, 468.
- DOUBLEDAY, HENRY.**
Colias Hyale, 398; *Brepba Parthenias* and *Notha*, 399; *Orthosia lunosa*, 399; *Triphæna subsequa*, 399; Observation on the greater tit, 574; *Anticlea berberata* at Epping, 581; Summer birds at Epping, 651.
- DUNCAN, ROBERT DICK.**
Swallow, 447; Rhymes relating to birds, 556; Owls building in trees, 563; Colour of the heron's egg, 575; Glowworm in Scotland, 612; Birds and birds' nests, 647; Anecdotes of foxes, 790; Cat's nest in a tree, 791.
- EDLESTON, R. S.**
Effects of rain on pupæ, and captures near Manchester, 399; *Lasiocampa Trifolii* and *Agrotis annexa*, 683; *Mamestra suasa*, 683; *Nyssia zonaria*, 683; Captures in Dunham Park, 684; *Lycæna Phlæas*, 734; *Mamestra suasa*, 734; Lepidopterous insects near Manchester, 734; *Deilephila lineata*, 736.
- EDMONSTON, THOMAS.**
Fauna of Shetland, 459, 551; Voracity of *Dytiscus marginalis*, 701.
- FARR, HENRY F.**
Colias Edusa at Yarmouth, 540; Species of *Agrotis*, 687; Capture of a female of *Lithosia muscerda*, 774.
- FISHER, WM. R.**
Migration of birds at Yarmouth, 441; Fire-crested *Regulus* at Yarmouth, 451; Migration of larks, 452; Fulmar Petrels, 456; Goshawk off Yarmouth, 491; Iceland gull at Yarmouth, 502; Nomenclature of British birds, 552; Capture of a sturgeon, 580; Departure of winter birds from Yarmouth, 654; Breeding of birds at Yarmouth, 654; Migration of the kingfisher, 766; Mi-

- gration of the water-rail, 766 ; Ducks nesting in trees, 767 ; On the honey buzzard, 793 ; Occurrence of Richardson's skua in Great Yarmouth, 795.
- FORGE, CHAS.**
Hedge-sparrow's nest, 655.
- FRERE, H. T.**
On the water-rail, 794.
- GAZE, W.**
Capture of Lepidopterous insects in Suffolk, 400 ; Captures of Lepidoptera near Sudbury in 1843, 485 ; Lepidoptera bred from larvæ, 486 ; Coleoptera near Sudbury, 486.
- GIBSON, G. S.**
Enquiry respecting *Pontia Brassicæ*, and *Chariclea*, 581.
- GORDON, REV. GEORGE.**
Fauna of Moray, 421, 502, 551 ; On the scarcity of wasps in 1843, 474 ; Summer birds at Elgin, 653.
- GOSSE, P. H.**
Thyridopteryx Ephemeraformis, 537 ; Dirt daubers, 582 ; Description of a bee tree, 607 ; Voyage up the Alabama river, 703.
- GREENWOOD, ALFRED.**
Nest of greater titmouse, 447 ; Plumage of black redstart, 449 ; Food of the ringdove, 454 ; Enquiry respecting an owl's nest, 492 ; Hoopoe in Cornwall, 659 ; Capture of *Colias Edusa*, 729.
- GREGSON, C. S.**
Captures of moths at New Brighton, 684 ; Capturing moths with sugar, 800.
- GREVILLE, R. N.**
Coleoptera at Stirling, 698.
- GURNEY, J. H.**
Honey Buzzard, 491 ; Tadpole fish on the coast of Norfolk, 532 ; Red-crested whistling duck in Norfolk, 576 ; Nest of the long-horned owl, 655 ; Opah, or king-fish, on the coast of Norfolk, 679, 769.
- GURNEY, SAMUEL.**
Early arrival of the swallow, 565.
- HARDING, H. T.**
Abstinence in a snail, 800.
- HARDY, JAMES.**
Habit of the grey wagtail, 568.
- HARLEY, JAMES.**
Blackcap in winter, 450 ; Summer birds at Leicester, 652 ; Enquiry respecting the wild duck, 668. (This, by an oversight, bears the name of Hardy.)
- HARRISON, J. B.**
Eggs of *Orgyia Antiqua*, 683.
- HASLAM, S. H.**
Common wren, 564.
- HEATHCOTE, W. P.**
Birds of prey near Winchester, 490 ; On rearing the death's head hawk moth, 540 ; Capturing male emperor moths, 540.
- HEPBURN, ARCHIBALD.**
Enquiries in practical entomology, 482 ; Nest and eggs of the blackbird, 493 ; Nest and eggs of a hedge-chanter, 493 ; Habits of the chaffinch, 570.
- HEPPENSTALL, JOHN.**
Pied flycatcher, 452 ; Tame pigeons perching in trees, 453 ; Merlin hawk, 491 ; Summer birds near Sheffield, 653 ; Great grey shrike, 656 ; On a woodcock, 667.
- HODGKINSON, JAMES B.**
Enquiry respecting *Polyommatus Artaxerxes*, 682 ; Captures of Lepidopterous insects at Preston, 685.
- HOLME, F.**
Mutilated humble-bees, 475 ; Beetles inhabiting ants' nests, 475 ; Glow-worm, 475 ; Bombardier beetle, 475 ; Anecdote of rooks, 574 ; *Apate capucinus*, *Aphodius rufescens*, 612 ; Water beetle, 612 ; Large viper found in Devonshire, 768 ; Occurrence of the boar-fish on the coast of Cornwall, 769 ; Hooting of the barn owl, 794 ; Roller in Cornwall, 794.
- HORE, REV. W. S., M.A., F.L.S.**
Colias Edusa, 484 ; Black redstart, 495 ; Richard's pipit, 496 ; Correction of an error respecting *Accentor alpinus*, 566 ; Night heron in Cornwall, 575.
- HUSSEY, REV. ARTHUR, M.A.**
Missel thrush, 565 ; Singular noise made by a sparrow, 574 ; Anecdote of a partridge, 574 ; Water-rail, 575 ; Food of the snipe tribe, 576 ; Use of oil from glands in birds, 648 ; Arrival of the swallow, 650.
- HUTCHINSON, MATTHEW.**
Summer birds at Shooter's Hill, 720.
- JERDON, ARCHIBALD.**
Dipper, 450 ; Song of the missel thrush, 492 ; Song thrush, 493 ; On the siskin, 496 ; Application of ornithology to agriculture, 561 ; Dispersion of seeds by birds, 561 ; Wagtails, 764.

- JOHNSON, HENRY.**
Preservation of colour in dried fishes, 799.
- JORDAN, R. C. R.**
Colias Edusa, 396; *Polyommata* in South Devon, 398; Luminous property of male glowworm, 413; Black redstart, 494; Substitute for spirits of wine, 613; *Sarothrips Illicanus*, 688.
- KNOX, A. E., M.A.**
Birds of Sussex, 430; Nudity of throat, &c. in adult rook, 628.
- LEWIS, REV. W. S.**
Habit of the wasp and hornet, 748.
- LIGHTON, THOMAS.**
Colias Edusa, 397; *Mancipium Daplicia* and *Argynnis Lathonia*, 398; Captures of Lepidopterous insects, 400; Bombardier beetle, 413.
- LONGLEY, HENRY.**
Nonagra crassicornis, 581.
- LUXFORD, G., A.L.S.**
Hunting spider, 680.
- MANSSELL, T.**
Osprey at Farnham, 443; Ring ouzel at Farnham, 444; Stilt plover in New South Wales, 454; Scoter near Farnham, 455.
- MARSHALL, THOS.**
Variety of *Hipparchia Galathea*, 471;
- MAY, JOSEPH.**
Australian hymenopterous insect, 749.
- MORRIS, BEVERLY R., A.B., M.D.**
Spawning of trout, 580; Cat catching eels, 614; Breeding of the grey parrot in England, 725.
- MORRIS, REV. F. ORPEN, B.A.**
Unusual snow-storm, 416.
- MORRIS, JOHN, (Wimeswold).**
Club-footed canaries, 726.
- MORRIS, JOHN, (Kensington).**
Duval's *Terebratula*, 769.
- MOSLEY, SIR OSWALD, BART., F.L.S.**
Remarks on the stoat and weasel, 488; Quadrupeds formerly existing in Great Britain, 710; Otter breeding on the banks of the Trent, 775.
- NEWMAN, EDWARD, F.L.S., Z.S.**
Colias Edusa, 397; *Triphana Curtisii*, 399; Description of *Anchomenus picticornis*, 414; Description of *Hermerius impar*, 415; A word on nomenclature, 456; *Toxotus rugipennis*, 476; *Callidium rubeocolle*, 477; Nomenclature of British birds, 553; Two-toed sloth, 616; Toads found in Stone, 677; Duval's fossil *Terebratula*, 679; Enquiry respecting *Colias Edusa* and *C. Hyale*, 682; New British butterfly, 682; Capturing insects with sugar, 688; Cave in Westmoreland, 709; Spines of the young hedgehog, 715; New British butterfly, *Erebia Melampus*, 729.
- NEWTON, ALFRED.**
Sea-eagle at Eldon, 443; Summer birds at Elvedon, 651; Nidification of birds at Eldon, 722, 768; Black grouse at Elvedon, 794.
- NORMAN, G.**
Death's head hawk moth, 398; Rough-legged buzzard at Hull, 491; Summer birds at Hull, 653.
- NORMAN, J. S.**
Captures of Coleopterous insects, 413.
- OWSTON, F.**
Song-thrush nursing a missel thrush, 444.
- PATTERSON, ROBERT, V. P. Nat. Hist. Soc. Belfast.**
Reptiles mentioned in Shakspeare's Plays, 385.
- PEACHEY, WILLIAM.**
Summer birds near Petworth, 650; Battle between a kestrel and a magpie, 655; Anecdote of a pheasant, 667.
- PLANT, J.**
Variety of the large cabbage butterfly, 471; *Formica rufa*, 473; Coleoptera affecting meadow lands, 475.
- POOLE, JOSEPH.**
On the grey crow, 723; Greater tit, 726; *Colias Edusa* in Ireland, 728.
- RASHLEIGH, H. B.**
Death's head moth, 473.
- RICHARDSON, FRANCIS.**
Colias Edusa, 397; Development of moths by heat, 736.
- RODD, E. H.**
Great northern diver, 795.
- RUDD, T. S.**
Rare fishes at Redcar, 395; Migration of birds at Redcar, 440.
- SAUL, M.**
Grub which attacks wheat, 688.
- SLATER, P. L.**
On the water-rail, 669.
- SHEPHERD, HENRY.**
Colias Edusa at Winchester, 728.
- SHERWOOD, WM.**
Locust in Yorkshire, 477.
- SIRCOM, JOHN.**
Polyommatus Agestis, 773.
- SLADEN, EDWARD H. M.**
Anecdote of the starling, 761; Migra-

- tion of the swallow, 762; Golden oriole in Kent, 762; Waxen chat-
 terer in Sussex, 762; Martin, 763;
 Grey wagtail, 763; Hoopoe in Kent,
 765.
- SLANEY, W. H.
 On the moorhen, 667; Habits of the
 hedgehog, 715; Singular death of
 two canaries, 764.
- SMITH, FREDERICK.
Osmia bicolor and *tunensis*, 405; Eco-
 nomic habits of ants, 405; Humble
 bees without wings, 407; Descrip-
 tions of new bees, 408; British
 humble bees, 541; British wasp
 bees, 587; *Osmia tunensis* and *O.*
bicolor, 609; Leaf-cutter bees, 689;
 Hymenopterous insects at Wey-
 bridge, 697; *Pissodes Pini* at Wey-
 bridge, 702; *Philanthus triangulum*,
 736; Description of the British
 mason bees, 737.
- SPENCER, J. B.
 Capture of great grey shrike, 761.
- SPICER, J. W. G.
 Anecdote of a young partridge, 575.
 Flies found dead on hemlock, 582;
 Dispersion of seeds by birds, 649;
 Battle between two kestrels, 654;
 Terrier poisoned by vermin infesting
 a rat, 714; Cat hunting like a dog,
 714.
- STEPHENS, J. F., F.L.S., Z.S.
Yponomeuta sedella, 687.
- STEVENS, SAMUEL.
 Capture of Lepidopterous insects at
 Charlton, 687; Capture of Coleop-
 terous insects by night, 700; *Den-*
drophilus Cooperi at Hammersmith,
 701; Capture of insects at Plum-
 stead, 749; Capture of insects at
 Charlton, 749.
- THOMAS, W. H.
 Habits of the wryneck, 433.
- THOMAS, F. E.
 Montagu's snipe and the roseate tern,
 454.
- THOMPSON, W.
Echinodermata at Ramsgate, 415.
- THURNALL, C.
 Stoat tamed, 615.
- TRATHAN, JAMES J.
 Pied wagtail, 452.
- TUKE, JAMES H.
 Nest of the long-horned owl, 562.
- TUKE, WILLIAM MURRAY.
 Early incubation of the robin, 566.
- TURNER, REV. WILLIAM, M.A.
Helix hybrida, 395; Habits of the
 hedgehog, 750; Rarity of the swift
 at Uppingham, 762; Ringdove's
 nest with three eggs, 766; Para-
 sitism of *Scopula prunalis*, 774.
- WALMESLEY, VIVIAN.
 Water shrew, 428; Correction of re-
 marks on the reed bunting, 568.
- WATERHOUSE, G. R.
 Habits of *Osmia atricapilla*, 403;
 Bones of enormous birds in New
 Zealand, 454.
- WAYNE, W. H.
 On fieldfares, 724; On the Swift, 725;
- WEAVER, RICHARD.
 Capture of *Cordulia alpestris*, 750.
- WEBSTER, THOMAS.
 Fishes infested by insect parasites,
 799.
- WESTWOOD, JOHN O., F.L.S.
Serropalpus in Leicestershire, 701.
- WILMOT, J. P.
 Honey buzzards breeding in England,
 437.
- WINTER, J.
Colias Edusa at Winchester, 728.
- WOLLASTON, T. VERNON, B.A.
 Capture of *Curculionidæ* in Surrey,
 412; Coleoptera in Gloucestershire,
 477; Coleoptera near Cambridge,
 612; *Omius sulcirostris*, 702; Lo-
 cality for *Cossonus Tardii*, 702;
 Capture of *Lebia Crux-minor*, 750;
 Habits of *Cossonus Tardii*, 775.

ALPHABETICAL LIST OF SUBJECTS.

- Abstinence in a beetle, 612; in a snail, 800.
- Acarus found on a moth, 680.
- Accentor, alpine in Devonshire, 566.
- Acherontia Atropos, 473, 540.
- Agriculture, ornithology applicable to, 561.
- Agrotis, species of, 687; annexa, 683.
- Alabama river, 703.
- Alpine Accentor in Devonshire, 566.
- Andrena argentata, description of, 409.
- Anchomenus picticornis, description of, 414.
- Animals, seeds sown by, 442.
- Anthus petrosus at Kingsbury, 447.
- Anticlea berberata at Epping, 581.
- Ants, habits of, 405; nests, beetles inhabiting, 475.
- Apate capucinus in Kensington Gardens, 612.
- Aphodius rufescens, variability of, 612.
- Argynnis Lathonia near Exeter, 398.
- Badger near Melbourne, 615.
- Bat, torpidity in a, 613.
- Barn-owl, hooting of, 794.
- Bee, economy of, 748.
- Bee-tree, description of, 607..
- Bees, humble, notes on the British, 541; leaf-cutter, description of the British, 689; mason, description of the British, 737; wasp, descriptions of the British, 587; and laurel trees, 609.
- Beetle, long abstinence of, 612; Bombardier, 475; beetles inhabiting ants' nests, 475.
- Birds of Sussex, 430; migration of at Redcar, 440; migration of in Derbyshire, 440; migration of at Yarmouth, 441; songs of, 442; enormous bones of, found in New Zealand, 454; summer, arrival of near Twizell House, 456; of prey in the parish of Hursley, near Winchester, 490; in Isle of Wight, 516, 634. nomenclature of British, 552, 553; rare British in Derbyshire, 553, 644; Rhymes relating to, 556; seeds sown by, 561, 649; instinct in web-footed, 578; and birds' nests, 647; arrival of migratory at Bonchurch, Isle of Wight, 649; at Northchapel, near Petworth, 650; at Kingsbury, Middlesex, 650; at Layton, Essex, 651; at Epping, 651; at Elvedon, 651; at Leicester, 652; near Derby, 652; at Melbourne, Derbyshire, 652; at Sheffield, 653; at Hull, 653; at Elgin, 653; departure of winter from Yarmouth, 654; breeding of some, resident and migratory, 654; Arrival of summer on Barham Downs, 719; at Pilling, 720; on Shooter's Hill, 720; Nidification of at Elden, 722, 768; Canary, singular death of, 764;
- Black-headed gull, 455, 577.
- Black redstart, 449, 494, 495.
- Black rat, 616.
- Blackbird, nest and eggs of, 493.
- Blackcap, correction respecting, 450.
- Boar-fish on the coast of Cornwall, 769.
- Bombardier beetle, habits of, 413, 475.
- Bombus, notes on the British species, 541.
- Bones of enormous birds found in New Zealand, 454.
- Branchiæ in the imago of Pteronarcys regalis, 478.
- Bream, short sea, description of, 393.
- Brepha Parthenias and Notha, 399.
- British Association, 792.
- Bullfinch breeding in confinement, 453.
- Bunting, reed, correction respecting, 568; snow at Derby, 569.
- Butterfly, cabbage, variety of, 471; new British, 682, 727.
- Buzzard, honey, nesting of, 437; plumage of, 491, 562; rough-legged at Hull, 491.
- Callidium rubeocolle, 477.
- Canary birds, club-footed, 726; singular death of, 764.
- Cape pigeon, 579.
- Captures at Manchester, 399; with sugar, 399; of Lepidopterous insects, 400; in Suffolk, 400; of Curculionidæ in Surrey, 412; of Coleoptera in Heineault Forest, 413; of Echinodermata at Ramsgate, 415; of Clytus 4-punctatus, 476; of Coleoptera in Gloucestershire, 477; of Lepidoptera, 484; of Lepidoptera near Sudbury, 485; of Coleoptera near Sudbury, 486; of emperor moth, 540; of British birds in Derbyshire, 553; of sturgeon near Great Yarmouth, 580; of Anticlea berberata at Ep-

- ping, 581; of *Apate capucinus*, 612; of Coleoptera near Cambridge, 612; of red-legged falcon, 654; of *Trochilium Ichneumoniforme*, 683; of *Lasciocampa Trifolii*, 683, 734; of *Agrotis annexa*, 683; of *Mamestra suasa*, 683; of *Nyssia zonaria*, 684; in Dunham park, 684; of moths at New Brighton, 684; of Lepidopterous insects at Preston, 685; of Lepidopterous insects at New Forest and Darenth Wood, 686; of Lepidopterous insects at Charlton, 687; of *Yponomeuta sedella*, 687; of *Sarothrips ilycanus*, 688; of Hymenopterous insects at Weybridge, 697; of Coleoptera at Stirling, 698; of Coleoptera in Leicestershire, 699; of Coleopterous insects by night, 700; of *Dendrophilus Cooperi* at Hammersmith, 701; of *Omius sulcirostris*, 702; of *Pissodes Pini* at Weybridge, 702; of *Mamestra suasa*, 734; of Lepidopterous insects near Manchester, 734; of Lepidopterous insects at Charlton sandpit, 735; of *Deilephila lineata*, 736; of moths by means of sugar, 736, 800; of *Philanthus triangulum*, 736; of Coleopterous insects at Plumstead, 749; at Charlton, 749; of *Lebia crux-minor*, 750; of *Cordulia alpestris*, 750; of great grey shrike, 761; of *Lithosia muscerda* at Horning, 774.
- Carrion crow, food of, 656.
- Cat catching eels, 614; hunting like a dog, 714; nesting in a tree, 791.
- Caterpillar of *Tenthredo*, 609.
- Cave in Westmoreland, 709.
- Chaffinch, habits of in East Lothian, 570.
- Chatterer, waxen, in Sussex, 762.
- Cerura, note on the genus, 540.
- Clytus 4-punctatus*, 476.
- Coleopterous insects, habits of, 410; affecting meadow lands, 475.
- Colias Edusa* at Teignmouth, 396; at Sidmouth, 397; in Northamptonshire, 397; in the Isle of Wight, 397, 471; at Forest Hill, 397; var. *Helice*, 472; near Devonport, 484; at Yarmouth, 540; enquiry respecting, 682; at Winchester, 728; in Ireland, 728; near Bromfield, 729.
- Colias Hyale* at Epping, 398.
- Conops flavipes*, 688.
- Cordulia alpestris* in Scotland, 750.
- Cossonus Tardii* in Devonshire, 702; habits of, 775.
- Crested grebe in Middlesex, 502.
- Crow, carrion, food of, 656; grey, 723.
- Ctenicercus metallicus*, habits of, 411.
- Cuckoo kept in confinement through the winter, 655.
- Dabchick, habits of, 499, 767.
- Death's head hawk moth, 398, 473, 540.
- Deilephila lineata*, capture of, 736.
- Dendrophilus Cooperi* at Hammersmith, 701.
- Descriptions of short sea bream, 393; of *Andrena argentata*, 409; of *Nomada baccata*, 409; of *Anchomenus picticornis*, 414; of *Hermerius impar*, 415; of *Toxotus rugipennis*, 476; of *Callidium rubeocolle*, 477; of the British wasp bees (*Nomada*), 587; of a bee tree, 607; of *Yponomeuta sedella*, 687; of the British leaf-cutter bees (*Megachile*), 689; of *Erebia melampus*, 729; of the British mason bees (*Osmia*), 737; *Pseudotomia Artemisiae*, 774.
- Dipper, notes on, 450.
- Dirt daubers, habits of, 582.
- Diver, northern, change of plumage in, 455; occurrence at Penzance, 795; red-throated near Derby, 576.
- Ducks nesting in trees, 767.
- Duck, prolific, 727; red-crested whistling in Norfolk, 576; wild, enquiry respecting, 669.
- Dytiscus marginalis*, voracity of, 701.
- Eagle, sea at Elden, 443.
- Echinodermata at Ramsgate, 415.
- Edible frog in Cambridgeshire, 393, 467, 677, 727.
- Eels caught by a cat, 614.
- Eggs, Guinea hen's, in a partridge's nest, 454; heron's, correction respecting, 575; *Ichneumon*'s, on caterpillars, 749.
- Emperor moth, mode of capture, 540.
- Entomology, enquiries in practical, 482.
- Epaphius secalis*, 476.
- Erebia Melampus*, description of, 729.
- Falcon, red-legged, capture of, 654.
- Fauna of Moray, 421, 502, 551; of Shetland, 459, 551.
- Fieldfare, 656; late departure of, 724; early arrival of, 724; note on, 724.
- Fishes, rare British at Redcar, 395; in the Tweed, 468; notes on, 524; nidification of, 795; preservation of colour in dried, 799; infested by parasites, 799.
- Flies found dead on hemlock, 582.
- Fly catcher, pied, 452.
- Food of the snipe tribe, 576; of the tadpole, 579, 676.

- Forked-beard, lesser, on the coast of Norfolk, 532.
- Formica rufa*, 473.
- Fossil sloths, 417.
- Foumart, note on, 615.
- Fox, anecdote of, 614, 790.
- Frog, edible, in Cambridgeshire, 393, 467, 677, 727; shower of, at Selby, 677.
- Fulmar petrels near Yarmouth, 456.
- Glowworm, male, luminous property of, 413; note on, 475; in Scotland, 612.
- Goatsucker, note on, 445.
- Golden oriole in Kent, 762.
- Gordius aquaticus*, 396.
- Goshawk near Yarmouth, 491.
- Grebe, crested in Middlesex, 502; red-necked, near Derby, 576.
- Grey crow, 723.
- Grey shrike at Lynn, 444; at Hitchin, 656; at Blackheath, 761.
- Grouse, black, at Elvedon, 794.
- Grub which attacks wheat, 688.
- Guinea-hen's eggs in a partridge's nest, 454.
- Gull, black-headed, 455; habits of, 577; change of plumage in, 768; Iceland, at Yarmouth, 502.
- Habits of *Osmia atricapilla*, 403; *Osmia bicolor* and *O. tunensis*, 403, 609; of ants, 405, 409; of Coleoptera, 410; of *Hylobius Abietis*, 410; of *Ctenicercus metallicus*, 411; of Bombardier beetle, 413, 475; of wry-neck, 433; stoat and weasel, 488; of moorhen, 497, 667, 756, 767; of dabchick, 499, 767; of salmon and eels, 524; of missel thrush, 565; of wagtail, 566; of grey wagtail, 568; of the hawfinch, 569, 659; of the chaffinch, 570; of water-rail, 575, 669, 766, 794; of the black-headed gull, 577; of the dirt-daubers, 582; of *Hylesinus Fraxini*, 610; of water-beetle, 612; of red-wings and fieldfares, 656; of a pigeon, 659; of the ringdove, 660; of *Miscophus bicolor*, 697; of the hedgehog, 714, 715, 750, 791; of stoat, 714; of grey crow, 723; of the greater tit, 726; of wasp and hornet, 748; of *Cossonus Tardii*, 775.
- Halisarca Dujardinii*, 750.
- Hare, anecdote of, 420.
- Hawfinch, habits of, 562, 659.
- Hawk, Merlin, 491; kestrel, 491; and weasel, battle between, 723.
- Hawk-moth, death's head, 398, 473, 540.
- Hedge sparrow, nest and egg of, 493; nest of, 658.
- Hedgehog, habits of, 714, 715, 750, 791; spines of, 715.
- Helix hybrida*, 395.
- Hen changing the colour of her plumage, 667, 726.
- Hernerius inpar, 414.
- Heron, night, in Cornwall, 575; egg, correction respecting, 575.
- Hipparchia Galathea*, variety of, 471.
- Honey-buzzard, nesting of, 437; rearing its young in Britain, 562; plumage of, 793.
- Hoopoe nesting in Surrey, 564; occurring in Cornwall, 659; in Kent, 765.
- Humble bees without wings, 407, 475; notes on the British, 541.
- Hunting spider, anecdote of, 680.
- Hylesinus Fraxini*, habits of, 610.
- Hylobius Abietis*, habits of, 410.
- Iceland gull near Yarmouth, 502.
- Ichneumon's eggs on caterpillars, 749.
- Instinct in web-footed birds, 578.
- Insect, Australian Hymenopterous, 749.
- Kent, birds of, 718.
- Kestrel hawk, 491; battle between two, 654; and magpie, battle between, 655.
- King fish on the coast of Norfolk, 679.
- Kingfisher, migration of, 766.
- Kittiwake near Pont-y-pool, 727.
- Larks, migration of, at Yarmouth, 452; remarks on, 657.
- Lasciocampa Trifolii*, capture of, 683.
- Lebia crux-minor*, 750.
- Lepidoptera bred from larvæ, 486.
- Lithosia muscerda*, capture of, 774.
- Locusts in Yorkshire, 477; in India, 486.
- Luminous property of male glowworm, 413.
- Lycæna Phleas*, var. of, 734.
- Mamestra suasa, 683, 734.
- Mammalia of Isle of Wight, 776.
- Mancipium Daplidice* near Exeter, 398.
- Martin, nesting of, 763.
- Mason bees, description of the British species, 737.
- Megachile, descriptions of the British species, 689.
- Merlin hawk, 491.
- Microscopical Society, proceedings of, 447, 487, 536, 580.
- Migration, see birds and fishes.
- Miscophus bicolor*, habits of, 697.
- Missel thrush, anecdote of, 444; song of, 492; habits of, 565; nesting of, 656.
- Moa, gigantic bird of New Zealand, 667.
- Moorhen, habits of, 497, 667, 756, 767.

- Moray, fauna of, 421, 502, 155.
 Moths, male emperor, captured by means of a female, 540; captured by sugar, 736, 800; developed by heat, 736.
Myiodon robustus, 417.
- Natica intricata* compared with *Natica glaucina*, 770.
 Naturalists' note books, 486.
 Nesting of honey buzzard, 437.
 Nest of greater titmouse, 447; of long-horned owl in trees, 562, 563, 655; of a robin in a watering-pot, 566; of a swallow, curious locality for, 657; of a hedge-sparrow, 658; of a wagtail, singular locality for, 726; of a ringdove having three eggs, 766.
 Nidification of swans, 669; of birds at Elden, 722, 768; of martins, 763.
 Night heron in Cornwall, 575.
 Night-hawk, note on, 445.
Nomada baccata, 409; description of the British species, 587.
 Nomenclature, a word on, 456; of British birds, 552, 553.
Nonagria crassicornis, 581.
 Northern diver, change of plumage in, 455.
 Note books, naturalists', 486.
Nyssia Zonaria, 684.
- Ocys melanocephalus*, 476.
 Oil from glands used by birds to lubricate their plumage, 648.
 Oil-gland, Waterton's Essay on, 674; remarks on Waterton's Essay, 751.
Omius sulcirostris, capture of, 702.
 Opah on the coast of Norfolk, 679, 769.
Orgyia antiqua, hatching of the eggs of, 683.
 Oriole, golden, in Kent, 762.
 Ornithology applicable to agriculture, 561; of Kent, 617, 718.
Orthosia lunosa, 399.
Osmia, descriptions of the British species, 737; *atricapilla*, 403, 405; *bicolor*, 405, 609; *tunensis*, 405, 609.
 Osprey at Farnham, 443; in Yorkshire, 443.
 Otter, note on, 714; breeding on the banks of the Trent, 775.
 Ouzel, ring near Farnham, 444.
 Owl, long-horned, nesting in trees, 562, 563, 655; enquiry respecting a nest of, 492; passerine, 563; little Italian 673; barn, hooting of, 794.
- Pagellus curtus*, description of, 393.
Pamphila lineata, variety of, 683.
 Parrot, grey, breeding in England, 725.
 Partridge, anecdote of, 574, 575.
 Passerine owl, 563.
 Pastor, rose-coloured, at Thetford, 452.
 Petrel Fulmar near Yarmouth, 456.
 Pheasant, anecdote of, 667.
Philanthus triangulum at Weybridge, 736.
 Pied flycatcher, 452.
 Pied wagtail, correction respecting, 452.
 Pigeon, Cape, 579; dovecot, anecdote of, 453; tame, perching in trees, 453; habits of a, 659.
 Pipit, Richard's, near Devonport, 496; tree, remark on, 658.
Pissodes Pini, at Weybridge, 702.
 Plover, stilt, in New South Wales, 454.
 Plumage, change of, in divers, 455; changed by fright, 565; changed periodically in a hen, 667; changed in a domestic fowl, 726; annual change in a gull, 768.
Polyommata in South Devon, 398.
Polyommatus agestis, 682, 773; *Artaxerxes*, enquiry respecting, 682.
Pontia Brassicæ, var. of, 471; enquiry respecting, 581, *Metra*, 681, 729.
Pseudotomia Artemisiæ, 774.
Pteronarys regalis, *branchiæ* in, 478.
 Pupæ, effects of rain on them, 399.
Purpura capillus, development of, 533.
- Rail, water, habits of, 575, 669.
 Rain, effects of, on pupæ, 399.
Raniceps trifurcatus on the coast of Norfolk, 532.
 Rat, black, 616.
 Red-crested whistling duck in Norfolk, 576.
 Red-necked grebe near Derby, 576.
 Red-throated diver, 576.
 Red-legged falcon near Selby, 654.
 Redstart, black, change of plumage in, 449; near Teignmouth, 494; near Devonport, 495.
 Redwing, habits of, 656; migration of, 724.
 Reed bunting, correction respecting, 568.
Regulus, fire-crested, at Yarmouth, 451.
 Reptiles mentioned in Shakspeare's Play, 385.
 Rhymes relating to birds, 556.
 Richard's pipit near Devonport, 496; error respecting, 556.
 Ringdove, food of, 454; habits of, 660; nest with three eggs, 766.
 Ring-ouzel near Farnham, 444.
 Robin nesting in a watering-pot, 566; early incubation of, 566.
 Roller in Cornwall, 794.
 Rooks, anecdote of, 574; cause of the nudity of the throat, and absence of nasal bristles, 628; habits of, 656.
 Rose-coloured pastor at Thetford, 452.

- Salmon, ova and fry of, 678.
Sarothrips ilicanus, 688.
Scopula prunalis, 774.
 Scoter near Farnham, 455.
 Sea-bream, short description of, 393.
 Sea-eagle at Elden, 443.
 Seeds sown by animals, 442; by birds, 561, 649.
Serropalpus in Leicestershire, 701.
 Shells, notice of catalogue of, 537.
 Shetland, fauna of, 459, 551.
 Shrew, water, in Westwood park, 428.
 Shrike, grey, at Lynn, 444; near Hitchin, 656; at Blackheath, 761.
Siskin in Scotland, 496.
 Skua, Richardson's, at Yarmouth, 795.
 Skylark, remarks on, 657.
 Sloths, fossil, 417; two-toed, 616.
 Snails, carnivorous propensity of, 396; abstinence in, 800.
 Snipe, Montague's, enquiry respecting, 454; tribe, food of, 576.
 Snow bunting at Derby, 569.
 Snow-storm, remarkable, 416.
 Songs of birds, 442.
 Song-thrush, anecdote of, 444; migration of, 493, 657.
 Sparrow, singular noise made by, 452, 574; hedge, nest of, 658.
 Spawning of trout, 580.
 Sphingidæ, clear-winged, near Leicester, 683.
 Spider, hunting, anecdote of, 680; singular application of thread of a, 728.
 Spirits of wine, substitute for, 613.
 Spoonbill at Lynn, 455.
 Squirrel, hunting the, 616.
 Starling, 724; anecdote of, 761.
 Stilt plover in New South Wales, 454.
 Stoat, habits of, 488, 714; keen scent of, 490; anecdote of, 615.
 Surgeon at Great Yarmouth, 580.
 Substitute for spirits of wine in preserving specimens, 613.
 Sugar, capturing insects with, 688.
 Sussex, birds of, 430.
 Swallow, nesting places of, 446; note on, 447; early arrival of, 565; late occurrence of, 565; course over the Atlantic, 565; enquiry respecting, 650; migration of, 762.
 Swan dying, 674; nidification of, 669.
 Swift, 725; late departure of, 762; at Uppingham, rarity of, 762.
Sylviadæ, new genus of, 496.
 Tadpole fish on coast of Norfolk, 532.
 Tanager, red-breasted, at Cheltenham, 444.
 Tenthredo, caterpillar of, 609.
 Terebratula, Duval's fossil, 679, 769.
 Tern, roseate, enquiry respecting, 454.
 Terrier poisoned by vermin infesting a rat, 714.
 Thrush, missel, anecdote of, 444; song of, 492; habits of, 565; nesting of, 656; song, anecdote of, 444; migration of, 493, 657.
 Thyridopteryx *Ephemeraformis*, habits of, 537.
 Tipulidæ in winter, 402.
 Titmouse, greater, nest of, 447; note on, 449; habits of, 726.
 Toads found in stone, 677, 769.
 Torpidity in a bat, 613.
 Toxotus *rugipennis*, 476.
 Tree pipit, remarks on, 658.
Triphæna Curtisii, 399; subsequa, 399.
Trochilium Ichneumoniforme, capture of, 683.
 Trout, spawning of, 580.
 Viper in Devonshire, 768.
 Voyage up the Alabama river, 703.
 Waders, rare, at Kingsbury reservoir, 767.
 Wagtail, pied, correction concerning, 452; habits of, 566; habits of grey, 568; singular locality for a nest of, 726; grey, migration of, 763; habits of, 764.
 Wasps, scarcity of, 474; remarkable habit of, 748.
 Wasp bees, description of the British, 587.
 Water beetle, habits of, 612.
 Water-rail, habits of, 575, 669; migration of, 766; habits of, 766, 794.
 Water-shrew in Westwood park, 428.
 Waterton's Essays, notice of, 671.
 Waxen chatterer in Sussex, 762.
 Weasel, habits of, 488.
 Wight, Birds of Isle of, 516, 634; mammalia of Isle of, 776.
 Wild duck, enquiry respecting, 669.
 Woodcock, half-grown, 667.
 Wood-wren, peculiarities of, 451.
 Wren, wood, 451; common, anecdote of, 564.
 Wryneck, habits of, 433; note on, 449.
Yponomeuta sedella, 627.

Notes upon the Reptiles mentioned in Shakspeare's Plays.

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(Continued from page 320).

THE fact that the tongue of the serpent is bifid for about the one-third of its length, was a phenomenon too striking to have escaped "the poet's eye." Hence such phrases as "adder's fork," "forked tongue," &c., are of frequent occurrence. But although Lear makes use of the expression—

———— "struck me with her tongue
Most serpent-like, upon the very heart,"

there is no reason to suppose that Shakspeare attributed to the tongue the poisonous property. On the contrary, it is distinctly referred to the "tooth," or poison-fangs. Thus Macbeth says, in one of the interviews with his lady —

"We have scotched the snake, not killed it ;
She'll close and be herself ; whilst our poor malice
Remains in danger of her former tooth."

Act iii. Scene iii.

Thus also we find in King Henry the Sixth,—

"Whose tongue more poisons than the adder's tooth."

3rd Part, Act i. Scene iv.

And we notice that Lear concludes his harrowing imprecations against Goneril with the words—

———— "that she may feel
How sharper than a serpent's tooth it is
To have a thankless child."

Act i. Scene iv.

To enter into any description of the exquisite contrivance evinced in the mechanism of the adder's fang, would be out of place in a paper such as the present. It furnishes one of the countless examples of that nice adaptation of means to an end, which in every kingdom of Nature unfolds itself to the eye of the naturalist, and by the delight which attaches to each onward step in the course of its investigation "makes a July's day short as December."

The hiss of the serpent is so well known, and so universally alarming, that our knowledge of it, like Dogberry's reading and writing,

“comes by nature.” Shakspeare has given to the sound a characteristic epithet in the line —

“Their music frightful as the serpent’s hiss.”

2nd Part K. Henry VI. Act iii. Scene iii.

A remarkable difference exists between the common snake and the viper, with regard to the production of the young. The former is oviparous, and deposits from sixteen to twenty eggs, which are vivified by heat; the latter is ovo-viviparous, and the young, which vary in number from sixteen to twenty, come forth alive. Such distinctions were most probably unknown to Shakspeare, who, regarding all serpents as dangerous, might naturally attribute to all the same mode of reproduction. The words of Brutus, when communing with himself respecting Cæsar, favour this opinion.

“And therefore think him as a serpent’s egg,
Which hatched, would as his kind grow mischievous,
And kill him in the shell.”

Julius Cæsar, Act ii. Scene i.

But although specific differences are not always regarded by our poet, it is obvious that he was not only aware of the fact that snakes are produced from eggs, but that they are vivified by the heat of the sun, and recalled by the same genial warmth from their winter torpidity.

“It is the bright day that brings forth the adder,
And that craves wary walking.”

Julius Cæsar, Act ii. Scene i.

The application of gentle and continued warmth will, at any period, restore the suspended animation of the torpid snake. That it should turn against the individual by whom that warmth had been applied, is so revolting to the feelings, that the fact furnishes to our bard the striking and poetic image —

“Snakes in my heart-blood warmed, that sting my heart.”

Richard II. Act iii. Scene ii.

One common though erroneous idea, current at the time of Shakspeare, has descended unchanged to our own days, and, in the minds of uneducated persons, flourishes with all its pristine luxuriance. I allude to the notion that a horse-hair, by immersion in river water, becomes vivified into what naturalists term the “hair-worm” (*Gordius aquaticus*), but which the vulgar regard as the young state of eels or serpents. The idea is embodied in the words employed by Antony —

———“ Much is breeding,
Which, like the courser's hair, hath yet but life,
And not a serpent's poison.”

Act i. Scene ii.

It may be worth mentioning in connection with Antony, that one of the pet appellations given by him to Cleopatra was drawn from the reptiles of which we here treat. Her words are —

———“ He's speaking now,
Or murmuring 'where's my serpent of old Nile?'
For so he calls me.”

Snakes possess, as is well known, the power of changing their skins, a process which takes place at uncertain intervals of time: before it is cast off, the colouring appears dull, and the animal blind. When the new skin is completely formed and hardened underneath, the old one bursts, or splits asunder about the neck, and is removed by the creature passing through any tangled copse or other place where there is a dense and luxuriant vegetation. As the skin is occasionally found in such situations, attached to the lower branches of brambles or shrubs, we can appreciate the propriety of the concluding lines of Oberon's description of the “bank whereon the wild thyme blows.”

“ And where the snake throws her enamell'd skin,
Weed wide enough to wrap a fairy in.”

Act ii. Scene ii.

The word “enamell'd” is highly descriptive both of the polished appearance which the skin presents and of the diversity observable in the colour; and as the adder is especially distinguished by the beauty of its markings, we feel that Shakspeare is employing a very striking simile when he speaks of “Gloster's show” in beguiling Henry.

———“ As the snake roll'd on a flowering bank,
With shining chequered slough, doth sting a child
That for the beauty thinks it excellent.”

2nd part K. Henry VI. Act iii. Scene iii.

It is because of this acknowledged superiority in colouring that Petruchio asks —

———“ Is the adder better than the eel
Because his painted coat contents the eye?”

Act iv. Scene iii.

We find among the reptiles enumerated by Timon of Athens, the

“adder blue.”* The passage appertains too closely to the present paper to be omitted. It occurs where Timon, digging for a single root to appease his hunger, thus addresses the earth.

—————“Common mother thou,
Whose womb unmeasurable, and infinite breast
Teems and feeds all; whose selfsame mettle
Whereof thy proud child, arrogant man, is puft,
Engenders the black toad and adder blue,
The gilded newt and eyeless venom’d worm,
With all the abhorred births below crisp heaven,
Whereon Hyperion’s quickening fire doth shine.”

Act iv. Scene iii.

It would be out of place in the present paper to enter into the practice of serpent charming, as still prevalent in India, else would “the deaf adder that stoppeth her ear, which will not hearken to the voice of the charmer’s charming never so wisely,” supply a subject of curious and interesting enquiry. That these animals, as well as some others, are attracted by musical sounds, is a well-known fact, and whenever such a result does not appear, it is commonly supposed that the reptile is refusing to listen, — that it is wilfully excluding those sounds which if heard would produce their customary effect. To this popular opinion, imbibed by the mind of Shakspeare, and there transmuted into poetry and wisdom, we owe the remark —

—————“For pleasure and revenge
Have ears more deaf than adders’ to the voice
Of any true decision.”

Troilus and Cressida, Act ii. Scene ii.

And to the same source we may trace the language employed by Queen Margaret in her appeal to Henry.

“What, art thou, like the adder, waxen deaf?
Be poisonous too, and kill thy forlorn queen.”

2nd part K. Henry VI. Act iii. Scene ii.

To any naturalist who is willing to admit, “I love a ballad but even too well,” and who delights to connect the objects of his researches with the poetry and legends of other times, an added charm will be thrown around the present subject by one of those spirit-stirring old ballads enshrined in Percy’s ‘Reliques of Ancient English Poetry.’ King Arthur, being about to negotiate for an armistice, gave orders that his host should not unsheath a weapon “unless a sword

* A variety of the British viper is described in the ‘Linnean Transactions,’ under the name of *Coluber cæruleus* or blue-bellied viper.

drawne they should see." It chanced however that one of the knights, being stung by an adder on the knee, was unintentionally the cause of bringing on a bloody combat between the opposing armies. The circumstance is thus narrated —

"When the knighte found him wounded sore,
And saw the wild worme hanging there,
His sworde he from his scabarde drew ;
A piteous case as ye shall heare.

"For when the two hostes saw the sworde
They joynd battayle instantlye,
'Till of soe many noble knightes
On one side there were left but three."

Dr. Clarke, in speaking of the common snake, remarks — "The movements of this species are highly elegant. Its course among grass or underwood is performed in a zigzag direction ; the head and neck are thrust forward alternately to the right and left, whilst the rest of the body follows precisely the same course. In its progress the head pushes aside the blades of grass or other yielding bodies, and the remainder of the body follows without communicating any motion to them ; and in this way a snake will often steal across a meadow, or through a thicket, unperceived by a person standing at a little distance."* In contrast with the clear and simple statement here given, of the movements of the common English snake, it is interesting to place the magnificent description so well known to every reader of 'Paradise Lost.'

"So spake the enemy of mankind, enclosed
In serpent, inmate bad ! and toward Eve
Addressed his way ; not with indented wave
Prone on the ground as since, but on his rear
Circular base of rising folds, that tower'd
Fold above fold, a surging maze ! his head
Crested aloft, and carbuncle his eyes,
With burnished neck of verdant gold, erect
Amidst his circling spires that on the grass
Floated redundant." — *Book ix.*

Like many other now exploded specifics, the flesh of serpents, or the liquid, especially wine, in which they were infused, was held of peculiar efficacy for the cure of disease, and as an antidote to poison. These ideas, preposterous as they may now appear, were not "quietly inurned" until the last century was far advanced. By Dr. Owen's

* Mag. Nat. Hist. 1838, p. 479.

work on serpents, published in London in 1762, we are informed that "their flesh, either roasted or boiled, the physicians unanimously prescribe as an excellent restorative, particularly in consumptions and leprosy."

It is not my intention to enter into any disquisition on the fabulous animals mentioned by Shakspeare, but in treating of the Reptilia it is impossible not to advert to creatures mentioned by him, which were at one time included under that term, though now regarded solely as the offspring of imagination. Thus we find the dragon mentioned by Lear, in a burst of his inconsiderate rage against Cordelia,—

"Come not between the dragon and his wrath."

Act i. Scene i.

And again by Juliet, in the anguish of her feelings consequent upon the death of Tybalt and banishment of Romeo,—

"O serpent heart, hid with a flow'ring face!

Did ever dragon keep so fair a cave?"

Act iii. Scene ii.

Thus also we find the basilisk frequently introduced, and always in a manner consonant to the powers with which it had been invested by tradition. As an example, may be quoted the words addressed by King Henry the Sixth to Suffolk.

"Look not upon me, for thine eyes are wounding:

Yet do not go away;—come, basilisk,

And kill the innocent gazer with thy sight."

Act iii. Scene ii.

From the Reptilia let us now turn to the Amphibia, a class of animals comprising very few species in these countries, but highly interesting to the scientific naturalist, from the modifications of form, organization and habits, which they display. For information on these points I refer the reader to the luminous and excellent work of Professor Bell, and shall merely advert to them, so far as may be needful, for the illustration of those passages in Shakspeare in which some of these creatures are introduced.

In the metamorphoses of the common frog we have changes more wonderful than a poet would imagine, yet brought to light by the sober and stedfast observations of the man of science; thus furnishing one of the countless examples that "Truth is always strange, stranger than fiction." Into these matters I am not required to enter. The "toe of frog" occurs in the witches' chaldron, and the young state

of the animal is noticed by Demetrius in the line —

“ I'll broach the tadpole on my rapier's point.”

Titus And. Act iv. Scene ii.

Another passage, in which the creature is mentioned in both these states, will be given hereafter.

The common toad (*Bufo vulgaris*) belongs, like the frog, to the order Anoura of Bell. It is perfectly innocuous, living on earth-worms, slugs, caterpillars, and insects; thus giving actual assistance to the husbandman, in keeping his most common assailants within due bounds. Did we not, in other instances, know how potent are the workings of imagination, and how tacitly men occasionally surrender to them their senses and their reason, it might well seem incredible that the toad was formerly regarded as “highly poisonous, and this not only from its bite; its breath, and even its glance, were fraught with mischief or death.”* So perfectly were these malign influences accredited, that Pliny enumerates several plants as forming “a singular counter-poison against the venome of toads and serpents.” At a time when such ideas were still current, it was natural that in the sorceries of the weird sisters such an animal should be placed in the very foremost rank;—

“ Toad that under the cold stone
Days and nights hath thirty-one,
Sweltered venom sleeping got,
Boil thou first i' the charmed pot !”

In perfect accordance with the opinions and feelings of his day are the several passages in which the toad is mentioned by Shakspeare; and so entirely do they give utterance to the popular opinion, to the exclusion of any other particulars in the economy of the animal, that a mere quotation of a few of the most striking is all that is here necessary. Juliet's garrulous old nurse, in speaking of Paris, says her mistress “had as lieve see a toad, a very toad, as see him;” and Lady Anne, when showering her reproaches on Gloster, says —

“ Never hung poison on a fouler toad.

Out of my sight! thou dost infect my eyes.”

Richard III. Act i. Scene ii.

While we appreciate the poetic beauty of the language used by Othello,—

* Bell, p. 112.

“ I had rather be a toad, and live upon the vapour of a dungeon,”

Act iii. Scene ii.

we may perhaps be justified in supposing that the food of the creature was then as little known as its real powers and habits. In a line in ‘ Romeo and Juliet ’ there is embalmed a curious traditionary error,

“ Some say the lark and loathed toad change eyes,”

Act iii. Scene v.

an idea which probably took its origin from a notion that the bright full eye of the toad was more suitable for the bird than at “ heaven’s gate sings ” than for a reptile so “ loathed.” A passage in ‘ As you like it ’ demands more deliberate attention : it is one of those which, like sterling coin, has passed into general circulation, and scarcely suggests to our mind the recollection of the rich mint from which it came : and, as the gold has its alloy, so here we have the moral truth and the legendary error.

“ Sweet are the uses of adversity,
Which, like the toad, ugly and venomous,
Wears yet a precious jewel in his head.”

Act ii. Scene i.

Much commentary has been expended on these lines, but from Douce’s Illustrations we learn—what is probably the true solution of the enigma—that the common people of England “ made superstitious uses of a real jewel that always could be found in a toad’s head ; ” and that, according to popular belief, “ the toad before her death sucks up, if not prevented by sudden surprisal, the precious stone (as yet but a jelly) in her head, grudging mankind the good thereof.”
—p. 294.

In Ireland the common toad is unknown ; but our tutelary saint has left us the smaller species (*Bufo calamita*), the natterjack. It has been found in three or four localities in the county Kerry, and at Ross bay, county Cork.

The remainder of the British Amphibia belong to the order *Urodela*, and family *Salamandridæ*. They consist of four species of newts, of which two only have as yet been noticed in Ireland.

The newt, like others of the tribe, is enumerated among the ingredients of the charmed chaldron, so frequently mentioned ; and the term “ gilded newt,” which has been also quoted, indicates the bright orange colour visible on the body of the male eft during the spring. Among the best known passages in which newts are introduced, is that where Edgar, in his assumed character of poor Tom, speaks

of eating "the swimming frog, the toad, the tadpole, the wall-newt, and the water-newt;" thus showing that distinctions, existing even among these amphibious creatures, did not escape the observant and discriminating eye of Shakspeare. The only species of newt (*Lisso-triton punctatus*) common in the north of Ireland, is there well known by the name of "Mankeeper," and is an object of apprehension to the uneducated, from the idea that it is prone to jump down the throat of any one whom it may find sleeping!

Pliny informs us that "the Salamander is able to destroy whole nations at one time, if they take not heed and provide to prevent them."* Such an opinion of its malignant powers was most probably never at any time current in these countries, for on this point Shakspeare is altogether silent; and the only mention of the creature occurs where Falstaff, addressing Bardolph, says, with reference to the nose of that worthy,—

"I have maintained that *Salamander* of yours with fire any time this two-and-thirty years."—1st part *K. Henry VI.* Act iii. Scene iii.

Belfast, September, 1843.

R. PATTERSON.

Note on the occurrence of the edible Frog in Cambridgeshire. I have the pleasure of recording in 'The Zoologist,' the capture of the edible frog (*Rana esculenta*, Linn.) for the first time I believe in this country. Two specimens were taken by my friend, C. Thurnall, Esq., of Duxford, in Foulmire fen, Cambridgeshire, in September last. They are now in the British Museum, J. E. Gray, Esq., the curator, having kindly determined the species for me. There is a beautiful figure of this frog in Bell's 'British Reptiles,' p. 104, taken from a foreign specimen.—*Fred. Bond; Kingsbury, November 23, 1843.*

[I should be much obliged for a drawing and detailed description of this interesting addition to our British Vertebrata.—*E. N.*]

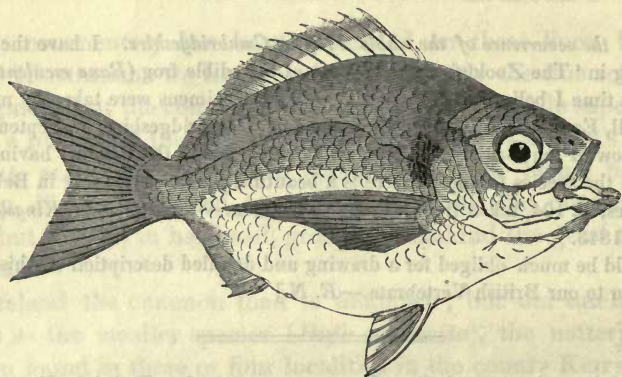
Account of a species of Sea Bream new to the British Fauna, and perhaps hitherto undescribed. By JONATHAN COUCH, Esq., F.L.S.

ON the 2nd of September, 1843, a fisherman took with one of his ordinary baits, a sea-bream, which he presently discerned never before to have fallen under his notice; and in consequence it was transferred to my possession as soon as he reached the land, which was before sufficient time had elapsed to allow it to undergo any change. Its length was 1 foot 2 inches, the greatest depth $9\frac{1}{2}$ inches, and, in

* Book 29, p. 358.

proportion to the kindred species, it was of considerable thickness. The under jaw was slightly the longest; the teeth in front, and forward on the sides, slight, conical, and somewhat scattered; gape moderate. Eye very large, being $1\frac{3}{8}$ inch across; nostrils in a depression before the eyes, in this respect, and in the cheeks, for the most part resembling the common sea-bream (*Pagellus centrodontus*), but slightly differing in the markings of the head. The body thick and plump; scales on the cheeks and body large, those on the hinder part of the body, especially above the lateral line, having well marked festooned edges; those placed on the anterior part less regularly so. Lateral line at first mounting, arched, sinking opposite the ending of the dorsal and anal fins, waved in its course, and mounting again as it approaches the caudal fin; at its origin a large black spot. Pectoral fins very long, reaching to within a short distance of the termination of the anal fin, being in length $4\frac{3}{4}$ inches, and passing 2 inches beyond the vent. Commencement of the dorsal just above the origin of the rays of the pectoral. Tail lunated.

P. 15: D. 12,12: V. 1, 5: A. 3,13: C. about 20.



Short Sea-bream, *Pagellus curtus*, Couch.

Colours much as in the common sea-bream, but more vivid; top of the head rich brown; the back scarlet red, lighter on the sides, the belly white, with slight mottlings. Dorsal, pectoral and caudal fins and within the mouth, vermilion; ventral and anal fins paler. Compared with the common sea-bream laid beside it, besides the remarkable difference in the dimensions, it is distinguished by a wider gape, by teeth, though resembling in arrangement and structure, less thickly placed, especially the incisors, by a less rounded muzzle, a much

larger eye and longer pectorals, which are also differently shaped, being more arched. In a common bream of the same length these fins were $3\frac{3}{4}$ inches long. The scales also were more decidedly waved at their edge. In the stomach I found a Comatula and the bait, a slice of fish, with which it was taken; but in the lower intestine were rather broad pieces of brown seaweed, covered with *Flustræ*, but this, being undigested, seems not to be its ordinary food.

At the first glance I was induced to suspect that this fish was nothing more than a dumpy specimen of the common sea-bream; but it differed in so many particulars, besides the shortened form, that on minute examination I have been compelled to conclude that it is a separate species; in which opinion I am supported by the decision of an eminent naturalist. I have not been able to discover any species at all closely resembling it in the works of Rondeletius, Gesner, Ray, Linnæus, Gronovius, Risso or Cuvier; and am therefore compelled to conclude that it is now for the first time described: a circumstance the less to be wondered at, when we recollect that even in the limited waters of the Mediterranean, and so near a region as Madeira, several fishes have been recorded of which only single specimens have been obtained. The specimen is deposited in the British Museum; and, using the privilege of a discoverer, I propose to designate it as *Pagellus curtus*.

JONATHAN COUCH.

Polperro, November, 1843.

Note on the occurrence of rare Fishes at Redcar, Yorkshire. 1. *Gobius unipunctatus*, common, of various sizes from $2\frac{1}{2}$ inches downwards; one full of spawn. Found in almost every pool on West Coatham marshes, eastern shore of the Tees. 2. Two-spotted goby. A single specimen on the rocks at low water here. 3. Two specimens out of a cod-fish, which agree minutely with *G. gracilis* of Jenyns. 4. *Scopelus Humboldtii*. First met with by me, May, 1841; this year I have taken thirteen specimens (six of which I sent to Mr. Yarrell), varying in size from $2\frac{1}{2}$ to $\frac{3}{4}$ of an inch. 5. *Clupea Leachii*. In April last I found a single example, in length 11 inches. — *T. S. Rudd; Redcar, near Guisborough.*

Note on Helix hybrida. Perhaps the following note may interest some of your readers. I do not pretend to a scientific knowledge of any branch of Natural History, but am in the habit of collecting in my walks anything that appears uncommon: and early in last September my attention was attracted by what seemed to me a singularly coloured *Helix hortensis* (being of an almost uniform rosy brown), and on examining it I found it had a beautiful rosy lip. I searched for more, but without success. The first rainy day which occurred I renewed my search, and was rewarded with twelve or thirteen specimens; since then I have, at different times, taken not fewer than fifty. What struck me as remarkable was, that of a fence one thousand yards in extent, and

abounding through its whole length with *H. hortensis*, the one I am speaking of was confined to a distance of one hundred yards, beyond which I did not find a single specimen of *H. hortensis*; there was every shade of yellow, and every variety of banded ones, but, though I examined some hundreds, I could not find one with the lip in the least degree rosy. I suppose it is what is called *H. hybrida*, but if this implies a mule between *H. hortensis* and *H. nemoralis*, I think it is a misnomer; for though *H. hortensis* is exceedingly plentiful in this neighbourhood, I know of only one locality where *H. nemoralis* occurs, and that is four or five miles from the place where these were found. If it is not a distinct species, it must be a variety of *H. hortensis*; but from its confined locality, and the occurrence in that locality of the young in different stages towards maturity, I should think it a permanent variety. To an unscientific eye the animal does not differ from that of *H. hortensis*. The specimens I have sent you embrace every variety both in general colouring and the intensity of the rosy lip; but very few have it so faintly coloured as the palest of the five, though I have one which is perfectly white. In some there are slight indications of bands, and the accompanying ones are selected to show these in their greatest distinctness. — *Wm. Turner; Uppingham, November 27, 1843.*

[The shells sent are those of *Helix hybrida*. I believe no one supposes the species so called to be a mule between the two more common species, although the name is probably intended to imply that the rarer species is somewhat intermediate in its appearance.—*E. N.*]

Note on the carnivorous propensity of Snails. Oblige me by making known to the public, through the medium of your valuable journal, another instance of a snail feeding on the common earth-worm. On the 28th of April, whilst walking upon the chalk hills, near Guildford, I saw a snail feeding on a piece of the common earth-worm, about two inches long, half of which it devoured. — *F. A. Chennell; Stoke, Guildford, November 4, 1843.* [See Zool. 201 and 257].

Note on the Gordius aquaticus. One of these singular worms was found last July, extended to the length of two or three inches on the mould of a flower-bed, lately moistened by the rain, but at some distance from any water. When captured, it coiled itself up into a complicated knot, and some hours after appeared to be dead, but revived on being put into water; in this element it lived about a week, but gradually lost its transparency, and at last died. When in health, the *Gordius* was transparent and almost colourless, with the exception of numerous minute dark spots, which, under the microscope, were discovered to be eggs; some of these were subsequently deposited, and when examined with a highly magnifying power, appeared of an oval form, semi-transparent, and of a dark brown colour.—*A. F. B.* Leyton, Essex.*

Note on the occurrence of Colias Edusa in November. On the 4th of November I caught a male *Colias Edusa*, in very good condition, this will most likely be the last for the season. Yet as we had frost during the latter part of October, it appears to

* Communicated by J. Gurney Barclay, Esq.

prove that the insect may sometimes hibernate, for if it could remain unscathed through part of the winter, it is most probable that it could do so through the whole until some sunny day in March instead of November should revive it. On the 16th of October I took a female of that beautiful variety *Helice*, perhaps some of your correspondents can inform me if it ever occurs in the male insect?—*R. C. R. Jordan; Teignmouth, November, 1843.*

Note on the occurrence of Colias Electra at Sidmouth. On the 12th of September last *Colias Edusa* was in great abundance in the clover-fields at Sidmouth and Budleigh Salterton, Devonshire: there were thousands in one clover-field between Sidmouth and Lyme Regis. I remarked two beautiful white varieties.—*Thomas Lighton.*

Note on the occurrence of Colias Edusa and C. Hyale in Northamptonshire. I saw in Northamptonshire a male *Edusa* flying very swiftly, on the 14th of July, and a female that was taken near Whittlesea mere on the same day. When shooting near Trip-low, Cambridgeshire, the second week in September, I saw two male *Edusas* and one male *Hyale* on the wing. I likewise saw a pair of *Hyale* that were taken about the same time near Cambridge.—*F. Bond; Kingsbury, Middlesex, November 10, 1843.*

Note on the occurrence of Colias Edusa in the Isle of Wight. In addition to the numerous notices of the appearance of this beautiful insect in England, during the past season, which have found place in your journal, I may mention the Isle of Wight, where it has been of very frequent occurrence up to about the middle of October. Although said to be visible only every four years, I think I have seldom failed to observe it annually with us here, though very sparingly except at periods which may agree with the above interval; but this I cannot assert with certainty. I recollect it was equally plentiful as now in the island, two, three, or perhaps four years ago. The rich, warm, saffron tint of the wings, certainly entitles *Colias Edusa* to rank with the most beautiful of British butterflies; and if gayness of colouring alone were the criterion of beauty, it would take precedence of the much rarer but more elegantly pencilled *C. Hyale*, likewise a native of this island, but very scarce. It is singular that the near relative of this insect, the sulphur butterfly (*Gonepteryx Rhamni*), usually so common here in ordinary seasons, has this year been rather scarce, and whilst the mostly abundant *Vanessa Iö* has appeared in smaller numbers than it is wont to do, I never saw *V. Atalanta* so profusely on the wing as it was this autumn. *Vanessa Polychloros*, which generally is the first of the diurnal Lepidoptera to greet us on sunny days in March, and again at the end of summer, has this year fallen numerically below the average; whilst the painted lady (*Cynthia Cardui*) has been rather frequent. *Papilio Machaon* occurs occasionally in the island, and I saw a specimen on the wing last August, between Calbourne and Brixton, but it is a rare insect here, as is also *Apatura Iris*. I have likewise missed *Pieris Cratægi* and *Limenitis Camilla* in my botanical rambles, usually not the most unfrequent of my former objects of attraction and pursuit, and though now unmolested, not the less gazed at and admired by me still.—*Wm. Arnold Bromfield; Ryde, November 1, 1843.*

Note on the occurrence of Colias Edusa. I saw many specimens of this butterfly this autumn in the neighbourhood of Forest-hill, and caught three of them.—*Francis Richardson; Peckham, November, 1843.*

Note on Colias Electra or Edusa. I shall be obliged for more records of the capture of this insect: although those now published go far to confirm the quadrennial theory, yet we must have still more abundant evidence of its appearance, and also of its general absence during the intervening years, before the matter can be considered

as definitely settled. It will be recollected that the year of its abundant occurrence has always been that antecedent to leap-year.—*Edward Newman.*

Note on the occurrence of Colias Hyale at Epping. A few specimens of this species were seen here in August and September, but it was not nearly so numerous as last year. I only captured about a dozen.—*Henry Doubleday ; Epping, Nov. 29, 1843.*

Note on the occurrence of Mancipium Daplidice and Argynnis Lathonia near Exeter. My cabinet has lately been enriched by specimens of these rare butterflies, captured in 1836 in Roseberry wood, near Exeter, by R. Dawson, Esq., who kindly presented them.—*Thomas Lighton ; 4, Caledonian Place, Clifton, October 21, 1843.*

Note on the occurrence of Polyommata in South Devon. I have ventured to enclose a short account of the south Devon Polyommata, as, owing to the wilful obstinacy of collectors in naming varieties as species, this genus is still imperfectly understood, at least so it would seem from the figures in Wood's Catalogue, as well as those in Mr. Humphreys' more recent work. Polyommatus Argiolus, a double-brooded insect, appearing in April and May, and again in August and September, approaches nearer to the Theclæ in habit than the other south Devon species, flying high, and hovering over the holly and ivy bushes. In the spring the male may be seen flying quickly along the tops of currant-bushes, very much in the same manner that Thecla Quercus flies along the oak trees; this is probably because they are in full flower and leaf at that time, which few other shrubs are. P. Alsus, the smallest of our British butterflies, appears in May (and again in August?), it is a local insect, frequenting marshes and open places in woods; flight rather quick: the male differs from the female in having the wings slightly tinged with a metallic colour, varying in different lights from blue to emerald green. Common on the cliffs at Teignmouth, where it principally settles on the plants of Equisetum hyemale. P. Argus, local, frequents open heaths, and appears in June and July. P. Alexis (Icarius of Wood's Cat.), double-brooded, appearing in April and May, and again in August and September, but specimens may be caught from the latter part of April to October. Wood's figures called P. Alexis and P. Dorylas seem to be varieties of the insect called Icarius, which is the general form of this insect, and by far the commonest of our British species: flight low, amongst the grass, frequently settling: meadows, pastures &c., abundant. P. Agestis, double-brooded, May and August; local: frequents rocky places in woods. I took it in tolerable plenty in Bradley-woods near Newton, Devon, settling on the flowers of Helianthemum vulgare, though I did not see a single specimen until I came to the rock where this plant was growing. They seemed to settle on the flower, until there was an opportunity of molesting some passer by, either of their own species, or any other insect, as they even attacked bees and large flies (Eristales). This love of combativeness soon spoils their beauty, so that you may catch several specimens without obtaining one perfect insect. These five constitute the whole of our south Devon Polyommata, that is, all that I have ever taken, and with five others, P. Arion, P. Acis, P. Adonis, P. Corydon and P. Artaxerxes, make up the whole of the British species, which perhaps may be reduced to nine, as P. Artaxerxes is most probably merely a local variety of Agestis.—*Robert C. R. Jordan ; Teignmouth, November, 1843.*

Enquiry respecting the mode of rearing the Death's head Hawk-moth. I shall feel greatly obliged by your inserting these few lines in the next number of 'The Zoologist.' The larvæ and pupæ of Acherontia Atropos being found almost every autumn in this neighbourhood, sometimes in tolerable plenty, and being extremely difficult to rear; I should deem it a favour if any of the readers of 'The Zoologist,' who have

been fortunate enough to rear the perfect insects, would, through the medium of this useful publication, insert a few hints respecting their management; being confident that they require some peculiar treatment. I received two larvæ last month, one of which has undergone the usual transformation in a flower-pot. I have had as many as a dozen pupæ in the course of one season, but have never, in one instance, been fortunate enough to obtain the perfect insect.—*G. Norman; Hull, Nov. 1, 1843.*

Note on Brepha Notha and Parthenias. The specimen in the Linnean cabinet, with Linnè's label on the pin—"Parthenias," is the larger species with simple antennæ, or what in this country is usually called *Notha*, thus proving that the continental lepidopterists are correct. The species will stand thus:—*BREPHA, Hub. 1. Parthenias, Linn. (Notha, Haworth &c.) 2. Notha, Hub. (Parthenias, Haw. Steph. &c.)—Henry Doubleday; Epping, November 29, 1843.*

Note on Orthosia lunosa. Since I sent a few remarks respecting this species (*Zool. 332*), I have seen several specimens of the true *Orthosia humilis* of Hubner, and find it is a totally distinct species, with the under wings entirely fuscous, and nearly allied to *O. pistacina*. *O. lunosa* is identical with the *H. subjecta* of Duponchel, and *O. agrotoides* of Guenée; but Haworth's name having the priority, must of course stand. It seems to be but little known upon the continent, and apparently rare. Mr. Westwood has referred it unhesitatingly to *O. humilis*, probably from the erroneous reference of Boisduval to Mr. Curtis's beautiful figure of it.—*Id.*

Note on Triphæna subsequa. Mr. Bentley possesses two specimens of this species, one captured by himself in Hampshire, the other from Mr. Stone's cabinet, probably taken in the same county. The species is very likely to occur in the southern counties, as it is not uncommon in the northern parts of France. The insect figured and described by Mr. Curtis, is a totally distinct species, and I believe unique, though it is very possible that it may be common in some parts of Scotland. It does not seem to be known upon the continent.—*Id.*

Note on Triphæna Curtisii. As we are indebted to Mr. Curtis for making known the unique moth to which my correspondent Mr. Doubleday refers, and as it appears at present to be without a name, I beg to suggest that it receive the name of *Triphæna Curtisii*; and I shall be happy to be allowed to give it that appellation.—*Edward Newman.*

Note on the effects of Rain on Pupæ, and on recent captures near Manchester. I agree with the remarks of Mr. Douglas (*Zool. 334*), that a warm rain is favourable to the development of moths from the pupa state; but in my opinion its effects are far more visible in forcing the perfect insects from their concealment in the herbage, and thus compelling them to ascend for safety the trunks of trees &c., on which so many are afterwards to be found. However, my remark as to the weather, was in regard to myself, a cold March wind, with heavy rain, in Dunham-park, is anything but favorable to my development, whatever it may be to that of pupæ. In 1841, with very dry weather, *Hispidaria* and *Zonaria* were very common. *Emmelesia Blomeri*, *Xerene plumbata* and *albicillata*, *Nonagria pilicornis* and *Charæa fusca* have been taken at Preston this season. At Blackpool I procured some beautiful specimens of *Argynnis Charlotta*, var.; and at Whitefield near here, a *Lycæna Phlæas* without orange margin in inferior wings, and one at Birmingham nearly black.—*R. S. Edleston; Manchester, October 11, 1843.*

Note on capturing Moths with Sugar. 'The Entomologist' and 'The Zoologist' have each contained several notices of captures of moths by means of sugar, but there

has been no account of the method of using it; and, from the communications of some of my correspondents, I am inclined to believe that it is not generally understood by country entomologists. A brief direction may therefore be of service, and be the means of making many captures during the next summer. The strongest brown sugar, known as "Jamaica foots," is mixed with hot water to the consistence of treacle, or somewhat thinner, and a small portion of rum added and stirred in; the composition is then laid on the trunks of trees in favourable situations with a painter's brush. I have found that it is better to make long and narrow streaks than broad patches. Many species do not like to wet their feet, and sit and sip the nectar modestly and at a distance, others are not so careful, but rush readily on their destruction. The sugar should be put on the trees at dusk, before the moths fly; for I have repeatedly observed, that if used afterwards, there will not be nearly so many come. With a lantern, suspended from the neck, and thereby preserving an upright position during every movement, the collector may visit the trees several times during an evening. The greater number of moths will be found during the first hour, but some species are only taken late at night. Most of them may be taken very easily by holding a pill-box under them, into which they will fall, and remain quiet till the next day, but some are not so quiet. Some persons boil the sugar and water, and think it an advantage, but I have not yet tried it. Of the efficacy of the addition of the rum I am sure, having more than once seen one collector use it, and another at the same time sugar without it, when the former would obtain double the number of Noctuæ.—*J. W. Douglas*; 6. *Grenville Terrace, Cobourg Road, Kent Road, November 18, 1843.*

Note on a few captures of Lepidopterous Insects.

June 4. <i>Abraxas ulmata</i> , near Matlock in abundance.	Augt. <i>Polyphasia populata</i> , Inverness.
— <i>Papilio Machaon</i> , do. 2 specimens	— <i>Melanippe albulata</i> , Ulswater, Cumberland.
August. <i>Larissa imbutata</i> , Dalwhinnie-moor, Inverness-sh. N. B.	— ——— <i>ericetata</i> , Derwentwater.
— <i>Ellopia fasciaria</i> , nr. Inverness	— <i>Nudaria mundana</i> .
— <i>Charæas Graminis</i> .	Sep. 26. <i>Heliothis peltigera</i> , on Brauntomburrows near Bideford, asleep on the sand.
— <i>Stilbia anomalata</i> , Ben Nevis.	

—*Thomas Lighton*; 4, *Caledonia Place, Clifton, Bristol, October 24, 1843.*

Notes on Captures in Suffolk. By W. GAZE, Esq.

ALTHOUGH we have left off chasing our nimble friends the butterflies, for this season, and the weather being rather unfavourable for searching for the autumnal moths round the blossoms of the reed and ivy; there is still left the pleasure of taking a retrospective ramble over those excursions in which we were the most successful, and of reading those of our brothers of the net. I therefore send you an account of my excursions to Assington-thickets during the past summer, hoping it will prove interesting to some of the readers of 'The Zoologist.'

Assington-woods are situate about three miles east of Sudbury, and contain about five hundred acres. They are principally composed of oaks, with a thick underwood of hazel, willow, ash, berry-bearing alder &c., and in one part completely carpeted with that beautiful fern, *Blechnum boreale*; but the chief attractions to the entomologist are the thickets or broom-fields, these are pieces of about two acres each, surrounded by the high road, and are composed of long grass, heath, furze and broom, with here and there a stunted oak, birch, aspen and willow. My first excursion was made on the 23rd of May, accompanied by a guide. It was a most beautiful morning: *Gonepteryx Rhamni*, *Mancipium Cardamines*, *Melitæa Euphrosyne*, *Hipparchia Ægeria*, *Megara* and *Pamphilus* were very abundant: took one specimen of *Thecla Rubi* and several of *Thymele Alveolus* and *Tages*, *Chesias obliquaria* two, *Hercyna maculata* one, *Acidalia floslactata* three, *Pyrausta purpuralis* one, *P. sordidalis* several. A larva of *Gastropacha quercifolia* from the willow, one specimen of *Leptura ruficornis*, one of *Dorytomus Tortrix*, and *Chrysomela litura* in plenty. It was told adders abounded, and killed two with the handle of my net.

My second visit took place on the 5th of June. I entered the thickets about 11 A.M., and captured three specimens of *Thecla Rubi*, two of *Dasychira pudibunda*, one of *Lithosia Aureola*, *Phasianæ plumbaria* in abundance, one of *Minoa euphorbiata*, several of *Hercyna maculata*, three of *Margaritia fuscalis*, a larva of *Dasychira fascelina* from the broom; *Rhynchites Populi*, one specimen, *Saperda populnea* twenty from the aspen, *Leptura melanura* and *ruficornis*, one of each, and three of *Chrysomela rufipes*. The Coleoptera were all inadvertently put together into a tin canister; when this was opened, on my return home, every specimen of *Saperda populnea* was completely spoiled, and most of the others injured; to get a fresh supply I made my third visit on the 23rd of June, but could only find two specimens of *S. populnea*, and none of the other Coleoptera. *Melitæa Selene* was rather plentiful and in fine condition. I took two specimens of *Nemeophila Plantaginis*, and saw two of *Xerene hastata*, which escaped.

My fourth visit was made on the 15th of July, in search of *Argynnis Paphia*, which some years (I was informed) was very abundant, but could see only one specimen. *Hipparchia Hyperanthus*, *Pamphila linea* and *Sylvanus* were abundant. I took several of *Anthrocera Filipendulæ*, *Angerona prunaria* one, *Hipparchus papilionarius* one, *Chesias obliquaria* one: saw larvæ of *Gonepteryx Rhamni* feeding on *Rhamnus Frangula*, and brushed three of *Thecla Rubi* from

the broom: also took three specimens of *Strangalia elongata* and four larvæ, which produced *Chilocorus renipustulatus*, from the willow.

My fifth and last visit was made on the 28th of July, in the hope of seeing *Apatura Iris*, which has several times been taken there, but was disappointed; and with the exception of one specimen of *Oiceoptoma thoracica* from under a dead mole, I only met with the commonest species.

In this visit I was accompanied by a friend, who, contrary to my advice, persisted in taking a favourite little spaniel with him, and just as we had tired ourselves, and were thinking of leaving the thickets, I saw two very large adders curled up near a furze-bush, one of which I killed, and was putting a string round its neck to take it home for preservation, when I heard the dog (which had rambled to the other side of the bush) give a shriek, which was followed by a tremendous hissing. I instantly snatched up my net and ran to the spot, where lay three more adders curled up, and the one which had bitten the dog hissing at the edge of the bush, with its head raised about three inches from the ground, apparently watching for another bite, and not making the least attempt to escape: with four well-directed strokes, the work of a moment, they were all killed, together with another that lay about two yards off; they all proved to be females, with from twelve to sixteen young ones in each, some of which were found to measure six inches long. The dog was obliged to be carried home, where it was dressed by a veterinary surgeon, but died in a few hours.

Thus ended my excursions to this locality, the best for entomological productions I have yet visited, as besides my captures, I am informed *Nemeobius Lucina*, *Argynnis Lathonia*, *Thecla Betulæ* and *Lasiocampa Rubi* have been taken there: and although we parted on unfriendly terms on account of the adders, I intend, life and health permitting, to visit it again next season. W. GAZE.

Ballingdon, November 18, 1843.

Note on the appearance of Tipulidæ in winter. "During the severe winter of 1829—30, in the month of January, when the mean temperature of the twenty-four hours was varying from 28° to 33½°, and in two instances descended as low as 25° and 16° respectively, a brood of tipulidous insects (*Trichocera hiemalis*, Meig.) suddenly made their appearance at Swaffham Bulbeck, and were noticed in considerable numbers, settling upon the walls of different outbuildings, as if they had just emerged from the pupa state."—*Note to the Rev. L. Jenyns' edition of White's Selborne*, p. 372.

Notes on the Habits of Osmia atricapilla. By GEORGE R.

WATERHOUSE, Esq.

I MET with *Osmia atricapilla* for the first time at Darenth wood, about two or three years back, and then only with one specimen, which was a female. In the beginning of June, 1835, however, I found it in tolerable abundance, flying about a high bank by the river-side, near Liverpool: at this time none but females were to be seen, though I hunted diligently for the other sex. Having secured specimens for my cabinet, I then endeavoured to trace others to their nests in order both to ascertain their habits, and to discover the male, that sex being unknown to me.

It was not long before I observed a female dart into a tuft of dry grass near me; and upon separating this tuft very carefully, to my great delight, I discovered her in the act of constructing a cell. On being thus exposed she discontinued her work, but soon resumed it again upon my keeping myself perfectly quiet.

The situation in which this cell was placed, as well as several other cells which I afterwards found, was in a projecting part of the nearly perpendicular bank, where the soil was of a light nature. Most of the cells were deposited at the roots of dry grass, the lower part of each cell being generally inserted in the soil, and the upper part exposed. In a perfect nest the cells were never detached, but always two or three, and sometimes five or six, were joined side by side. In some instances I have found the cells about an inch under ground, in a little chamber, which had apparently been excavated for their reception; the entrance to this chamber was only sufficiently large to allow free access to the bee.

The cells are constructed of mud; the outer surface is irregular, the inner perfectly smooth, reminding one of a swallow's nest. Each cell is about five lines in length, and nearly egg-shaped; there is, however, a slight approach to the cylindrical form towards the upper end, which is truncated, and is closed by a lid, the upper surface of which is concave.

I frequently observed the female *Osmia* laden with little pellets of mud used in the construction of the cells; but as these pellets were always dropped upon my capturing the insect, I could not ascertain how they were carried; they appeared however to be held under the thorax by means of the two anterior pairs of legs.

In the newly-formed cells, which could be distinguished by the up-

per part being damp, there was always a small round hole in the lid, about the size of a pin's head. This I imagined was left by the insect, that it might insert additional food previous to the final closing of the lid; they already *had* some food in them.

The food deposited in the cells for the larvæ, consists, as in most of the Apidæ, of honey, with but a small admixture of pollen. The honey must have been chiefly collected from *Lotus corniculatus*, that being almost the only plant on which I observed the bee to settle.

I have reared from the nests of this species of *Osmia*, several specimens of females, and two males. The insect has usually undergone its transformation by the latter end of September, and always before the winter commences. This I have found to be the case with very many species of bees, and believe it will prove a general rule. Probably the perfect insect is better able to bear the effects of the winter frosts than the pupa. A great portion of the Coleopterous insects, especially the ground species, have undergone their transformations before the winter. At what time *Osmia atricapilla* first makes its appearance, I am not able to say. I have found a male in the middle of March; it must be observed however that it was an unusually warm day, and I suspect he had mistaken the month. He was crawling slowly on the grass, could not fly, and apparently did not know what to do with himself. I have said the females were abundant in the beginning of June, at which time there were no males to be found; and taking matters as they stand, it seems immensely probable that, as usual, the males come out first, and that about the end of April or beginning of May.

The male *Osmia atricapilla* is considerably less than the female — length $5\frac{1}{2}$ lines; it has the fore part of the head covered with *white* hair, and the vertex with reddish brown, like other parts of the body, if we except the under surface of the thorax and its sides, where the hairs are greyish white.

In the female (which is usually about $6\frac{1}{4}$ lines in length), the head is entirely covered with black hairs, the thorax, and two basal segments of the abdomen with hair of a bright brownish-red colour, and on the apical portion of the abdomen, and the whole of the under side of the body, the hair is black.

I will hereafter send some observations on the mode in which the cell is constructed. I do not do so now, because I wish to say, in connexion with that subject, a word or two about the cells of some other insects, and these I cannot at this moment lay my hand upon.

GEO. R. WATERHOUSE.

Notes on various Hymenopterous Insects, and Descriptions of two new British Bees. By FREDERICK SMITH, Esq.

CORRECTION of a previous error. I perceive that an unfortunate error has been printed in my communication of captures in Hampshire (Zool. 262 and 265), *Osmia atricapilla* should have been *Osmia leucomelana*. I am particularly sorry this should have occurred at p. 265, as some details of economy are given. Please to add a note in your next number, pointing out the error: I am sorry I did not observe it before, and cannot think how I could have made it.

Osmia bicolor and O. tunensis. I have received a communication from Mr. Walcott of Clifton, Bristol, who remarks,—“*Osmia bicolor* and *O. tunensis* breed numerously in the empty snail-shells on the slopes of our downs; as many as four specimens of *O. tunensis* have come from one shell of *Helix nemoralis*, two were males and two females.” As you figured a bee in your last number (Zool. 336), this, I thought, might be worth recording. Mr. Curtis tells me that he has captured *Osmia bicolor* in snail-shells. Should you not get sight of the bee figured in the last number, pray write for a more detailed description, particularly whether the bee is furnished with the pollen-brush on the underside of its abdomen, and what is the colour of the hairs. The figure looks like a male in the form of its abdomen, and the six segments defined admit of an additional segment being hid by the usual convexity of the abdomen of the genus *Osmia*.

Economic habits of Ants. I am much pleased to find in your November number (Zool. 335), some notes on Hymenopterous insects, and beg to make a few observations on them, which may perhaps tend to throw some light upon the enquiries of your correspondents. Mr. Wakefield's account of the ants collecting the seeds of the violet, might incline some to think modern naturalists incorrect in stating that they lay up no store for the winter. Gould, a century ago, observed, “In warmer regions the weather is more favourable, and seasons less severe; therefore ants may not undergo that chill which they do in England, nor consequently pass the winter in a state of numbness.” “And it will appear from a repeated series of observations and experiments, that our ants do not lay up corn or other food against winter, and have no magazines peculiar to this purpose; but that, in reality, their unwearied diligence in collecting provisions is chiefly carried on for the noble design of maintaining posterity.” Huber

held the same opinion, founded on observation. I have repeatedly examined the nests of *Formica fusca*, *flava* and *rufa*, in winter, and have always found the ants in a torpid state; and I believe that if ants require nourishment in early spring, previously to their leaving their subterranean abodes, they derive it from those species of insects found in their nests, as various species of *Aphis*, *Claviger*, *Atemeles*, &c. In the autumn of 1840 I was observing the various employments of a colony of *Formica rufa*, and was struck on observing numbers of neuters arriving, each carrying a similar substance in its mandibles. I caught several individuals, and found it was the seed of some species of plant. About four yards off was a sloping sand-bank, and I observed a continuous line of ants between this and their nest, and somewhere in the direction of the bank they found the seeds. I watched them carefully, and soon detected an ant scampering down the bank after a falling seed. They were the seeds of the common broom, and just at this season the pods were discharging them. I was curious to know for what purpose the ants collected these seeds, and found that they invariably deposited them outside their nest. All the ants did not bring seeds; some brought small pebbles, or other substances; and I was satisfied that the seeds were merely for the purpose of constructing their nest; probably the seeds, stones, &c., were intended to give greater solidity to the roof. I presume the species of ant observed collecting the violet-seeds was the common garden ant (*Formica fusca*); and I should be inclined to believe that the seeds were intended to be used in the construction of their nest, for I have repeatedly observed that species in a garden at Brompton, where they had chosen the interstices of a brick wall, carrying all manner of small substances, doubtless for the purpose of filling up all chinks and crevices, and making all comfortable within.

While on the interesting subject of ants, I will record the result of some experiments which I have made; and I will premise, that as what I am about to relate is in direct opposition to the opinions of Gould, of Huber, and I believe all modern investigators of the habits of ants, if the same care and observation are exercised by any one anxious to prove my statement, I doubt not he will become a convert to my opinion. Huber says, that previous to ants changing to the pupa state, they "are enclosed in a tissue spun by themselves before their metamorphosis; but they cannot, like other insects, liberate themselves from this covering, by effecting an opening in it with their teeth." This opinion was of course formed in consequence of Huber's having observed the neuters assisting the ants to escape from the

pupa-cases; but it struck me as so contrary to what obtains amongst numerous species of insects possessing apparently less power of extricating themselves that I determined upon trying some experiments. I collected pupæ on several occasions, but they invariably perished; time after time I was disappointed. Last summer, having previously well considered my plans, I collected a number of cocoons from the nest of *Formica rufa*, and placed, first, a quantity of the materials of which the nest was composed in a box; then laying the cocoons carefully upon this, I covered them with more of the materials of the nest. At this time a few females and males were to be found developed in the nest. I placed the box in a warm but shaded situation, covering it with gauze; the following day I found two females had made their escape, but were very inactive when I found them, and soon died, probably for want of nourishment. I was obliged to leave home, and neglected to give orders for the removal of the box, and the afternoon's sun reaching it, all the rest of the ants perished. The experiment, however, has satisfied me that ants *can extricate themselves*, although probably they are generally assisted by the neuters. I intend following up the same course next season, and shall procure a number of neuters, to whose care I shall give the individuals which extricate themselves, should I again succeed in my experiment.

There is another extraordinary circumstance connected with the economy of ants, which has perplexed me not a little, namely, that I sometimes find enclosed and naked pupæ in the same nest, of some of the species of the genus *Formica*. De Geer, as well as Latreille, observed this fact; I do not remember that Huber did. I have found them in the nests of *Formica fuliginosa*, *flava* and *fusca*; in September last I found a great number of the pupæ of *F. fusca* under bark, all naked, none were enclosed. I observed one female and but few neuters. The pupæ were lodged in shallow grooves, excavated in the trunk of the tree: I brought home a number, and took some care in my endeavours to rear them: only two individuals arrived at maturity. I am inclined to believe that those larvæ which do not spin have not received sufficient nourishment; and that like other insects not well fed, they never arrive at the full perfection of the species. And it will be remembered that all the pupæ of the genus *Formica* which have been observed naked, have been invariably neuters, or the least perfect sex, otherwise imperfect females.

Humble-bees without wings. I once observed, like your correspondent, Mr. Holme (*Zool.* 336), three or four humble-bees, late in the

autumn, in the same dismantled condition as those which he describes; on one of them a large *Goërius olens* was making a meal, but whether he took advantage of the bee's inability to fly, or rendered it incapable, I am at a loss to determine.

Descriptions of new Bees. The season for collecting having terminated for the present year, at least so far as regards the Hymenoptera, one has a little breathing-time, and can quietly review the results of another campaign. The past season is considered by collectors generally to have been an unproductive one; I can bear witness to the scarcity of insects generally. What became of the wasps — the true *Vespidæ*? I observed the usual number of females in the spring, but summer and autumn were enlivened by few of these industrious marauders. Anglers sought their favourite baits in vain, and I could scarcely find a specimen, even in situations where wasps usually abound. I found but one solitary male and half a dozen females. Notwithstanding the numerical deficiency of species, I consider the last season as one of the most fortunate I have experienced during ten years' collecting. I have captured several rare bees, as well as beetles; of the former, two new species — a beautiful species of *Andræna* and its parasite, a new *Nomada*, I will give descriptions of both, and would premise that I have searched amongst foreign collections, and hunted over foreign authors, and believe both to be undescribed. I have no wish to raise varieties into distinct species, or to re-describe them, but shall endeavour to point out shortly what species I consider as constituting varieties amongst the bees, as well as describing new species, should not some more able entomologist undertake the task. The genus *Bombus* I would reduce from thirty-seven species distinctly described in Kirby, to about eighteen: the genus *Nomada* from thirty-one species to about twenty, five of which are not described in Kirby's Monograph. Far be it from me even to insinuate that the illustrious author of that work unnecessarily increased the number of species; but the united experience of naturalists during the forty years which have elapsed since the publication of the '*Monographia Apum*,' have enabled us to give to many females their legitimate partners, and also to discover that these partners, in many instances, are clothed in different colours.

I shall first describe the *Andræna*. It is quite distinct from all the species described by Kirby, and would follow *A. Shawella* in Kirby's arrangement. I have twice met with this bee; it congregates in colonies, and appears to be a very local species. On both occasions I

have also taken the *Nomada*, in the first instance only three specimens, this season I took fourteen males and females in about equal proportions. One locality for these insects is at Weybridge, on the little patch of common south of the rail-road station, and is found at the south-west corner in the beginning of August; the other locality is in Hampshire, at the corner of an extensive common.

Andrena argentata. Female; length 4 lines. Head; the clypeus very minutely and delicately punctured, with a few scattered larger punctures intermixed; from the base of the antennæ to the occiput delicately longitudinally striated; the inner orbit of the eyes with a line of pale silvery hairs; antennæ black above, piceous beneath. Thorax thinly clothed above with pale fulvous hairs; all the legs clothed with silvery hairs, the floccus on the posterior pair silvery white; the tibiæ clothed with hairs of the same colour; all the tarsi pitchy red. Abdomen shining black, the margin of the second, third and fourth segments with a band of silvery hairs, the centre fuscous, the margins of the segments beneath have also a fringe of silvery hairs. Male; length 3 lines. Closely resembling the female, except that the thorax is altogether clothed with silvery hairs, and the abdomen has an additional band of silvery hairs, also a few silvery hairs on the lateral margins of the first segment.

Nomada baccata. Female; length $3\frac{1}{4}$ lines. Head rufous; a short black line at the base of the antennæ below, and a black patch above, reaching half way towards the anterior stemma; another black patch encloses the stemmata; the tip of the mandibles black; antennæ totally rufous. Thorax rufous; with three black lines extending from the collar to the scutellum, which is enclosed by a black line running down the centre of the metathorax to its base; a black patch extends from the base of the wings to the intermediate coxæ, inclosing a minute rufous tubercle, also a minute black spot at the base of each wing; all the coxæ have a black stain above; extreme base of the femora black; all the tibiæ and tarsi entirely rufous; the wings have a dark cloud at their tips, inclosing a distinct pale lunule. Abdomen rufous; the base of the first segment is maculated with black, somewhat in the form of the letter M; the second segment has lateral, wedge-shaped, cream-coloured spots, the third has two smaller spots, the fourth a narrow line across, slightly interrupted in the centre, the fifth has a large transverse patch, also cream-coloured, beneath; the abdomen is immaculate.

Male; length, $2\frac{3}{4}$ lines. Head black; clypeus yellow covered with a silvery pubescence: the whole head is covered with long, scattered,

silvery hairs; the antennæ have the scape white in front, black behind, the remaining segments are rufous, stained behind. Thorax black, with scattered silvery hairs above, more densely clothed beneath, as well as the coxæ and base of the femora; two obscure rufous spots on the scutellum, the tegulæ and tubercles also rufous; the wings hyaline, clouded at the tips, inclosing an obscure lunule, the nervures piceous; anterior and intermediate coxæ with a black ring, the posterior pair black; the anterior and intermediate femora with a minute black spot beneath, the posterior pair black, all the femora and tarsi rufous. Abdomen rufous, black at the base, with two waved cream-coloured lines on the first segment placed laterally, the second has two wedge-shaped white spots, the third two smaller, the rest are very obscurely maculated laterally: the abdomen is immaculate beneath.

F. SMITH.

5, High St., Newington, November, 1843.

Notes on the Habits of Coleoptera. By HENRY WALTER BATES, Esq.

HYLOBIUS Abietis. This fine Curculio occurs with us in several of the fir plantations on the hills of Charnwood forest; my first acquaintance with the insect being made in a house in Copt-oak, on a bleak hilly situation, whither I, as well as the beetles, were driven by stress of weather. Stray specimens also have been picked up in the streets of our populous town.

It is hard to attribute carnivorous propensities to so harmless a wood-eater as *Hylobius*, yet the vicious habit which Linnæus noticed—"Ore cutem mordere tentat captivus," is productive of the same destructive effects; and I have reason to remember it from the mangled remains of rare *Saperdas* which I once unconsciously placed in the same phial with the long-beaked gnawing Curculio. They will nibble the corks of your bottles to dust, amputate the limbs of your best captures, with now and then a passing grab at one another, and yet call themselves wood-eaters!

One of the plantations in which I found *Hylobius* deserves a passing remark, if only by way of memorial. Its ruinous state teaches a deep entomological lesson. The large trunks of many fine coniferous trees, which once, in assembled stateliness, were as land-marks to the surrounding country, drilled through with the galleries of *Rhagium bifasciatum*, have fallen to the ground. Curculiones have appropriated to themselves the branches. The bark swarms with species of

Cis, Rhyzophagus and Thymalus; and, as if entomological agency alone should complete the total destruction of vegetable materials, the voracious larvæ of *Melanotus fulvipes* devour the rottenness which *Rhagium* forsakes. The ruin is complete, and thus all things live and die, grow and decay, when Nature works alone.

Ctenicerus metallicus. Of the elegant genus *Ctenicerus* we have in the neighbourhood of Leicester four species, *C. pectinicornis*, *cupreus*, *tessellatus* and *metallicus*. These all occurred in the floods of last May and June, in the greatest profusion.

The *Cteniceri* used to be esteemed rare with us. Time was when it was held a treat to see the fine males of two of the species heavily hovering over the rich herbage in those flowery meads which a sandy soil alone can furnish. But, *tempora mutantur!* The love-inspiring creatures may now seek their hidden mates, and poise on quivering wing, without any interruption from us. The floods of last summer swept from the rich meadows of the Soar myriads of specimens, which were floating down with the refuse of the stream, or clustered like bees on the palings and taller herbage.

We are well situated in time of floods, for our numerous water-courses, from the narrowness or elevation of their beds, readily overflow, and the contents of many a broad acre are swept along with the turbid waters:—

“Rapidus vorat æquore vortex

“Apparent rari (multi) nantes in gurgite vasto.”

The town serves us for a riddle, through which the waters are sifted, and the living sediment is deposited on the hedges and fences which oppose its progress. Here we have taken about a fourth of the British *Harpalidæ*.

The *Cteniceri* are purely pastoral insects. They affect meadows, and are seldom, if ever, seen in the wake of the plough. Herein their connexions with agricultural economy are not of so serious a nature as several other species of the same family.

There is not a grub better known amongst agricultural people than the wire-worm; and yet there are still the most erroneous and ludicrous ideas prevalent respecting its Natural History. The worthy president of the Northamptonshire Agricultural Society, and author of a little work on kindred subjects, once seriously informed both his audience and his readers, that it was the larva of the Harry Long-legs; and actually produced the two creatures to show their resemblance! The wire-worm is frequently very destructive in North-

amptonshire, where it seems proof against all attempts at eradication. I noticed during a visit last summer, the particular prevalence of *Agrypnus murinus* along the pathways of wheat-fields; it was particularly confined to such situations.

The various modifications of the herbivorous habit in the Elateridæ admits of an interesting classification, at least such of the species as have come under my notice. The *Adrasti*, *Dolopii* (*El. marginatus*), and some *Athoi* (*El. Quercûs*, *El. vittatus*), are most partial to the rank herbage of thick woods. The *Selatosomi* (*El. murinus*, *holosericus* &c.) inhabit elevated, barren, stony places, where they occur in spring, under chips of granite &c. The *Cteniceri*, *Aplotarsi* (*El. testaceus* and *rufipes*) and *Hypolithi* (especially *El. riparius*) swarm in damp meadows. The *Elaters* and *Melanoti* inhabit rotten wood. And the *Agrypni*, *Agriotes* and *Athoüs longicollis* corn-fields; the *Agrypnus murinus*, suspiciously rambling along the pathways on the sunny days of June; and *Athoüs longicollis* occurring somewhat numerously on the ears of barley towards the end of July.

HENRY WALTER BATES.

Leicester, November 28, 1843.

(To be continued).

Note on the Capture of Curculionidæ in Surrey. The following is a list of Curculionidæ, selected from upwards of two thousand specimens, which I captured during the months of July, August and September last, in the neighbourhood of Blechingly, Surrey. The whole of them were taken within three miles of that place, one of the finest districts for Coleoptera I have ever been fortunate enough to explore. Although I have included many which are considered common in the south of England, I have at the same time omitted the names of those species which are abundant everywhere; thinking it unnecessary to enumerate all which more or less occur in every locality.

<i>Mecinus semicylindricus</i>	<i>Sibinia primita</i>
<i>Miarus Campanulæ</i>	<i>Orchestes Ilicis</i> , <i>Avellanæ</i> , <i>Calcar</i> , <i>bifasciatus</i>
<i>Cœliodes subrufus</i>	
<i>Ceutorhynchus Quercûs</i> , <i>guttula</i> , <i>sulcicollis</i>	<i>Tachyerges stigma</i> <i>Strophosomus limbatus</i>
<i>Nedyus Urticæ</i> (<i>Walton</i>), <i>Asperifoliarum</i> , <i>Echii</i> , <i>Resedæ</i> , <i>setiger</i> (<i>Scho.</i>)* <i>marginatus</i>	<i>Sitona sulcifrons</i> , <i>humeralis</i> , <i>canina</i> <i>Polydrusus cervinus</i> <i>Magdalis atramentaria</i>
<i>Pachyrhinus 4-tuberculatus</i> , <i>notatus</i>	<i>Rhinodes Pruni</i> , <i>Cerasi</i>

* I have a specimen of this rare insect, which I believe I captured in Surrey; but as it is possible I may have taken it with *Nedyus floralis* in Lincolnshire, I think it right here to state so.

Apion Craccæ, Pomonæ, subulatum, Rumicis, curtirostre, tenue, violaceum, Hydrolapathi, hæmatodes, rubens, frumentarium, Onopordi, Carduorum, æneum, picicorne (*Waterh.*), Hookeri, striatum (*Marsh.*), carbo-

narium, Ervi, punctigerum, virens, Loti, puncticolle (*Waterh.*), Waltoni (*Scho.*), Hedysari (*Walt.*), Kirbii, apricans, ebeninum, Ononis, vorax, Pisi (*Fab.*), subsulcatum

Amongst other insects which I captured in the same locality, I may mention *Phlophilus Cooperi*, *Cassida margaritacea*, *Micropeplus staphylinoides*, *Agrilus viridis*, and two species of *Mylæchus*, apparently undescribed.—*T. V. Wollaston*; *Jesus College, Cambridge, November 24, 1843.*

Note on the luminous property of the Male Glow-worm. The male glow-worm is generally stated not to be luminous, of the contrary, however, I have had abundant proof, having seen them shining several times. Again, I have seen it asserted that these insects cease to shine in August; if this be the case generally, it has not been so this year, as they have been luminous throughout October.—*R. C. R. Jordan*; *Teignmouth, November, 1843.*

Note on the Bombardier beetle. On the 1st of March the bombardier beetle (*Brachinus crepitans*) was plentiful near Bristol. Several specimens of this insect, on being scratched with a pin on the elytra, emitted a vapour accompanied by a distinct report. One insect repeated this seven times.—*Thomas Lighton*; *Clifton, near Bristol.*

Note on the capture of Coleoptera in Hainault Forest. Should you have a corner of 'The Zoologist' to spare, and think the following list of insects worthy of insertion therein, it is at your service. It includes twelve months; the locality is Hainault forest and surrounding neighbourhood. I have no doubt if this locality were diligently searched, that many novelties would turn up. I have not noticed the common run of things that are taken everywhere, or the number would extend to treble the following list, particularly in the Hydrodephagi.

- | | |
|--|---|
| <i>Calosoma inquisitor.</i> On oak and hornbeam, particularly the trunks of the latter that are covered with foliage down to the ground. I have known upwards of four hundred specimens to be taken in one day. May, June. | <i>Colymbetes fenestratus.</i> June. |
| <i>Agonum sex-punctatum.</i> April. | ———— vitreus. July. |
| <i>Adelosia picea.</i> Beneath the bark of rotten oaks in profusion; November. | ———— Sturmii. October. |
| <i>Hydroporus picipes</i> and <i>dorsalis.</i> Common in September. | ———— oblongus. October and November. |
| ———— ovalis. Common in November and December. | <i>Dyticus punctulatus.</i> April, very com. |
| <i>Hydroporus umbrosus</i> and <i>rufifrons.</i> September. | <i>Leiodes humeralis.</i> April. |
| ———— granularis. October. | <i>Sylvanus unidentatus.</i> In rotten stumps, November and December. |
| ———— pygmæus. August. | <i>Triphyllus bifasciatus.</i> Abundant under the bark of rotten hornbeam, October to March. |
| ———— nigritus. October and November. | <i>Mycetophagus 4-pustulatus, multipunctatus, variabilis.</i> Ditto, in April. |
| <i>Colymbetes abbreviatus.</i> April. | ———— atomarium. Ditto, in May. |
| ———— fuscus. May and June. | <i>Engis rufifrons.</i> Boleti, in September. |
| | <i>Ips 4-guttata.</i> Under bark of oak, May. |
| | — 6-pustulata. May. |
| | <i>Bitoma crenata.</i> Under bark of rotten hornbeam in damp situations, October to November, abundant. |

- Cerylon histeroïdes and picipes. Under bark of horn-beam in similar situations to the above, November and December.
- Lyctus oblongus. In dead hornbeam.
- Rhyzophagus ferrugineus and bipustulatus. Abundant under bark of dead hornbeam, October to December.
- Anthophilus sulcatus. In dung, May.
- Dendrophilus punctatus. Under bark of whitethorn in May.
- Cucujus dermestoides. Beneath the bark of recently felled oaks, near where the separation has taken place. I never found them on standing trees but once, and then only a solitary specimen on the trunk of a hornbeam, where a limb had been lopped off. Pretty common in May; I have taken thirty or forty in one day.
- Dorcus parallelipedus. October, in rotten hornbeam.
- Lucanus Cervus. June.
- Onthophagus nutans. Common in dung.
- Elater ephippium. One specimen beaten from the oak in June.
- Pomonæ. June.
- præustus. Oaks in June.
- Ctenicercus sanguinicollis. Oak, June.
- Campylus linearis. Whitethorn, May and June.
- Opilus mollis. April.
- Thanasimus formicarius. June.
- Ptinus imperialis and Lichenum. Whitethorn, May.
- Cis Boleti. Abundant in Boleti, October to July.
- Hylesinus crenatus. Whitethorn, May.
- Fraxini. Ash, May.
- Gymnætron Beccabungæ.
- Leiosoma ovatula. Rank herbage.
- Platyrhinus latirostris. Trunks of oaks, two specimens.
- Pogonocherus pilosus. Whitethorn, June to October.
- Leiopus nebulosus. Ditto, May and June.
- Tetrops præusta. Ditto, June.
- Callidium violaceum. Old oak, July.
- variabile. June.
- Alni. Whitethorn.
- Clytus arcuatus. On the trunks of felled trees in the sun. The larva feeds in the trunks of pollard oaks. July, common.
- Rhagium bifasciatum. Whitethorn, July, common.
- Leptura revestita. Beaten from the oak in June.
- scutellata. Trunks of trees in the sunshine, July and August, comn.
- nigra. On flowers, June & July.
- Zeugophora subspinosa. June to September.
- Endomyces coccineus. In rotten stumps of hornbeam, September & October.

—J. S. Norman; Rider St., New North Road, October 26, 1843.

Description of Anchomenus picticornis, a new Beetle belonging to the stirps Nematocera, and the natural order Carabites. General colour dark brown, with the palpi and the margins of the prothorax and elytra paler, the basal and second joints of the antennæ are pitchy red, the third is of the same colour at both its extremities, but nearly black in the middle, the fourth, fifth, sixth and seventh joints are black, and the remaining four white. There are two deep longitudinal furrows on the anterior part of the head, and a deep, short and somewhat lunulate furrow on the prothorax immediately behind the head: each elytron has eight very distinct striæ, besides an abbreviated one at the base, between the first and second, the exterior furrow is interrupted by many large irregular coarse punctures. This little beetle is $\cdot 3$ inch in length, and $\cdot 125$ in. in breadth, and closely resembles in size and appearance the well known *Anchomenus albipes* of this country. It was found by Mr. E. Doubleday, near St. John's Bluff, in East Florida, and the specimen, which is unique, is now in the cabinet of the British Museum.

—Edward Newman; Hanover St., Peckham, November, 1843.

Description of Hermerius impar, a new Beetle belonging to the stirps Macrocera and the natural order Cerambycites. I propose the new genus *Hermerius* as distinct from the other Australian Prionidæ, on account of some discrepancies which will be sufficiently manifest in the description. The head is small, and bends downwards almost in a vertical position, and it has a deep median longitudinal groove, which terminates just above the mouth: the eyes are large and oblong, and are scarcely at all indented at the insertion of the antennæ: the antennæ in the female are scarcely half so long as the body, in the male they are rather more than half as long, they are slender, and composed of eleven joints, the first and third of which are the longest, the second very short, and the remainder of nearly equal length, the tenth and eleventh are somewhat flattened, and are impressed with numerous irregular longitudinal furrows, and a few furrows also appear on the eighth and ninth joints; the other joints are cylindrical and shining, and have many large, deep, punctures: the prothorax is gibbous, rough, uneven, and deeply, irregularly, and confluent punctured; its lateral margins are armed with a few irregular and unequal teeth, one of which, much larger than the rest and somewhat spine-like, is placed at the posterior angle and near the base of the elytra: the scutellum is large, triangular, smooth and shining: the elytra are much wider than the prothorax, very long and rounded at the apex, without any anal tooth or spine: all the tibiæ are without external spines or serratures, a character which will at once distinguish this genus from *Cnemoplites*, *Sceleocantha*, and the allied forms of Australasian Prionidæ; the femora have a few minute but distinct teeth beneath. The colour of *H. impar* is that pitchy brown so common among the family Prionidæ, the elytra being paler than the other parts: on the elytra are two indistinct longitudinal ridges; the head, prothorax and sternum are very hairy, especially in the male: in the under side of the abdomen of the two sexes there is a very remarkable difference, that of the female being perfectly smooth and very glabrous, while that of the male has a large lunulate depression in each segment, occupying the greater part of its surface, and completely filled with a dense mass of yellowish hairs. The female is rather more than 2 inches in length, the male rather less; the breadth of the female is .7 inch, of the male .6 inch. The only specimens I have seen were sent to me from Kangaroo Island by Mr. Davis, and are now in the cabinet of the British Museum.—*Id.*

Note on the occurrence of Echinodermata at Ramsgate. In the spring of the present year, namely from February to May, I visited Ramsgate, and did not fail to examine the shore between high and low water mark, my search being greatly facilitated by the spring tides, which gave me a more extended range. The following are my remarks. The common cross-fish (*Uraster rubens*, Forbes) and the common sun-star (*Solaster papposa*, Forbes), were the only two species I found; they appear to inhabit different localities; the former are found nearer high-water mark than the latter, as well as being left dry by the tide, whilst the sun-stars are always found in the small pools left by the tide, not attached to anything, but lying on the sand at the bottom; the cross-fish, on the contrary, were invariably found firmly attached to the rocks: I should doubt whether they can move equally easy with the sun-star, or whether they have even a voluntary or a moving power within themselves at all: what would favour this supposition is the fact that several of the number I found were deformed in consequence of the arms suiting themselves to the shape of the crevices in which the fish had located them-

selves. The above opinion that they have no free motion, was further confirmed by my detaching certain fish with peculiarities of form, which I threw to a moderate distance from the shore, and which were thrown up the next tide. After storms great quantities are thrown up. I do not mean to insist that they always remain stationary, but that they do in the spring months I have not the least doubt. The anemones prey on the cross-fish indiscriminately with shell-fish. I could find neither cross-fish, sun-stars, nor anemones on the Pegwell side of Ramsgate; but on the western side the anemones were very plentiful and very large, and some of them were embedded in the sand to the depth of four inches; in digging down you find them attached to the rock or some stone; they evidently adapt themselves by elongating their bodies as the sand rises above them.—*W. Thompson; London, November, 1843.*

Note on an unusual Snow-storm. We were visited here, in Yorkshire, on the 17th of October, by an unusually early and severe snow-storm, the effects of which were very curious, for the leaves being at that time still on the trees, they held up the snow in a remarkable manner, till the superincumbent weight became more than the branches and boughs could support, and one by one they gave way, till the whole country in every direction was strewed with them. But it is an ill wind that blows nobody good, and the poor have obtained a windfall in an unwonted supply of the needful article of firewood. The ash trees sent their top-gallant yards down on deck, as if they had, for once, adopted the motto, "*frangas non flectes,*" but the oaks, in many instances, still suspend their fractured and twisted branches between sky and sod, like Mahomet's coffin, and so they will doubtless remain for some time longer. The sound of the branches cracking and giving way on all sides, had a very singular effect. The wind was not high, at least in sheltered places, and the first crash I heard was caused, I thought, by a tree being felled; but reflecting, the next moment, that it was not a likely day for that operation, I looked round, and soon had ocular and auricular proof from various quarters of the real cause. The fields were strewed in all directions with boughs already broken, and every few minutes others might be heard or seen following their downward course.—

"How bowed the woods beneath their fleecy weight!"

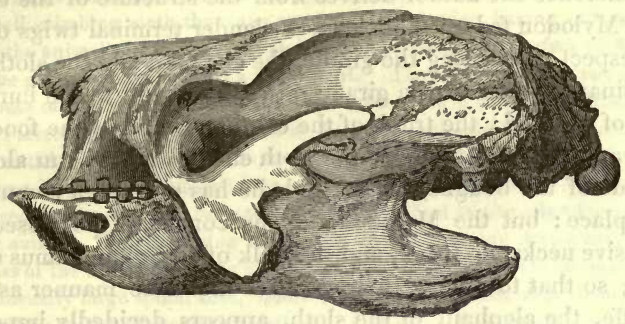
It was remarked to me by an observer, how melancholy an appearance the green trees presented when covered with this unusual and unseasonable mantle, quite a contrast to their cheerful aspect when "Gaffer Winter" has stripped off their leaves:—

"When the hoar frost is chill
Upon mountain and rill,"

And when the smallest sprays and twigs of the forest glitter and twinkle in the sun, with their temporary covering. Not only has every season its beauties, but any anachronism destroys the harmony of their good keeping. The 17th of October, 1843 I shall not soon forget, nor will, I think, a mare I rode that day, for I set out in the midst of the storm, but though well becoated, I soon found that I had better return, unless I wished to sit in wet clothes all the day. The mare was much frightened, but notwithstanding her shying we did not part company.—*F. O. Morris; Crambe Vicarage, York, November, 1843.*

Notice of Fossil Sloths.

(Concluded from p. 287)



Skull of Mylodon robustus, Owen.

PROFESSOR OWEN, proceeding to a detailed description of the skull, gives a minute and elaborate analysis of the malar bone: this remarkable bone projects from the skull somewhat in the manner of a small elk-antler; it commences with a short thick stem, somewhat flattened above, where it forms the floor of the orbit, and there expands into a broad vertical trilobed plate, as represented in the above figure. In no family of existing or extinct animals, besides the sloths, do we find any approach to this extraordinary formation: though the more lengthened and straightened skull of the Mylodon, and its more complete zygomatic arch, are characters possessed more fully by the armadilloes than by the sloths. With all other mammals it were useless to compare the skull now before us: once place it beside that of the horse, ox, elk, tapir, rhinoceros, dugong, or any other herbivorous animal of equal bulk, and we shall not only be struck with the manifold discrepancies, but at once conclude that the Mylodon obtained its food in a manner no longer practised by living animals. The extinct Megatherium, however, presents us with a conformation similar in many respects to that of the Mylodon, and more especially in the possession of that singular descending process of the malar bone, which so peculiarly characterizes the sloth, and which alone is sufficient to show the close affinity of these gigantic antediluvians with our existing sloths.

The teeth of the Mylodon are eighteen in number, five on each side above and four below: they are simple, long, fangless, of uniform substance and nearly straight, with the exception of the first tooth in the

upper jaw, which is slightly curved : each has a central body of vascular dentine, enclosed in a cylinder of hard unvascular dentine, which forms a prominent ridge, and which is again cased in a covering of cement.

The inference the author derives from the structure of the teeth, is that the *Mylyodon* fed on the leaves or slender terminal twigs of trees, in this respect resembling the giraffe, the elephant and the sloth. The extraordinary stature of the giraffe raises its mouth to the immediate vicinity of its food ; the trunk of the elephant conveys the food to its mouth ; and the light figure of the sloth enables him to run along the under side of the boughs, till he finds he has reached a commodious feeding-place : but the *Mylyodon* and his congeners possessed short and massive necks, no trunk, and the bulk of a Hippopotamus or Rhinoceros ; so that to obtain their food in the same manner as either the giraffe, the elephant or the sloth, appears decidedly impossible, unless, with Dr. Lund, we imagine a vegetation gigantic in proportion ; but even granting this, it is difficult to believe that creatures rivalling the Hippopotamus in bulk, would approach the leaves, which are usually placed on the most slender twigs. Professor Owen, after alluding to the very perfect clavicles of the *Mylyodon*, which have been received alternately as evidence of the burrowing and climbing hypotheses, does not necessarily imply the faculty of climbing or burrowing, since the bear, a climbing, and the badger, a burrowing animal, are perfectly destitute of them : but from a comparison of the hand of the *Mylyodon* with that of certain ant-eaters, he thinks it may be inferred that it was an instrument employed in digging or displacing the earth. The author considers the unequalled bulk of the posterior extremities, and the corresponding excess of muscular power, as shown by the spinal crest of the sacrum, and the broad, rugged, and anteriorly produced margin of the ilium, as further evidence against the climbing theory ; and he regards the hind legs as uniting with the enormous tail in forming a tripod, which supported the weight of the animal, leaving the hands at liberty.

“ If the foregoing physiological interpretation of the osseous frame-work of the gigantic extinct sloths be the true one, they may be supposed to have commenced the process of prostrating the chosen tree by scratching away the soil from the roots ; for which office we find in the *Mylyodon* the modern scansorial fore-foot of the sloth modified after the type of that of the partially fossorial ant-eater. The compressed or subcompressed form of the claws, which detracts from their power as burrowing instruments, adds to their fitness for penetrating the interspaces of roots, and for exposing and liberating them from the attached soil. This operation having been duly effected by the alternate action of the fore-feet, aided probably by the unguiculate digits of the

hind-feet, the long and curved fore-claws, which are habitually flexed and fettered in the movements of extension, would next be applied to the opposite sides of the loosened trunk of the tree: and now the Mylodon would derive the full advantage of those modifications of its fore-feet by which it resembles the *Bradypus*; the correspondence in the structure of the prehensile instruments of the existing and extinct sloths, extending as far as was compatible with the different degrees of resistance to be overcome. In the small climbing sloth the claws are long and slender, having only to bear the weight of the animal's light body, which is approximated by the action of the muscles towards the grasped branch, as to a fixed point. The stouter proportions of the prehensile hooks of the Mylodon accord with the harder task of overcoming the resistance of the part seized and bringing it down to the body. For the long and slender branchial and anti-branchial bones of the climbing sloth we find substituted in its gigantic predecessor a humerus, radius and ulna of more robust proportions, — of such proportions, indeed, in the *Mylodon robustus*, as are unequalled in any other known existing or extinct animal. The tree being thus partly undermined and firmly grappled with, the muscles of the trunk, the pelvis and hind limbs, animated by the nervous influence of the unusually large spinal cord, would combine their forces with those of the anterior members in the efforts at prostration. And now let us picture to ourselves the massive frame of the *Megatherium*, convulsed with the mighty wrestling, every vibrating fibre reacting upon its bony attachment with a force which the sharp and strong crests and apophyses loudly bespeak:—extraordinary must have been the strength and proportions of that tree, which, rocked to and fro, to right and left, in such an embrace, could long withstand the efforts of its ponderous assailant.”—p. 147.

A few pages are occupied by elaborate observations on several remarkable points, particularly the arrangement of the bones of the hind feet, and the evidence, which appears irresistible, of the existence of a large and powerful tongue, with which the animal, in all probability, drew down the boughs before devouring them. The structure of the feet is truly remarkable: the anterior pair, or hands, had five fingers, of which the first, second and third were armed with immense claws, the first being the shortest, and the third the longest; the fourth and fifth fingers, instead of claws, appear to have been furnished with small hoofs: the hind toes were only four, the interior pair having claws, the exterior pair hoofs.

In the zoological summary, the natural affinities of the sloths are briefly detailed, and their relation to the other tribes of Cuvier's *Edentata* pointed out; and a structural peculiarity of the teeth is used as an argument against their approximation to the monkeys: but when we find the microscopic structure of the teeth of fishes repeated in mammals, as Professor Owen admits to be the case, we surely must pause before we regard these characters as available to the important subject of natural classification. The following paragraph is sufficient to induce some hesitation in adopting the dental hypothesis.

"In the *Orycterope* we find, strangely repeated, a microscopic structure characteristic of the teeth of the ray and the saw-fish, very different from any modification in the teeth of other Edentata or of other Mammalia. The intimate structure of the teeth of the Megatherioids and Sloths is quite as peculiar to them among Mammalia, but this modification has not been observed in any other class of vertebrate animals."—p. 165.

We have only to subjoin Professor Owen's conspectus of the fossil sloths, and to recommend his admirable work to the attention of every comparative anatomist. It is one, from the perusal of which no one can rise uninstructed: the language is careful, terse, and never redundant; the knowledge displayed accurate and profound; and the reasoning fair, forcible, and almost irresistible.

LIST OF THE SLOTHS.

Order.—BRUTA, *Linnaeus*.

Tribe.—PHYLLOPHAGA or Leafeaters.

Family I.—TARDIGRADA or recent Sloths.

Genus 1.—BRADYPUS.

Genus 2.—CHOLÆPUS.

Family II.—GRAVIGRADA or fossil Sloths.

Genus 1.—MEGALONYX.

Genus 4.—SCELIDOTHERIUM.

Sp.—Jeffersoni

Sp.—leptocephalum.

Genus 2.—MEGATHERIUM.

„ Cuvieri.

Sp.—Cuvieri.

„ Bucklandi.

Genus 3.—MYLONDON.

„ minutum.

Sp.—Darwini.

Genus 5.—CÆLONDON.

„ Harlani.

Genus 6.—SPHENODON.

„ robustus.

We cannot conclude our notice of this work, without speaking in praise of the numerous and beautiful lithographic plates drawn by G. Scharf. They represent bones more faithfully than any we have previously seen. K.

Anecdote of a Hare. I used frequently to walk, during the winter months, with my gun, on the sea-wall and the saltings beyond it, in pursuit of wild fowl, of which several species were frequently to be found. These saltings, which produce, during the summer, a little coarse herbage for sheep, afford also a very favourite resort for hares to sit. At spring tides they are completely covered with water: the hares remain on their forms till the tide flows up to them, and are then frequently obliged to swim off. On one occasion, as I was walking on the wall I saw a hare rise from its form, but instantly squat down again on perceiving me. I staid to see whether its fear of me would overcome its evident desire to escape the coming flood. As the tide rose around it, it gradually raised itself up so as barely to leave its head visible above water, with its ears kept closely on its neck: and this it continued to do till a considerable portion

of its body was immersed. My attention was then called off to a number of wild ducks flying towards me, and I retreated behind the wall, in hopes of getting a shot at them, which gave the hare an opportunity of escaping, and when I again looked over, she had just landed, and was bending her course over the adjoining marsh.—*John Atkinson; Laver Marney, near Kelvedon, Essex, October 21, 1843.*

A Fauna of Moray. By the REV. G. GORDON.

THE following lists are transmitted to 'The Zoologist,' in order to give its readers some idea of the Fauna of Moray, a province of Scotland from which there has as yet been no communication to its interesting pages.

The Province of Moray lies on the north side of the Grampian range, is "drained on the east by the Spey and its tributaries, on the west by the Beaully,—is bounded on the north by the Moray Frith, and on the south by a line running from Loch Spey to Loch Monar, the course of which is regulated by the *water-shears* between the east and west coasts."

This district has not been so minutely examined by the zoologist as it deserves. Combining on its varied surface almost every degree of temperature, cultivation, and level that are to be found in Scotland, its alpine range and fertile plains, its inland lakes and its waters of the German ocean, its hill and dale, its primeval forests and modern plantations, its shady bowers and muirland wastes, must be the habitats of many a species, of the minuter tribes, that has not yet been detected by the prying eye of the naturalist. And it is hoped that observers and collectors, whether resident or visiting, will communicate to this journal such additions to the following lists as have or may come under their notice. The admirable plan upon which 'The Zoologist' is conducted, affords every facility for such a record, and the Elgin Museum, lately opened, a no less suitable receptacle for the objects themselves. In former times, when there was no such opportunity of recording the discovery or of preserving the specimen itself, many a zoological rarity has doubtless been found within this province, when, if it attracted any attention at all, it was turned over and over by the hands of the curious, then left to dissolve into its constituent elements on the spot. At times an effort was made, if small in itself and vivid in its colours, to submit it to the inspection perhaps of some neighbouring surgeon or some one who had perchance been beyond the Tweed, or travelled in foreign climes. But, nailed to the most conspicuous gable of the homestead, or the less elevated kiln-

door, quadruped and bird were doomed to weather a few winters at most. The fur and the feather were carried fast away piecemeal by the wind and the storm. The muscles and ligaments dissolved by the rain or dried up and cracked by the sunshine, the bones one after another fell down to rot in the earth, until the skull alone remained. Even this last vestige was to be seen but for a time, — it soon followed the rest of the body, or was torn off to make way for some other “rara avis,” that had fallen a prey to the rustic’s firelock or the keeper’s trap. A more suitable place of exhibition has lately been erected, — The Elgin Museum, one of the most elegant structures in a town already of some note for its public buildings, ancient and modern. The interior, vieing in beauty with the exterior, is both commodious and well arranged, but as yet miserably deficient in what would most enhance it in the eyes of many a visitor, viz., in specimens, animal, mineral or vegetable, illustrative of the natural history of the county and neighbourhood. A gallery, amply sufficient for this purpose, has been set apart by the directors, who earnestly solicit contributions to this the most important portion of every provincial museum. There is no gentleman in the country who might not assist in this matter; while the avocations of sportsmen and their keepers, and the residence of others at the different fishing stations along the coast, are particularly fitted for securing many desiderata of our Fauna.

I. MAMMALIA.*

Badger, “Brock,” *Meles Taxus*.” Occasionally trapped in the woods by gamekeepers and others. Its nocturnal habits and sequestered retreats prevent any satisfactory estimate of its numbers in this part of Scotland.

Pine Marten, *Mustela Martes*. A marten, killed some years ago in the Oakwood near Elgin, was probably of this species, as its throat and breast were *yellowish*. It were well that some more distinctive and palpable mark were given between this and *M. Foina*, than those given in our systematic works.

Polecat, “Foumart,” “Fozzle,” *M. Putorius*.

Weasel, *M. vulgaris*.

Ermine, *M. Erminea*. Occasionally seen perfectly white in winter and spring, but not always so even in the severest weather. This species and the former seem equally common and are both known by the provincial name of *Whitret*.

* The order and nomenclature adopted in Jenyns’ Manual are followed here.

Otter, *Lutra vulgaris*.

Fox, "Tod," *Canis Vulpes*. The depredations of the fox in the hen-roost are seldom heard of now: about thirty years ago they were very common. This happy change in the number of Reynard's visits to the property of his neighbours, is not to be accounted for by any diminution of his numbers, at least in the lower and better cultivated portion of this county. He has scarcely been the object of the chase here since the late Duke (Alexander) of Gordon gave up his fox-hounds. The plantations are vastly increased, and the furze-covers as extensive as ever, where he may shelter with impunity: so that the only reason we can assign for the comparatively honest character he has lately acquired with us, is that the profusion of rabbits now spread over the district, supplies him with abundance of food without moving far from the mouth of his hole, or subjecting himself to detriment or death in visiting the hostile habitations of men. In the pastoral or upper districts persons are kept in constant employment by the sheep-farmers to keep down as much as possible this formidable enemy of their lambs.

Wild cat, *Felis Catus*. Found only in the largest forests and among the subalpine rocks and valleys of the Province. One killed above Cawdor-castle, measured from the nose to the tip of the tail 3 feet 9 inches, of which length the tail itself occupied 15 inches.

Common seal, "Sealch," *Phoca vitulina*.

Mole, *Talpa europæa*. The albino variety seems to be not unfrequent at Dalless, on the Findhorn.

Shrew, "Straw mouse," *Sorex tetragonurus*. This is found in most marshy or damp enclosures. At least one other species has been seen in the Province of Moray; but until other specimens are obtained and compared with Mr. Jenyns' papers in 'The Magazine of Zoology and Botany' for June, 1837; and in 'The Annals and Magazine of Natural History,' i. and vii.: the provincial species cannot be accurately given.

Hedgehog, *Erinaceus europæus*. Very rare: one found a few years ago, when clearing away the foundation of an old wall near Elgin Cathedral. Occasionally met with in Strathspey.

Bat, *Vespertilio Pipistrellus*. Many are not aware of there being more than one species of bat in the north of Scotland; but as others, — for instance, *Vespertilio Daubentonii*, at Aberdeen — have been found, they may also be expected as early additions to this list of denizens of the Province of Moray.

Squirrel, *Sciurus vulgaris*. Occasionally seen in the woods of Strathspey.

Field mouse, *Mus sylvaticus*. Abundant in corn-fields and about gardens, rarely found in houses, and then only about their foundations. In July, 1836, on the top of Maam Soul, one of the highest hills in Strath Glass, and about 3000 or 4000 feet above the level of the sea, evident traces of a colony of some small animal were seen among weathered grass, rushes, &c., and debris. Mr. Jenyns (vide 'Annals and Mag. of Nat. Hist.' vii. 268), has received an imperfect specimen of a mouse from a similar situation in Ireland, which he seems to think is a small variety of *Mus sylvaticus*, but wishes that the point may be determined by those who have fitter opportunities of observation in these remote localities. It is believed that this province affords many such opportunities to sportsmen and others, who have it in their power thus to advance our knowledge of the British Fauna.

House or common mouse, *M. musculus*.

Black rat, *M. Rattus*.

* Brown or grey rat, *M. decumanus*. This species was seen about the seaport towns on the Moray-frith, upwards of thirty years ago; since that time it has gradually moved inland, fast closing in upon the north foot of the Grampian range. It has generally got the credit of driving off or destroying the black rat (*M. Rattus*), which is now scarcely to be seen in the *flat* of Moray, and only to be found in any number in the upper districts. It is questionable if this be the sole or chief cause of the disappearance of this species. Owing to the vastly improved condition which has taken place within the above period, in the structure of the farm-houses throughout the country, especially the introduction of slates and tiles in place of the straw thatch of the roofing, the favorite haunts of the black rat are now much circumscribed, if not entirely done away with. It never burrowed like the brown rat, which prefers drains and burrows about the floors and foundations of houses, and in summer or harvest is not unfrequently to be met with in the fields.

The brown rat is a great enemy to poultry of all descriptions when newly hatched. It has been found storing up provisions about its nest; in stack-yards preferring wheat to other kinds of grain. An instance has been observed in which it formed its nest under a stack of *barley*, which was built on the ground, and had made an underground communication to a stack of *wheat* at the distance of a few yards, through which it had conveyed a number of ears of the finer grain to its nest. Around its domicile were also found upwards of a dozen skins of the common mouse, which had all been reflected back from

the body, just in the manner in which they would have been manipulated for the purpose of being stuffed and preserved, but with far greater exactness and neatness. There was no vestige of the ribs and back-bone, but the skull and bones of the limbs remained partially attached to the skin; but all were cleaned and cleared of every particle of soft or fleshy matter.

Water-rat, *Arvicola amphibia*, and var. β . *ater*.

Field campagnol, *A. agrestis*.

Red or meadow vole, *A. riparia*. This species abounds in the neighbourhood of Cawdor, where it has been known for several years to be most destructive to the newly-planted larches. No sooner are the plants put out into the ground, than a single night is sufficient to show the ravages, and a few days will scarcely leave a plant over whole acres, but what is more or less injured. The chief object of attack at this season (December) seems to be the newly-formed bud, which they eat out with the greatest nicety, often leaving the outer scales attached like a lid, after the *kernel*, as it were, is gone. When the branchlets are too slender to bear the animal to the buds at their extremity, they are gnawed across, and falling to the ground yield up their treasures an easy prey to the little robber. Mr. Black, the forester at Cawdor-castle, says that when the winter sets in, the stems are often denuded of their bark under the snow, and of course the plants are seriously damaged if not killed. The injury sustained by the extraction of so many of the buds, and by the lopping off of so many of the branches, and most frequently the leading one, is such that many plants never recover it, but grow up cramped, bushy and deformed, instead of the tall, straight and handsome forms so natural to the larch.

In the dry bare moors the red voles are seldom met with, and consequently the plants there escape. They are chiefly congregated in the large hollows which are thickly strewed with boulders, angular fragments of the subjacent rock and debris, and deeply covered with fog (mosses), decayed grass, and the tangled roots of juniper, whins, broom, and the smaller willows.

Mr. B. mentions that upwards of twenty years ago he felt the ravages of this or a similarly destructive animal, on the banks of the Spey about Arndilly and Boat o'Bridge. He has little doubt that it is owing to their abundance and consequent destructiveness, and *not to the nature of the soil*, that, in some localities, in plantations throughout the north of Scotland, it has been found impossible to raise the larch. At Cawdor he endeavours, and with some success, to lessen

their numbers, by a line of traps laid across their most frequented haunts in the newly-planted grounds.

A. neglecta. "Aberarder, Invernesshire," 'Annals and Mag. of Nat. History,' vii. The Rev. Leonard Jenyns is inclined to consider many specimens of an *Arvicola* from Perthshire, as deserving to rank as a distinct species under this name. Mr. Thompson of Belfast also received some of the same species from Aberarder, in Invernesshire. The following characters contrast it with *A. arvalis* (*A. agrestis* of the Manual), and may lead to its detection in other localities. *A. arvalis*.—Body 4 inches : ears projecting out of the fur. *A. neglecta*.—Body 5 or 5½ inches : fur long, entirely concealing the ears. At Aberarder "it was taken in traps set for vermin on broken rocky ground at the base of the glens : it was also caught by the dogs, and knocked on the head by the shooters in the heathy tracts up to the summits of the mountains."

Beaver, *Castor Fiber*. As the beaver is the next in the order of the Manual, it may be here stated that the remains of this ancient denizen of Scotland, were detected by Prof. M'Gillivray in a parcel of bones, sent to him by Admiral Duff, of Drummuir, from a small cave opened in a sandstone quarry on his property of Hopeman, and close by the southern shore of the Moray-frith, and little raised above high-water mark.

Common hare, *Lepus timidus*.

Rabbit, *L. cuniculus*. It is highly probable that for a length of time some were scattered along the sea-shore, yet rabbits, as far as regards Moray, may be said to have been introduced about forty years ago, and protected at Pitgaveny, whence they have spread over all the country, and in many other instances been protected to the great injury and annoyance of the farmer, who cannot, without incurring the displeasure of the proprietor or the jealousy of the sportsman, resort to shooting or hunting, the only means which he has readily at command for defending himself against the ravages of an animal, whose powers of increase are proverbial. Not a few of the land-owners however are so impressed with the necessity of extirpating these vermin, that they had in some measure anticipated the wise resolution of Sir Robert Peel, who, while lately addressing his tenantry, said, "I consider it to be the duty of every landlord to make some sacrifice of his personal pleasures for the tenant farmer:" and, "I have no hesitation in saying that I shall be pleased that there is no one single rabbit on the whole of my property. I will do everything I can for their destruction." The many sandy banks and the general lightness of the

soil, as well as the numerous rising plantations in Moray, afford too many natural facilities for the protection of the rabbit, that it requires not the arm of the law to keep up its numbers in their fair and legitimate proportion.

Alpine, mountain, blue or white hare, *L. albus*. Frequent in the alpine and subalpine districts: a straggler may at times be found down on the low country, as one which was killed by Mr. J. Dunbar, on the 3rd of January, 1844, within a quarter of a mile of the town of Elgin. A purely white specimen, even in the depth of winter is considered rather rare.

Stag or red deer, *Cervus Elaphus*. Among the lofty mountains, deep glens and wide forests that lie along the southern and western borders of the Province, this, the noblest animal of the British Fauna may still be seen to range in all its pristine freedom. Numbers, no doubt, fall before the rifles of the deer-stalkers, who now, every autumn, visit the moors and shooting-grounds of the north; but this loss is more than compensated by the care with which these grounds have of late been guarded against the depredations of the lawless poacher. Glenfiddach, the deer-forest of the Duke of Richmond, is perhaps as well stocked as any other place in Scotland. From this locality stragglers are often seen to move down to the low country, especially towards the woods of Gordon-castle. In that princely mansion there is to be seen a fine assortment of this animal's horns, exhibiting every variety of tyne, size and form. It has often been deemed somewhat singular, if the stag annually shed its horns, that so few of them should be met with in its haunts. An old shepherd, who had long followed his avocation among the mountains of Badenoch, a favourite resort of the red deer, gave a not unsatisfactory reason for this, by stating that he believed many of these horns were chewed and destroyed by the cattle that were sent every year to pasture in these remote districts. He had often met with broken pieces that had undergone this process; and all are aware of the avidity with which some cattle will pick up and gnaw any bit of bone that may lie in their path. This explanation is fully as feasible as that more commonly received, namely, that the red deer purposely buries his horns out of sight in the mosses and spongy places among the hills.

Roebuck, *C. Capreolus*. While the red deer not unfrequently lives among the bare hills far from any forest or plantation, the roebuck is never seen in open ground, save when it is feeding or passing from one cover to another. To afford it a permanent residence, the cover, if of grown wood, must be of considerable extent, as that of Gordon-

castle, Darnaway, Cawdor and Quarrywood: but it will find shelter for years in young plantations comparatively small, before the trees are thinned out, or so long as they preserve the size and density of brushwood. Hence the roebuck is annually becoming more abundant, owing to the vast extent of surface which has of late years been enclosed and planted in almost every corner of the Province of Moray.

Porpesse, *Delphinus Phocæna*. Common in the Moray-frith.

Ca'ing whale, *D. melas*. Cast ashore near Fort George some years ago; as have been several other species of the whale tribe, but which have not been identified or compared with the descriptions in any systematic work.

G. GORDON.

Manse of Birnie, by Elgin,

November, 1843.

Note on the occurrence of the Water Shrew in Westwood Park. So vast and exhaustless a subject is Nature, that to the out-door naturalist new objects of observation are presenting themselves before him every day. Each season in its turn brings with it new pleasures. Spring and summer have attractions which soothe the hardest heart, and fail not to draw the attention of the most careless observer. Autumn too, with its teeming fields of grain, ready to yield to man an abundant supply, is not without its charms. And he who is not too much attached to his fire-side, will, even in the depth of dismal dreary winter, be amply repaid by a ramble through the woods and fields. Nature is not to be studied by the comfortable fire-side, for there she is not; you may read books on Natural History until you have become sick at heart and disgusted with this interesting pursuit, and in the end know little or nothing about it. He who wishes to study Nature in her true garb, must be heedless of the vicissitudes of an English climate, out he must go, morning, noon, evening and night, wet or fine, cold or hot; he must throw aside all fear, putting on courage and perseverance, and taking caution for his guide; he must ascend trees, rocks and precipices, go through bog and quagmire, over hill and dale, even the water must not be passed by without frequent visits; and in fine there must not be a spot left unsearched, or else the true history of Nature, in some one of her parts, must for ever remain in the dark. By following the above axiom I have, day by day, become a more ardent lover, as well as admirer of Nature; the beautiful objects she presents before my eyes, and the melodious as well as harsh sounds by which she attracts my ear, have impressed upon me such a fond attachment for her, that to destroy her in any one of her forms uselessly, is to me a matter of grief. This last summer has been one of great interest to me, and it has not passed without having housed a goodly store of information on Natural History. Amongst the foremost in my stock is the discovery of a little animal called by name the water shrew, the *Sorex fodiens* of authors, a short account of which, I hope, will not be irksome to your readers. I saw two of these little creatures in an old pit in Westwood park, and at first sight I took them to be the young of the water-hen, but upon approaching near the spot where they were, they proved to be a pair of water-shrews, which were diving and sporting on the water with the greatest agility, and as

though in pursuit of insects. Both being frightened on my approach, immediately made for the opposite bank, where they soon found a hiding-place secure from molestation: but after the lapse of a few moments, all being still and quiet, both of them reappeared, once more to be the objects of my attention and amusement. They were busily engaged in searching with their long snouts amongst the dead leaves and rubbish at the water's edge, for their favorite food, insects and their larvæ. After proceeding some distance along the bank, they again took to the water. And now I witnessed a truly beautiful and pleasing sight: one of the little creatures repeatedly diving under the water, as if in pursuit of some favorite and delicious morsel. On emerging from the water its black and glossy coat was perfectly dry. They both seemed to use the tail as a rudder, whilst swimming on the surface, and their sides were apparently much dilated. The whole of the upper parts of these two little animals were jet black, and the under parts a beautiful silvery white, presenting a very striking contrast to the eye. The water being of a very dark colour, as is frequently the case in old pits, I was not able to observe their feats whilst under that element. At last I was compelled to leave these interesting and playful little companions by themselves, to paddle their way up the tributary ditch of the pit. Though this, perhaps, is the first record of this species in this immediate neighbourhood, I should be sorry to publish it with the impression of its being its first appearance with us; for I am inclined to think otherwise, and that this is merely a first record of its appearance, for so minute, retiring and timorous a creature is very likely to elude observation. — *Vivian Walmsley; Westwood House, January 5, 1844.*

A new Quadruped. “The buffalo or mountain elk is nothing in comparison to this animal in the scale of worth. It sits on its hind legs, its front legs or arms are short, but armed with sharp claws, and it bounds or jumps with its hind legs. It has a tail, somewhat like that of a sheep, about ten inches long; and round the middle of the body it has a ring of flesh, about twelve inches wide and eight inches thick in the middle or centre, which produces a large quantity of oil. On their heads they have two horns, very similar to the horns of the deer, and they have the same kind of teeth; but what is more extraordinary that all the rest, their coat is of the most beautiful fur I ever beheld, of a dark brown colour. The proportions of the one we killed were very great; it weighed, to the best of our calculations, upwards of 600 lbs., and it measured from the top of the head to the end of the tail, 9 feet 4 inches. We had no sooner killed this one, than some Indians, attracted by the report of the rifle, joined us. Our interpreter conversed with them; they said that in the woodlands similar animals were in great abundance. They called it in their tongue the *ke-ko-ka-ki*, or jumper; they feed on grass, herbs and foliage. Upon observing us take off the skin, the Indians expressed a desire to have some of the flesh, which we gave them. We cooked some of the same, and found it delicious; it was very white and tender, and tasted very similar to veal; but the ring on the body was nearly all oil, and the whole upper part will produce a great quantity. The Indians took us to their huts or village, which consisted of six families; there we saw no less than six of these animals domesticated.” — *Extract of a Letter from Mr. Audubon which has gone the round of the Newspapers: is it not a hoax?—Ed.*

Notes on the Birds of Sussex. By A. E. KNOX, Esq., M.A.

(Continued from p. 230).

THE carrion crow (*Corvus Corone*), though a well known bird in many parts of Sussex, more especially frequents the wooded districts north of the Downs during the spring and summer, where, notwithstanding the dangers to which he is occasionally exposed from bird-nesting boys, and vigilant gamekeepers, the species seems to have found a strong hold, and does not appear to be sensibly diminishing.

After the bursting of the leaf it is extremely difficult to discover his haunts; so shy and solitary are his habits, that two nests are seldom to be found in the immediate neighbourhood of each other: and here amidst forests of oak, and dense thickets, interwoven with briars and brush-wood, he dwells in comparative security, and has ample opportunities of indulging his vagrant habits, and his predilection for all kinds of animal food. Besides the young of small quadrupeds, carrion of all kinds, and the eggs of pheasants, partridges and poultry, he is particularly partial to a species of fresh-water muscle (*Anodon Anatina*) which abounds in all the brooks and ponds in the clay district of the weald of Sussex, and from this circumstance has, among the country people in those parts, acquired the name of "*crow muscle.*"

After continued and heavy falls of rain, the meadows in the neighbourhood of these brooks are flooded to a considerable extent, and quantities of this shell-fish, disturbed from the muddy bed of the stream, are carried over and deposited on the banks, where they remain high and dry after the falling of the water. On such occasions the carrion crow is not idle: as the floods retire he may be seen issuing from the neighbouring woods, expressing his delight, or announcing his discovery to his mate by hoarse croakings, soaring on extended wings along the edge of the flood, but checking his progress every now and then to seize and devour a newly exposed muscle. Presently another may be observed parading up and down the banks, wading knee-deep in the shallower parts of the stream, and anxiously watching the receding waters; occasionally plunging in his head and dragging forth a prize, which he demolishes in the same manner as he would an egg: the shell being brittle, two or three smart blows of his beak suffice to break it, and the contents disappear in a moment.

Immense quantities of this shell-fish are found in the numerous small ponds which form so distinguishing a feature in the wooded scenery of the weald, and attract the attention of all strangers who vi-

sit this part of Sussex. Many of these are the remains of establishments for the smelting of native iron, before the Swedish metal came into such general use; and the name of "*furnace-pond*" which is still applied to some of them, serves to point out their origin. They are now generally used as fish-ponds, and are regularly drained after an interval of a certain number of years; carp, tench and eels are found in considerable numbers, and the decayed vegetation which has accumulated at the bottom in the form of mud, the result of the falling of the leaf from the overhanging woods during many successive seasons, is afterwards dug out and thrown up on the banks to be used for agricultural purposes, and in this state the ponds are suffered to remain for some time, before the water is allowed to return, and the stock fish re-introduced. Then, indeed, an ample and welcome feast is prepared for the carrion crow: the bottom of the pond and the banks above being literally studded with the fresh-water muscle. I have never observed so many carrion crows assembled together as on such occasions, and the banquet lasts for several days, until nothing remains but scattered heaps of empty and broken shells.

On the approach of winter the carrion crow retires from the wooded districts, and proceeds to the sea-coast, about the same time, or perhaps at a somewhat later period than that at which the hooded crow (*Corvus Cornix*) arrives in this country from the north; and the partial distribution of these Corvidæ, during this season, involving as it does the local separation of the two species, appears to me to be worthy of observation.

A few years ago, while residing during the winter near the sea in the western part of the county, I remarked that the carrion crow was particularly numerous on that part of the coast, more especially in the estuaries of Chichester harbour, and along the whole line of shore from Selsey Bill to Bognor, while I could never detect the occurrence of a single individual of the hooded crow within the same limits. This struck me as the more remarkable, from having previously observed that the latter species is exceedingly numerous during the same season of the year about twenty miles to the eastward, in the neighbourhood of Shoreham and Brighton, where the carrion crow is, in its turn, equally scarce. I may add that my subsequent observations have proved the above remarks to be correct, as well as the testimony of local observers both at Chichester and Brighton, whose attention I had drawn to the subject.

It would perhaps be difficult to discover the cause of this peculiarity in the local distribution of the two species, while impelled by

the same instinct to haunt the shores of our country during the winter months. It can hardly be attributed to any innate dislike of each other or natural hostility. The many well-authenticated instances which are on record of the hooded crow having paired with the carrion crow in a wild state, would refute such an idea.* Perhaps the different character and aspect of the country, in the immediate vicinity of the coast, to the east, and to the west, may afford a clew to unravel the mystery.

To the eastward near Brighton, and for many miles in that direction, the naked downs approach the coast, the country is generally open, and presents a considerable extent resembling (at least in the absence of wood) the native haunts of the hooded crow in the north of Scotland and Denmark. A natural predilection in favor of such a country may therefore induce these birds to prefer the neighbourhood of this treeless tract to the wooded and highly cultivated district which extends to the very shore in the more western part of Sussex; and admitting, for a moment, this conjecture to be correct, a similar course of reasoning would account for the partiality of the carrion crow for the latter country.

I should have observed that the carrion crow, even where it occurs in the greatest numbers during the winter months, as at the mouth of Pagham harbour, and the inlets of the sea to the south of Chichester, seems always more or less to live in pairs, both when feeding and when on the wing, and never assembles in large flocks, as the hooded crow is well known to do in the immediate neighbourhood of Brighton, and even on the beach between the houses and the sea.

The food of both these Corvidæ at this season of the year consists of oysters, muscles, small crabs, marine insects, worms, and dead fish which are cast up by the waves during the prevalent south-westerly storms. At Pagham, in the vicinity of the oyster beds, the carrion crow has frequently been observed to ascend to a great height in the air with one of these fish in his claws, and after letting it fall on the beach to descend rapidly with closed pinions, and devour the contents, which, but for the shock or fracture occasioned by the fall, he would have been unable to disengage from the shell. I do not know an instance of the hooded crow's having ever been observed to resort to a similar expedient.

The hooded crows make their appearance about the beginning of October, haunting the upper parts of the tide rivers at Shoreham and

* Vide Yarrell's 'History of British Birds,' vol. ii. p 86

Newhaven, and the fields at some distance from the coast, gradually becoming more gregarious, and more marine in their habits as the winter approaches.

Perhaps they never appear more numerous than at that period which immediately precedes their departure for the north. When at Brighton about the end of last March I noticed as many as thirty assembled on the shore opposite Brunswick Terrace, and a much larger flock in a neighbouring field at Hove, and in a few days afterwards not a bird was to be seen. The carrion crows commence their return from the coast to the interior at a somewhat earlier period, and as might be expected from their having sojourned in pairs during the winter, their departure is not so sudden and simultaneous, but they seem gradually to appear less numerous, until at last they entirely desert the shores for the woods and forests of the interior.

A. E. KNOX.

New Grove, Petworth, Sussex,

December, 1843.

Notes on the Habits of the Wryneck, (Yunx Torquilla, Linn.)

By W. H. THOMAS.

THIS singular and beautifully marked bird arrives in this country about the latter end of March, and is sometimes heard by the middle of the month. It is commonly to be seen in most of our old cherry, plum, or apple orchards, likewise in gardens whose sides are bordered with plenty of decayed elm or willow trees; such places affording it plenty of food and suitable breeding-holes. In the spring the male bird is very noisy; his song or call notes are often repeated, and may be expressed by the words "*qui, qui, qui, qui, qui, qui, qui,*" executed in rapid succession. A rough imitation of these notes in the breeding season will bring the bird pretty close to you. This note is one of the first heard in the early spring, and I take it to be the courting or love call to the female; it is well known to most of our country folks. In Kent the wryneck is called the "snake-bird," and it is found in all our southern counties.

It is a very bold, fearless bird, and when first taken in the hand it will erect its head-feathers, stretch out its head and neck to its full extent, twisting it from side to side in a stiff and singular manner, every now and then darting its head at you in a menacing attitude, and making a noise like the spitting of a cat; this no doubt is its cry of anger. Its disposition is fierce; it will grasp your hand tightly

with its strong claws, which are two before and two behind, like the cuckoo's, and, biting your finger sharply, is very obstinate in retaining its hold, and will remain suspended to it without attempting to escape.

They keep mostly in trees: I have now and then, but very rarely, seen them on the ground. The female makes no nest, but deposits her eggs in the hole of a tree upon the dust of the rotten wood. She generally lays from seven to ten white eggs, which when fresh laid appear transparent, and the yolk may be seen through the shell. I have never met with the slightest portion of a nest, nor have I found the eggs in any other situation than in the hole of a tree which is generally decayed.

The young are hatched in about a fortnight, and remain in the tree until they are nearly as well feathered as the old ones, I have had nine young ones out of the hole of a tree and well feathered, the latter end of June. The plumage of the nestlings is much the same in its markings as in the adult bird, with the exception of its being a little lighter in its colour.

On the 29th of July, 1841, I was out on a bird's-nesting excursion, and in crossing the fields near Peckham, I struck a stick which I had in my hand smartly against an old willow-tree by a ditch-side, and immediately heard a faint hissing sound. At first I could not make out from whence it proceeded: I struck the tree again, and listened to it, when I found the sound proceed from the interior. It instantly occurred to me that there was a tom-tit's nest, or some young snake-birds in the tree. About six or seven feet from the ground there was a hole, and on putting my hand and arm down it I could not reach the bottom, but still I could now and then hear the hissing noise. As the tree was much decayed, I had but little trouble in pulling out the rotten wood until I came to the birds, which were four naked little squabs. I supposed them to be wrynecks from there being no nest; and such they proved to be. The young ones lay huddled together warm enough on the dust of the rotten wood. When I alarmed them by striking the tree, they would all cock up their heads and utter the hissing noise I had heard before. They did not open their mouths at the time of making this noise, but I found by making a slight rustling noise similar to what I suppose the parent bird might make on entering the hole, that they would open their mouths for food: it therefore appears that they only hiss when they are alarmed. As I had a wish to see the old bird, I fixed the pieces of rotten wood in the hole as well as I could, and let them remain about half an hour;

on returning to the spot, supposing the old bird might be in with the young, I placed my handkerchief in the hole to prevent her escape. On taking the decayed wood out again, I found the old hen bird closely stowed in a corner of the hole ; she did not attempt to escape on my touching her, but crouched sullenly in a corner. As I had a mind to see how she would manage her young in a cage, I took them all home, and fixed some pieces of bark to an old shoe, and made a rough imitation of the bird's nesting-place. I then placed the young ones on some moss in the shoe, and hung it up in a large cage, the open front of which was covered with thin white paper. I put the old bird into the cage with them, and some scraped raw beef and chopped egg, mixed with live gentles and mealworms. I then placed them in a light situation, and watched the hen's proceedings through a small hole made in the back of the cage : she soon observed the live food and began to eat some of it, when hearing the young ones call, she quickly hopped into the shoe to them : in about five minutes time I had the gratification to see her come out, get more of the live food, and, returning to the hole, feed her young with it. She would, no doubt, have continued to feed the young ones while there was plenty of living food ; but from my not being able to get a sufficiency of it, and as she did not feed them with the egg and meat, I was obliged to take her away from them, and put her in a separate cage, where she soon began to eat the egg and meat before my face, without the least exhibition of fear, and was apparently unconcerned about her young progeny. On going to the cage and blowing at her, or attempting to frighten her, she would look fiercely at me, twisting her head and neck, and spitting like a cat, as before mentioned.

I fed the young with the artificial food, and they throve and feathered rapidly : when they were nearly fledged, I placed them in the cage with the old one, but she took no notice of them.

I kept the young ones in a basket on some moss, and as soon as they could hop about they would climb in and out, and all over the basket, continually thrusting their long, slender, horny-tipped tongue into every crevice of the basket, now and then tapping it stoutly with their bills, to see, as I suppose, if any insects would appear. They grew very fast, and were beautiful little creatures. I taught them to feed themselves in about three weeks. When at liberty in the room they would fly to the window, and on observing a fly within reach, would dart out their tongue at it with a rapid motion, and so confuse it, until it fell within reach of their mouth, when they would pick it up and swallow it in the same way as another bird : it was like tick-

ling the fly within their reach ; it had no power to get away. On showing them an insect, they would come from any part of the room and perch on my finger and take it, and they would often touch it with their tongue before they ate it. They would climb by short springs all over my person, every now and then insinuating their worm-like tongue (very like a slender brandling worm) in the button-holes of my coat or in my pockets, or tickling me about the eyes, nose, ears and neck, in short there was scarcely any crevice or place but what their long tongues would be prying into. For the purpose of keeping them as clean in feather as possible, I put each of them into a separate cage, and after three weeks let them out in the room. Their actions were now very different to what they had been when they were together ; they would scuffle about the room in a rapid manner, look fiercely at each other, stretching out their heads and necks and pointing like two game cocks, each pursuing his opponent round the room, and evidently inclined for battle. This pugnaceous disposition is observable in the males of most of the smaller summer birds, and causes them to separate more widely when in the wild state.

At times, if not well supplied with food, these birds (particularly the old one) would hammer the cage with their bills, not for the purpose of obtaining their liberty, but as they are in the habit of doing in the wild state, with the view of alarming those insects that are concealed behind the decayed bark of trees : these insects are their principal food.

I kept these birds three months, and then parted with them : how they got on with their new acquaintance I have never heard.

The wryneck is very partial to the hole she has selected for a nesting-place, and cannot easily be made to forsake it ; she will continue to lay her eggs in it year after year, they likewise sleep in these holes at night. In cages they will rather sleep in a corner, or creep into the feeding-trough, if there is room enough, than roost on the perch.

Although robust, stout-built birds, they are rather susceptible of cold ; and my nestlings, when well grown, would all huddle together in a corner of the cage at night.

Wrynecks seem to prefer cultivated grounds : I have no recollection of seeing them in any of the large woods, or of taking their eggs in such places. They generally leave this country in September.

I have not here attempted any scientific description of the bird, but have mentioned facts just as they have occurred and come under my own observation.

W. H. THOMAS.

6, Park Place, Walworth, December 1, 1843.

Note on the Honey-Buzzard's breeding in England.

By J. P. WILMOT, Esq.*

THE belief expressed by Mr. Fisher in your December number (Zool. 375), that "the honey-buzzard has never, except in the instance recorded by White of Selborne in the year 1780, been satisfactorily ascertained to have bred in this country;" and a remark made by Mr. Hewitson, in his beautiful work on the eggs of British birds, now in the course of publication, that "there is no recent instance of the honey-buzzard having bred in this country," lead me to believe that the following statement may possess sufficient interest for insertion in 'The Zoologist.'

Early in the month of July, 1838, a female honey-buzzard was shot off her nest in Wellgrove-wood, in the parish of Bix, near Henley-on-Thames, by a gamekeeper of Lord Camoy's named Lowe. The bird, with two eggs taken from the nest, passed into the hands of a bird stuffer at Henley, of the name of Hewer. I was then resident in the Temple, and being an eager collector of the eggs of British birds, had engaged a young friend, Mr. Ralph Mapleton, then living at Henley, to secure for me any rare eggs that he might have an opportunity of obtaining. Mr. Mapleton communicated to me the above occurrence, and at my request purchased the eggs for me. I afterwards saw the bird at the shop of Mr. Hewer, at Henley. The male bird, which continued to haunt the neighbourhood of the nest, was not long after killed by another of Lord Camoy's gamekeepers. The nest, a very large one, was placed in the fork of a beech tree, and was built of sticks of considerable size, with which were intermixed twigs with the leaves on. The lining was composed of leaves and wool; a great portion of the nest was, I am told, remaining in the tree a short time ago. I made no note of the occurrence at the time, but since my attention was drawn to the subject by the appearance of the observations before referred to, I have assisted my memory by application to Mr. Hewer, and by his aid am enabled to give the above particulars with confidence as to their accuracy. He informs me that the pair of birds are in the collection of W. Fuller Maitland, Esq., of Park-place, near Henley.

In the month of June, 1841, a pair of honey-buzzards, male and female, were sent to a naturalist of the name of Cashmore, at Birmingham, where I then resided, to be stuffed for the Museum of Na-

* Communicated by Wm. Yarrell, Esq.

tural History at Warwick. I had requested Cashmore, with whom I had frequent dealings, to apprise me as often as he received any rare British bird. He accordingly submitted these birds to my inspection, and by my desire ascertained that they were killed by the gamekeeper of Lord Leigh, of Stoneleigh-abbey. The birds reached Birmingham on the 12th of June, the month in which the egg was taken from the nest mentioned by White. I therefore came to the conclusion that they had a nest, but I made no further enquiry, until my attention was excited by the perusal of Mr. Hewitson's observation before quoted. I then wrote to Mr. Potts, Lord Leigh's gamekeeper, for further information, and I think that I shall communicate the result of my application most satisfactorily, by setting forth his reply, which not only gives an answer to my direct enquiries, but contains highly interesting information with respect to the food and habits of the honey-buzzard, showing that, although it may be insectivorous by preference, it does not confine itself to insects and reptiles, and "such small deer," but preys on young game, both biped and quadruped. Mr. Potts' letter is as follows.

"SIR, — In replying to your note respecting the honey-buzzards, I beg to inform you that I shot them in Waverley-wood, near Stoneleigh-park. I had seen them about there some time previous to my killing them, which caused me to look for their nest, which I found they were building, and had nearly completed by the appearance of it. I concealed myself near to it, and when they came I shot them. I also beg to say that I killed a pair of honey-buzzards in Berricott-wood, near Stoneleigh-abbey, a few years previous to 1841. I observed them coming from towards Waverley to Berricott, most days, and they generally used to take something back in their claws, which I have no doubt were young pheasants, as when I was in Berricott one day, I heard a pheasant making a noise as though something was taking her young. I went to the place, and one of the hawks flew up with two young pheasants in its claws. I immediately set some traps and baited them with young rabbits. When I went again to look, there was one caught, and the other was by its side, eating the bait, and when it flew up, I shot it, and so secured the pair. I have no doubt they had young ones in Waverley, as I saw a very large nest there some time afterwards, very similar to the one I shot the old ones from in 1841. I sent both pairs to the Warwick museum. Waverley-wood is 163 acres.

I am, Sir,

"Your obedient Servant,

"JAS. POTTS."

Wishing to have some little additional information respecting the position and structure of the nest, I again wrote to Mr. Potts, and learned from him that it was built in an oak tree, rather a large one, near the middle of the wood, and rested on two large arms which grew out from the trunk, and was built with sticks, some of them as thick as his finger, the greatest part without leaves, but there were a few with the leaves on entwined with the others, and there were a few small bits with the leaves on in the nest, just the leafy ends of the oak branches. He further describes the nest as nearly flat (White's nest was a large *shallow* nest), but rather hollow where they lay their eggs, and adds that his brother shot a honey-buzzard off its nest in the same wood about ten years ago. That nest was built between three large arms just at the top of the trunk, and he surmises that the nests are generally so placed that the young ones may walk in and out along the arms before they are fledged.

I had particularly asked whether boughs or twigs with the leaves on formed part of the materials of which the nest was constructed, in order to ascertain whether it resembled the nest near Henley in that peculiarity, if it should be so termed, for the presence of boughs with the leaves on, merely proves that the honey-buzzard, like the rook, does not use dead materials only in constructing its nest. Live boughs plucked at the season at which these nests were built, would necessarily be clothed with leaves. June seems to be the usual season of nidification in this country. White's nest was robbed in the middle of June; the nest at Stoneleigh was not completed when the birds were shot, about the 10th of June. The nest near Henley contained eggs in the early part of July, and the young birds in the nest mentioned by Willughby were fed with the nymphæ of wasps, which would not be obtained before the end of July. And, as far as can be collected from the recorded instances, there seems to be reason for supposing that the number of eggs laid by the honey-buzzard is below the number usually laid by birds of prey of corresponding size. In the instance mentioned by White, the single egg found in the nest contained the embryo of a young bird. The nest mentioned by Pennant contained two eggs, and the nest mentioned by Willughby (I am availing myself of the information collected by Mr. Yarrell), contained two young birds. The nest near Henley contained two eggs only, and the state of the eggs indicated that the bird had accomplished full one half of her period of incubation, and had consequently laid her complement. Of these eggs, one was inferior in size to the other, less strongly marked, and much more pointed at the smaller

end. The largest egg is about 2 inches long by $1\frac{1}{8}$ inch in breadth, and has the colouring, which has evidently lost somewhat of its brilliancy by incubation, pretty equally distributed over the whole surface. In other respects it resembles the specimen figured by Mr. Hewitson, and when newly laid must have been a splendid egg.

It would be strange indeed if the only instances of the honey-buzzard having recently bred in this country should have fallen within my very limited means of acquiring such information. I have therefore a strong impression that the dearth of recorded instances is attributable rather to neglect to record than to want of instances. When I was at Tonbridge Wells some eight or ten years ago, I saw the handsomest specimen I ever did see of this species, in the possession of an amateur bird-stuffer of that place. He informed me that it was killed in Lord Abergavenny's park in the neighbourhood, and that within a few years preceding, several specimens had been obtained in the same locality. The bird evidently has its favourite haunts, as observed by Sir Wm. Jardine with respect to the district round Twizell (I am again making use of Mr. Yarrell), and in these favourite haunts it breeds, I suspect, more frequently than has been supposed. The season at which it breeds, the trees being then in leaf, is favorable to concealment, and may cause some nests to escape observation. I shall however be disappointed if other instances do not flow in upon you, when attention has been drawn to the subject.

In order to make sure that Mr. Potts was not mistaken (not that I suspected any mistake) in the first pair of birds sent by him to the museum at Warwick, I wrote to Mr. Twamley, the Honorary Secretary of the Society, and have received a reply from that gentleman, fully confirming the accuracy of Mr. Potts' statement.

J. P. WILMOT.

Manchester, January 6, 1844.

Note on dates of Migration at Redcar, near Guisborough. On the 16th of last May I observed on our sea-banks a short-eared owl, two fieldfares and a cuckoo, the wind adverse, being north-east. On the 25th I saw a short-eared owl commence his migration in a north-east direction, the wind being south-west.—*T. S. Rudd; Redcar, near Guisborough, Yorkshire, November 8, 1843.*

Notes on the departure of Summer Birds in the County of Derby, in 1843. 'The Zoologist' has contained, from time to time, many accounts of the arrival of our migratory birds in different parts of our island, but very few of their departure from it. It must be acknowledged, that to ascertain the latter, is a much more difficult matter than the former, inasmuch as most of our summer sylvan warblers commence their

songs immediately on their arrival, and their persons are betrayed by their wild fresh notes, which, amidst the dearth of rural sounds, are readily distinguishable; whilst on the contrary, in the autumn their songs are generally hushed for weeks previous to their departure, and the woods and brakes are thick with foliage, and it requires considerable vigilance and attention to ascertain whether they still remain, or have departed from the neighbourhood. The following list, compiled with considerable care, gives the different dates at which our summer birds departed from Melbourne, Co. Derby, in the autumn of 1843.

Blackcap (<i>Sylvia atricapilla</i>) ...	Sept. 3	ies so late as October 20; but such an
Grasshopper warbler (<i>S. Locustella</i>). Its		incident is of rare occurrence.
cricket-like notes ceased Aug. 2, and		Redstart (<i>Sylvia Phenicurus</i>)... Aug. 18
it probably retired shortly afterwards.		Wood warbler (<i>S. sylvicola</i>)..... Sept. 18
Swift (<i>Hirundo Apus</i>)	Aug. 10	Willow warbler (<i>S. Trochilus</i>)... 18
Whinchat (<i>Sylvia Rubetra</i>).....	Sept. 10	Chiff-chaff (<i>S. Hippolais</i>) 26
Wheatear (<i>S. Œnanthe</i>)	10	Chiff-chaffs, which usually affect large
Whitethroat (<i>S. cinerea</i>)	10	woods during the vernal and summer
Lesser whitethroat (<i>S. sylviella</i>).	12	months, are frequently seen and heard
Landrail (<i>Gallinula Crex</i>)	12	in the open country towards August
Sedge warbler (<i>Sylvia Salicaria</i>)	12	and September.
Reed warbler (<i>S. arundinacea</i>)...	14	Swallow (<i>Hirundo rustica</i>) Oct. 15
Ray's wagtail (<i>Motacilla Rayii</i>)	18	Martin (<i>H. urbica</i>)
Sand martin (<i>Hirundo riparia</i>)..	20	A slight fall of snow took place on the
Grey wagtail (<i>M. Boarula</i>)	18	morning of Oct. 17, which vanished
		after sunrise. Wind S.E.

I observed a solitary bird of this species
—J. J. Briggs; Melbourne,

Notes on the arrival of some of the Winter Birds of Passage at Yarmouth in 1843.

Dunlin, birds of the year, about July	19	Jack snipe	Sept. 17
„ old birds	25	Smew, teal	17 & 18
Common sandpiper	22	Golden-crested Regulus, about	20
Curlew, pigmy curlew, oyster-		Wigeon	26
catcher	24	Woodcock	28
Green sandpiper	25	Short-eared owl.....	30
Little stint.....	Augt. 5	Skylark	Oct. 14
Sanderling.....	Sept. 4	Hooded crow	19
Black-tailed godwit	11	Snow bunting	25
Greenshank	16		

The golden-crested Regulus arrives here every autumn about this time. I have seen several within the last few days, which were so fatigued as to suffer themselves to be taken by the hand, but I am not aware that, like the skylarks, their arrival has been actually witnessed. The morning of October 14th was the first on which the migration of the skylarks was observed. I repeatedly noticed their arrival from that time till the 22nd. They flew generally in flocks of from ten to twenty, although I several times saw them in smaller numbers, and on one occasion only a single individual. I was also told that flocks of forty or fifty had been seen to arrive, and that numbers of them had been put up on the beach, where they had been roosting, just before daylight. They appeared at all times of the day, flying much higher in calm than in stormy weather. The stubbles in the neighbourhood are covered with them. The fol-

lowing species have also occurred near Yarmouth this autumn, in addition to the buff-breasted sandpiper, of which I have already sent you notice (Zool. 363).

Temminck's stint	Augt, 2	Rough-legged buzzard	Octr. 10
Purple sandpiper	Sept. 20	Peregrine falcon	21
Stormy petrel	30	Grey phalarope.....	30

The peregrine falcon was shot about ten miles from Yarmouth. It measures in length 20 inches, in extent $43\frac{1}{2}$ inches, and weighed more than 2 lbs. It is, I suppose, a young bird, the colour of the back and wings being dark brown, and the edges of the feathers with light margins. The cere dark blue, the bare orbital space light blue, and the legs greenish; the edges of the scales and the soles of the feet nearly yellow. There is also a patch of cream colour on the back of the head, and another, almost forming a ring, upon the lower part of the neck. The stomach contained a quantity of white feathers, and the neck, probably, of a chicken, as a grain of barley was also found. The man who brought it to me, said that when he killed it, it was dashing furiously at his dog.—*Wm. R. Fisher; Great Yarmouth, October 30, 1843.*

Note on the curious manner in which Seeds are sown by Animals. It is generally supposed that the seeds of trees and plants, after having been eaten by birds, are not killed by the process, but only rendered in a fitter state for germination by having passed through the stomach. And this is very probably the case; for we see elder, ash, ivy, gooseberry and currant bushes, growing on ruins and church towers, situations in which they never could have been planted by human hands, but must have sprung from seeds and berries which had been eaten and deposited there by birds. From trivial causes spring mighty effects; for doubtless many of our most richly wooded landscapes owe much of their timber to the agency of quadrupeds and birds. Linnets, goldfinches, thrushes, goldcrests &c. feed on the seeds of elms, firs, and ashes, and carry them away to hedge-rows, where, fostered and protected by bush and bramble, they spring up and become luxuriant trees. Many noble oaks have been planted by the squirrel, who unconsciously yields no inconsiderable boon to the domain he infests. Towards autumn this provident little animal mounts the branches of oak trees, strips off the acorns and buries them in the earth, as a supply of food against the severities of winter. He is most probably not gifted with a memory of sufficient retention to enable him to find every one he secretes, which are thus left in the ground, and springing up the following year, finally grow into magnificent trees. Pheasants devour numbers of acorns in the autumn, some of which having passed through the stomach, probably germinate. The nuthatch in an indirect manner also frequently becomes a planter. Having twisted off their boughs a cluster of beech-nuts, this curious bird resorts to some favourite tree, whose bole is uneven, and endeavours, by a series of manœuvres, to peg it into one of the crevices of the bark. During the operation it oftentimes falls to the ground, and is caused to germinate by the moisture of winter. Many small beeches are found growing near the haunts of the nuthatch, which have evidently been planted in the manner described.—*J. J. Briggs; Melbourne, November, 1843.*

Note on the Songs of Birds. White of Selborne laid it down as a maxim in Ornithology, that where there is incubation there is music; and it appears a correct one. Birds never produce their songs with such melody and vigour as during the breeding season; and some, as the missel-thrush, hush them entirely when it is over. Many birds, as the robin, blackbird, song-thrush, yellow bunting, common bunting, goldfinch, greenfinch, wren and some others, continue to warble until the verge of autumn. Mi-

gratory songsters have many peculiarities with respect to their ditties. The redstart, for instance, rarely prolongs his strains beyond the third week in January (22nd), whilst on the contrary the sable swallow and diminutive chaff hold on till September, almost up to the day of their departure. The landrail utters his hoarse "crake, crake" almost every evening (especially the moist ones) from the middle of May (16th) to the fourth week in July, very few birds being heard or seen after corn-harvest. The blackcap hushes his wild pipe by the 11th of that month, and the cuckoo her two notes always by the 1st of August. The sedge and reed warblers continue steadily in song from the time of their arrival until a few weeks before their autumnal disappearance. White-throats warble till the third week in July (about the 22nd), after which they are little seen. The nightingale commences his love-songs early in May, and his wild varied notes are the glory of the spring. Hidden by the shadowy foliage of some broad wood or copse, he serenades his mate every evening and night till the end of June, when his strains cease, and are succeeded by a rather harsh, croaking noise, falling anything but melodiously upon the ear. Of our resident songsters it may be noted that the skylark and woodlark awaken their exhilarating ditties in January, and continue them through all kinds of weather until the close of the year. The robin's plaintive lay is heard in the spring, then is nearly mute the summer through, and is very distinctly audible in the autumn, owing to the solemnities of the season, and the absence of most other woodland voices. He is in full song in September, and his lay may be called the dirge of the departed summer. The song-thrush sings nearly the year through with the exception of the severest months. The blackbird, too, commencing in spring, continues till October. The yellow bunting is in full song in July, and loves to sing during the most sultry days. The elegant goldfinch twitters the year round, and his delicate ditty is extremely pleasing. The low scream of the greenfinch, although commenced in the early spring, is heard all the summer, and when blended with the general chorus, has not an unharmonious effect. The chaffinch sings during the vernal months, but closes early, frequently by the middle of June.—*Id.*

Note on the occurrence of the Sea Eagle at Elden, near Thetford. A very fine female specimen of the sea eagle (*Haliaëtus albicilla*) was shot on the warren at Elden, on January 12, 1843. As it was very slightly wounded, we endeavoured to keep it alive for some time, but as it seemed to pine, it was killed and stuffed by Mr. Reynolds of Thetford. It had haunted for some time the large rabbit-warrens in the vicinity of Thetford, and was shot in the act of preying on a rabbit. It measured 7 feet 11 inches from tip to tip, and 2 feet 6 inches from beak to tail, and weighed 11 lbs. when first shot, but lost 1 lb. when in confinement.—*Alfred Newton: Elden Hall, near Thetford, Suffolk, Nov. 1843.*

Occurrence of the Osprey near Farnham. About the latter end of September, an osprey was seen in several different places near here, hovering over Frensham and other large ponds. I am not aware that this specimen was killed, but about three years ago I obtained a specimen which measured 3 feet across the expanded wings.—*T. Mansell; Farnham, November 3, 1843.*

Note on the occurrence of the Osprey and other Birds in the neighbourhood of the river Swale, Yorkshire. A fine specimen of the osprey visited this river in the month of May last; its favourite localities being between the villages of Catterick and Langton, where it was easily distinguished by its large size and peculiar habits. When first observed it was flying with an eel in its claws, and was afterwards frequently seen to hover over the water like a kestrel, sometimes hanging down its legs, then dropping

into it like a stone, it seldom failed to secure a fish, which it bore in its talons to land. It was first shot at while sitting in a tall ash tree, but not being much the worse, the bird flew off, dropping however a barbel of about half a pound weight. On another occasion it was shot at while on the wing, and let fall the tail part of a large trout; and while walking under a tree from which it had been disturbed, I found a perch with the back and head torn, as if by the claws of the bird. These observations tend to show that the osprey is no unskilful fisherman. The one in question, after remaining in the neighbourhood for above a month, and being constantly fired at, was killed by a gamekeeper on the 20th of June. Another bird of the same species was observed about five years ago, but not obtained. A fine cormorant was shot at the Red hills, under which the river flows, on the 18th of October, and is now in my possession. It is very rarely met with so far inland, this place being about thirty miles from the sea. Two little stints were seen in August, and one of them was shot; also three or four green-shanks. The latter are very regular visitors, generally arriving, together with the green sandpiper, about the end of July.—*Mark Booth; Killerby, Yorkshire, Dec. 22, 1843.*

Note on the occurrence of the Grey Shrike at Lynn. A specimen of the great grey or ash-coloured shrike was caught alive here on the 30th of last month.—*Daniel C. Burlingham; Lynn, 1st of 11th Mo. 1843.*

Note on the occurrence of the Red-breasted Tanager, near Cheltenham. When in Oxford during the month of September, I enjoyed the opportunity of examining an adult male specimen of the red-breasted tanager (*Ramphopsis purpureus*, Viellot) which had been recently shot near Cheltenham. Whether the transatlantic straggler will be entertained as an honest visitor, it is not presumed to determine, seeing that it is here for the first time treated as one of the British list.—*Charles Buckler; 15, Rockingham Row.*

Anecdote of a hen Song Thrush nursing a young Missel Thrush. A few years ago having had a young song thrush (*Turdus musicus*) given to me, I succeeded in rearing it until it was able to feed itself with the food supplied to it. About this time a young member of our family, during one of his holiday rambles, having met with the nest of a missel thrush (*Turdus viscivorus*), containing two half-fledged young ones, brought one of them home, and introduced it into the same cage with the song thrush. The latter (a hen bird) immediately undertook the part of nursing mother to her helpless fellow-prisoner, feeding it regularly at the stated hours when food was supplied them, before she partook of any herself. Under her affectionate care the missel thrush grew and throve wonderfully, till it had attained to nearly its full growth, and during all this time the affection displayed by the song-thrush for her élève could not have been surpassed, had she been really its parent. But one luckless morning, their cage, as was usual in fine weather, was placed on a gravel walk in the garden at a few paces distance from the window where I sat, and the song-thrush having by some means contrived to escape from the cage, had perched in a currant-bush hard by. Here she was cleaning her feathers, when a cat, lurking near, suddenly pounced on the unfortunate bird, and inflicted such injuries on her before I could come to the rescue, as caused her death. From this time the missel lost all its animation, though previously remarkable for its lively manners, neglected its food, pined and died within the week, not unwept by its youthful master, nor unregretted by the rest of the family, who had observed, not without admiration, the singular attachment which subsisted between these two birds from the first.—*F. Owston; Driffield; December 2, 1843.*

Note on the occurrence of the Ring Ouzel near Farnham. At Aldershot, a village

near here, the ring ouzels appeared in some abundance on the 8th of September last, they remained about the neighbourhood until the 19th, after which none were seen. In a few specimens that were shot, the white was much more observable than in those birds which were killed when they passed this place in their spring migration. — *T. Mansell, Naturalist; Farnham, November 3, 1843.*

Note on the Goatsucker or Night-hawk. In the month of July I had brought to me a pair of "*night-hawks*," as goatsuckers are provincially termed in Kent. They were quite young, and had been found at the foot of a tree, with an egg, which was also brought to me. It is generally supposed that the goatsucker lays only two eggs; this however was an instance to the contrary. Being desirous of rearing them, I fed them with flies and other insects, which at first they appeared to thrive on, but after a little, from some cause I could never quite understand, they began to droop, and finding they were gradually sinking, I killed and stuffed them. Wishing to obtain a specimen of the full-grown bird, I proceeded one evening to the wood from which the young ones had been taken, and after waiting a short time, I observed a pair of goatsuckers (probably the parent birds), hawking round an oak, close to the spot described to me as the place the young had been found in. I succeeded in shooting them both, and found they were male and female; they are now with the young ones in my cabinet. It is perhaps needless to remark that this bird derived its name from the ancient and ignorant idea, that it sucked goats, which is in the same degree probable as that hedgehogs performed the same kind office for cows! Although not a rare bird, yet from its habit of flying only in the evening and at daybreak, it is not very generally observed. There is something very peculiar in the appearance of the goatsucker when sleeping in the day. I recollect once shooting at what appeared to be a rat, crouching on the large arm of a high cherry-tree, but which, upon its falling to the ground, proved to be a goatsucker! It is a constant habit of these birds to perch lengthways, with their head lowest, that is, inwards to the tree. They are not unfrequently found squatting on stone-heaps, when they look not unlike a lump of old wood or bark covered with lichens. There is a peculiarity about the foot of the goatsucker, the middle claw being serrated, the exact use of which has not, I believe, been accurately determined. White thought it was to assist the bird in taking its prey, he having observed it take beetles with its claws and convey them to its mouth. Wilson, on the other hand, supposed this claw was used as a comb, to keep in order the bristles which grow on either side of the upper mandible. While others imagine it to be used for the same purpose as the pectinated claw of the night-heron (*Nycticorax europæus*), namely, to free the bird from vermin in those parts which it is unable to reach with its bill. Is it improbable that it may be used for all these purposes? Goatsuckers arrive in this part of Kent about the second week in May, and generally take their departure by the beginning of September. Their common note is somewhat between hissing and buzzing, which has been said to be in imitation of the low notes of beetles. As I was returning home between 11 and 12 o'clock one brilliant moon-light night in August last, my attention was attracted to a bird, which flew up before me from the road. I soon discovered it was a goatsucker. It several times settled at no great distance, and I observed that it lay almost flat in the road. I at first supposed the cause of its settling to be that it might the more easily dissect some large beetle; but upon watching it I found it was evidently dusting itself, after the manner of domestic fowls. I am not aware if this trait in the character of this bird has been noted. So far from the goatsucker deserving the bad character which was so long attached to it, I cannot but look upon it as a

bird which renders more service to man than at first sight it appears to do, as it must not be forgotten that the larvæ of the majority of the insects on which it subsists, are very destructive to the roots and buds of many plants and trees. I have found its eggs—nest it has none: these are generally placed in a wood or shaw, at the foot of a tree or bush, on a few dried leaves or grass, whichever may happen to be on the spot. — *J. Pemberton Bartlett; Kingston Rectory, December 4, 1843.*

Note on the Nesting-places of the Swallow.—

“The chimney-haunting swallow, too, my eye
And ear well pleases. I delight to see
How suddenly he skims the glassy pool,
Now quaintly dips, and with a bullet's speed
Whisks by. I love to be awake and hear
His morning song, twittered to young-eyed day.”—HURDIS.

From the remarks of two of your correspondents—the Rev. J. C. Atkinson (*Zool.* 354) and Mr. Hepburn (*Zool.* 147), on the places chosen for nidification by the *Hirundo rustica*, it appears that in the localities they mention, these “Welcome guests of settled spring” but rarely build in chimneys. Now in Kent it is quite the reverse:—building in chimneys with them here, is the rule, and in outhouses and barns the exception. As far as my own observations have gone, I should say decidedly that the greater majority choose chimneys to rear their young in. Where we have one building in a barn or out-house, we certainly have an average of four or five who build in chimneys. I recollect one year five chimneys in our house were occupied by swallows, three of which have been regularly tenanted by them for many years. There is hardly a cottage which has not its pair of swallows, which annually return to their favourite chimney: and I know of nothing (unless indeed it be shooting their favourite cat) which sooner excites the ire of the village dames than destroying their swallows. The following curious instance of the perseverance of these little birds came under my own observation. Three years since a pair of swallows, after reconnoitering the place for some days previously, very assiduously commenced building their nest against the interior wall of the porch of Kingston church, thus literally affording an example of the same fact recorded by the inspired poet, nearly three thousand years ago! When the nest was about half finished, it was discovered by the person who swept the church, and the consequence was, it was cleared away. But the industrious little architects, undaunted by this calamity, again set to work, and the following week the nest was rebuilt. This also was destroyed; but no sooner was it removed than a third was commenced, but this, alas, soon shared the fate of the others—being removed by the churchwarden. After meeting with such continued and decided opposition, the birds at length left their favourite spot, and repaired, no doubt, to some less public haunt. But the most remarkable thing is, that they have every year since repaired to the porch and commenced their nest! and although they have not been permitted to hatch their young, yet their love for the spot seems unshaken. The cause of the hostility to this luckless pair of swallows, on the part of the sexton, was that they kept the porch in a constant litter with the straws and mud which fell from the nest; and on that of the churchwarden, that their twittering and chattering disturbed the congregation! Swallows generally arrive here about the 10th of April, and the majority leave us about the first week in October: occasional stragglers may be seen throughout that month. Among the numerous fables in connexion with swallows, was one which assigned to the flesh of this bird when burned to ashes, the power of healing distempers of the eyes.

From the name given to it by the Greeks — “*Χελιδών*” — is derived the name of our wild celandine (*Chelidonium majus*), or, as it is frequently called, “swallow-wort,” with which plant, it was formerly believed, the swallow opened the eyes of her young! *Id.*

Note on the Swallow. It is now some weeks since the swallows assembled on the house-tops in great congregations. They met apparently for the purpose of departing in company to other lands than ours. I have seen none since these meetings took place until yesterday, October 15, when about a dozen chimney-swallows were observed, hawking for flies over our garden. The previous days had been frosty, so much so that the Ochil hills were white with snow. To all appearance the ground here will also be covered, to the depth of a few inches, ere tomorrow dawn. The hour when the swallows were seen was a little after noon. The sun was shining warmly at the time, although the frost, during the preceding night had formed ice, in some places, I am told, about a quarter of an inch in thickness. While the birds were flying, I observed a nettle tortoiseshell butterfly also on the wing. — *Robert Dick Duncan; Vale of Almond, Mid Calder, Edinburghshire, October 16, 1843.*

Singular locality for the Nest of the Greater Titmouse. An account given of a singular locality for a redstart's nest under a garden pot (Zool. 355), reminds me that a few years ago, in a friend's garden at Chelmsford, I met with a nest of the greater tit (*Parus major*) in a precisely similar situation, but I believe the parent bird was too much disturbed to allow of her rearing her young in her odd retreat. I remember once seeing a robin's nest in a small watering-pot which was hanging against a wall. — *Alfred Greenwood; Penzance, December 21, 1843.*

Note on Anthus petrosus (Montagu). About a fortnight ago I observed a small flight of these birds on the banks of our reservoir. I think it is generally believed to confine itself to the coast. I was much surprised to observe that they refused to associate with the common meadow pipits (*Anthus pratensis*) which were abundant, but associated with two or three pied wagtails (*Motacilla Yarellii*, Gould); indeed its habits were precisely similar to that bird's, keeping to the soft mud and chasing insects in the same manner, so that any one might readily have taken it for a wagtail, except for its colour. — *F. Bond; Kingsbury, Middlesex, November 10, 1843.*

Microscopical Society of London.

November 15, 1843.—J. S. Bowerbank, Esq., F.R.S., &c., in the chair.

Read, a paper by J. S. Bowerbank, Esq., F.R.S., entitled “Additional observations on the structure of the Shells of Molluscous and Conchiferous Animals.” The paper, of which this is a continuation, was read before the Society on the 18th of January last, and the present observations relate to the mode in which wounds in the periostracum are repaired, which differs in many respects from the analogous operation in the shelly structures. A shell (*Solen vagina*) in Mr. Bowerbank's possession, having had this organ pierced in a great number of places, afforded upon examination the means of ascertaining the manner in which Nature operates in making up deficiencies in that important membrane. In this case the wounded organ is so situated as to preclude the possibility of the ordinary mode, namely, the exudation of a layer of coagulable lymph, being followed, and consequently another course is pursued. The inner layer of the periostracum gradually advances from all sides over the wounded surface, until

it unites in the centre of its area. This new membrane is at first clear and pellucid, but after a short time minute vesicles, molecules and cytoblasts appear in various parts of the surface, together with small patches of minute vascular tissue. These spherical cells gradually increase in size, assuming the form of collapsed vesicles. As their number increases, their outlines become indistinct, until at length they form an even paving of closely compressed tessellated cells. Layer after layer of this tissue follow each other, one above the other, until the whole space of the wound is completely filled up. The progress of the minute primary vessels also affords an exceedingly interesting study of the origin of vascular tissue, whether simple, branched or anastomosing, not only in animals of a low degree of organization, but also in the higher warm-blooded animals, as the author had also observed similar appearances amid the cartilaginous fibres of the prepared fœtal skull of an infant, and also in the somewhat similar cartilaginous structure of bone in a case of mollities osseum, described by Mr. S. Solly, of St. Thomas's hospital. The remaining part of the paper was devoted to a minute description of the appearance of this primary vascular tissue in various stages of its development in the periostracum of the shell.

December 20, 1843.—Edwin J. Quekett, Esq., F.L.S., in the chair.

Read, a communication from Mr. Tulk, upon certain parasites in the dog. These parasites were found by Mr. Topping, on examining microscopically the contents of the pustules in a mangy dog. They belong to the genus *Demodea* (*Owen*), first discovered, figured and described by Dr. Lemon of Berlin, as inhabiting the sebaceous sacs and hair-follicles of the human skin. The insects now described as existing in the dog, were found in such abundance that thirty or forty were frequently seen in a single drop of pus. They differ very slightly from the human parasites before referred to, but analogy would lead to the conclusion that they are of a different species. The discovery of this parasite may throw some light upon the causes of the disease called mange, a distemper by no means confined to one class of animals; while, at the same time, it is far from being certain, whether this insect is the exciting cause, or is merely developed during the progress of that disorder.

The chairman made some observations upon *Tettigonia septemdecim*, a North-American insect sent by Professor Bailey, the ovipositor of which, he stated, forms a curious microscopical object. He exhibited specimens of the male and female insect, and also some wood, illustrating the injury done by it. The chairman also laid before the Society some earth from Petersburg, in Virginia, described by Professor Rogers, containing fossil animalcules, and noticed several new forms found in it.

Mr. Ross communicated an interesting observation relative to the Daguerreotype process, first noticed by R. H. Solly, Esq. If an ordinary Daguerreotype portrait he examined with a power of about 200 linear, the surface in the parts upon which the light has acted, instead of being perfectly smooth, is found to be covered with a series of minute dots or globules, arranged in a hexagonal form. Mr. Ross exhibited this curious appearance in the course of the evening.

A fluid for cleaning glass was also laid before the Society. It consists of a strong solution of nut-galls; glass wiped with this fluid is effectually freed from all greasiness.

Mr. Busk exhibited the achromatic object-glass of a telescope, having a minute *Conferva* growing between the lenses composing it. Some discussion took place as to whether this appearance was really the effect of vegetation, or produced by a species of crystallization on the surface of the glass.—*J. W.*

Note on the Greater Tit. There are several yew-trees close to my house; in these I have heard, day after day, for the last six weeks and more, a continual *tap, tap, tap*, which at first I imagined proceeded from the nuthatch (*Sitta europæa*), but upon further observation I found the noise was caused by the greater tit (*Parus major*) tapping violently against the bark. I have heard two or three of them at the same time, and making such a noise that one would fancy so many Lilliputian carpenters were at work. I have examined a branch, and could only find a few slight indentations made by the bird (as I have seen it) scraping its bill on it after tapping. I see in Mr. Yarrell's work that this bird employs this tapping propensity in killing "small birds, accomplishing his purpose by repeated blows of his hard and sharp beak on the skull of the victim, and afterwards picking out and eating the brain." I have never seen any other of the titmice (*Paridæ*) do this. The object of the bird is, I suppose, the same as that of the woodpecker (*Pica viridis*), to induce the hidden insects to come out. — *Frank Clifford; Eldon Rectory, near Thetford, December 29, 1843.*

Note on the Wryneck. A few years since I discovered in a hole in an old ash tree, a single white egg, without any trace of nest. Not knowing at the time what egg it was, I supposed the nest had been taken, and that this was an egg laid afterwards, as it not infrequently happens with some birds, that when a nest has been torn and robbed of its eggs, if the full number had not previously been laid, an egg is deposited afterwards, but of course generally neglected. But this is not always the case, as I recollect an instance of a hedge-sparrow (*Accentor modularis*), sitting in a most persevering manner on an egg which had been laid on the foundation of its nest, the lining and eggs having been taken. Acting on this supposition I took the egg, and on passing the tree the next day, had the curiosity to look into the hole, where, to my surprise, I found another egg; this I also took: and from that time the tree was daily visited either by myself or one of my brothers, and each day a white egg was carried away, until the number had arrived at *twenty-two!* after which, although we frequently visited the tree, not another egg was laid. Once or twice only was I able to catch a sight of the bird, which proved to be what is here provincially called a "snake-bird," and only known amongst the lower orders by that name, and which I found to be the wryneck (*Yunx Torquilla*). I am not aware if the term "snake-bird" is peculiar to Kent: the reason of the wryneck having this name assigned to it, is, I should imagine, either from the hissing and really snake-like noise made by the young before they leave the hollow tree in which they have been hatched, or from the rather snake-like appearance of the old birds themselves, in some of their motions, or very probably from a combination of both these facts: the name certainly has more of truth in it than provincial names generally have. I have never since heard of an instance of a wryneck so perseveringly laying, when regularly robbed of its eggs: and indeed there are but few birds I believe which would have continued to lay more than double their usual number of eggs. I have heard of instances of a similar character in the common wren, and in one or two of the tit tribe; but this is the only one that ever came under my own immediate notice.—*J. Pemberton Bartlett; Kingston Rectory.*

Note on the change of Plumage of the Black Redstart. A correspondent, in answering a former enquiry of mine respecting the change in the plumage of the black redstart (Zool. 101), states it as his opinion that the black plumage does not disappear in the winter, but becomes less pure and jetty (Zool. 355), and notes the reed and ciril buntings as instances of the same nature. I think it probable that such may be the case, but would observe that I have seen several of these redstarts since my last com-

munication; one at Perran, in March or the beginning of April, 1843, which I fancied, at the time, was just getting its black nuptial dress; and two (two, I believe, or if one, it had flown to a widely different spot in a short time) at Hayle, on the 28th of November last, both plain birds. None of them were secured. Now it seems odd if this bird does retain its black plumage in the winter, that no adult birds among others should have been noticed here at that period. I would also remark that I am surprised at the reed bunting (*Emberiza Schœniculus*) being brought forward as an instance of a bird which retains its black garb in the winter: as far as my own observation extends, a bird of this species is not to be obtained with a black head in winter, and a male killed at that period is not so dark about the head as a female killed in the breeding season.—*Alfred Greenwood; Penzance, December 21, 1843.*

Notes on the Dipper. Almost the only songsters which in this district enliven the winter's day, are the robin and the dipper; but at times the lively trill of the bustling little wren, or the harsh but not displeasing voice of the missel thrush, are also to be heard. In the spring and summer months the dipper is comparatively silent, and indeed I have never observed that it sings during those periods; but towards the end of autumn a sudden impulse seems to seize it, and to cause it to burst forth into song. For some years past I have remarked this habit of the dipper, and have often thought it somewhat singular that at the time when most other birds are mute, it should be, as it were, in full song. The months of November, December and January are those in which its song is principally heard, and severity of weather seems to have no effect in checking or suspending it. Often in the midst of the driving snow-storm have I listened to the sweet notes of the little dipper, and the hardest frost appears only to increase its activity and liveliness, and it sings away as merrily as ever. I have remarked too that it sings principally in the afternoon, and frequently when it is quite dusk. The song of the dipper is a continued inward warble, never very loud, but at times rising higher and becoming more distinct. The bird is generally perched upon a stone at the water's edge, or at the foot of the bank of the river when it is emitted. It is rarely, if ever, seen at any distance from water, and it is consequently only in the vicinity of a river or burn that its song is to be heard. It is rather abundant in this district, especially at this season of the year, which seems to be owing to the assembling of the summer broods in particular localities. It is never however seen in flocks. In this part of the country it is generally called the water-crow, and in some parts of Scotland the water-pyot. The dipper has been accused of destroying the roe of the salmon and other Salmonidæ, but all that I have ever found in its stomach (and I have examined a good many specimens) has been remains of aquatic insects, and in one case a few entire shells resembling those of snails. Macgillivray, in his 'British Birds,' is of opinion that this charge is unfounded.—*Archibald Jerdon; Bonjedward, October 15, 1843.*

Correction of a supposed error in a prior communication on the Blackcap. In the last number of 'The Zoologist,' (Zool. 356), your correspondent, Mr. Hewett, has drawn the attention of naturalists to the winter lingering of the black-cap (*Sylvia atricapilla*, Macg.). Nevertheless and notwithstanding the notice you have given of the capture of a fine male of that species of summer warbler in your excellent periodical (Zool. 76), yet I very much doubt its identity with our brumal residents on our open downs, as alluded to by your correspondent. Candour is the soul of Natural History, and therefore the man of the fields, I apprehend, ought ever to be on the alert when recording facts, lest error creep in and mar his work. May I therefore ask Mr.

Hewett, through the medium of 'The Zoologist,' whether he is certain of the identity of "those delicate little songsters on the top of furze-bushes on the open downs?" — because the wild wood-notes of the black-cap are invariably emitted from the leafy sprays of the coppice and the wood; and then, while the trees in "the sear and yellow leaf" blend their autumnal tints in gorgeous richness around his ebon cap, he and his congeners withdraw in silence from our shores, instinctive taught by an unerring hand to wing their way to more sunny climes.—*James Harley; Leicester, December 6, 1843.*

Note on the occurrence of the Fire-crested Regulus at Yarmouth. A specimen of the fire-crested Regulus was captured here on the 6th of last November. It was taken, I believe, among some gold-crests, which appear annually about that time, in considerable numbers. The dark bands on the cheek, and the white line over the eye, are in this bird very conspicuous, but the colour of the crest is much less vivid than in many of the goldcrests, whence I conclude that it was a young male.—*William R. Fisher; January 15, 1844.*

Defence of previous statements respecting the Wood-wren. In your December number (Zool. 356) is an article entitled "Correction of some inaccuracies in a prior communication on the wood-wren," by Henry Doubleday, Esq. As the "inaccurate" communication alluded to was written by me, I deem it advisable to offer a few remarks in reply. I stated that the wood-wren (referring of course to the locality from which I am writing) built its nest on the ground, in a tuft of coarse grass, which was lined with a profusion of poultry-feathers, and that I had seen it lined with dark horse-hairs and the seed-branches of field grasses. Mr. Doubleday remarks, that it is invariably lined with fine grasses and hair, the bird never using a feather in the construction of its nest. Living in a neighbourhood partaking entirely of the pastoral and sylvan, where these birds are no rarity, I have every summer ample opportunities of observing their manners and habits, and am convinced of the accuracy of my statement. Not only have I shot birds, which had just left nests answering to my description, but I have now one in my possession, killed by myself in the very act of carrying a feather to its nest. The bird was larger than the willow-warbler, of prettier coloured plumage, and at once distinguishable from it by the light feathers above and below the eye. Many birds vary the materials used for their nests, according to the locality in which they are built; and whether or no the wood-wren ever uses feathers in the construction of its nest in Mr. Doubleday's neighbourhood, I am not able to say, but I repeat the assertion that it does so in mine. I said the eggs were spotted very thickly with dusky red spots, he, thickly covered with dark purple spots. I am aware that Mr. Doubleday is an able and observant naturalist, and I must confess that no one has derived more gratification from a perusal of his writings than I have myself, but still I think him hardly justified in pronouncing an observation inaccurate, merely because it stated that a bird used one particular kind of material in building its nest here, which it did not happen to do in his own neighbourhood.—*John Joseph Briggs; King's Newton, Melbourne, December 10, 1843.*

[I thought it would be unfair to deny Mr. Briggs the right of reply, otherwise I should prefer leaving the question as it stood. I must freely confess my opinion that Mr. Briggs has fallen into an *inaccuracy* by some accidental transmutation of specimens: the materials of the nests of the wood-wren have been repeatedly described and the descriptions verified (see Montagu, Selby &c.), and the peculiarities of the bird in this choice of materials for its nest, really almost amounts to a specific character. The

title of Mr. Doubleday's reply, in which the word "*inaccuracies*" occurs, was written by myself; as indeed are most of the titles of these brief notes.—*E. N.*]

Note on the migration of Larks at Yarmouth, (see Zool. 411). The skylarks continued to migrate up to the 15th of November; on which day I also witnessed the arrival of (Montagu's) rock pipit.—*Wm. R. Fisher; Great Yarmouth, January 15, 1844.*

Correction of a previous note on the Pied Wagtail. In a note on *Motacilla alba*, which appeared in the June number, (Zool. 188), I have mentioned three specimens as having been taken at Falmouth: this is a mistake. The first (as there stated) is a fine specimen of the continental bird, in good plumage; but the other two (young birds in immature plumage), afterwards proved to be varieties of *M. Yarrellii*. I think it right to correct this error, although it is of little importance, as several individuals of *M. alba* were seen about that time.—*James J. Trathan; Falmouth, January 3, 1844.*

Note on the Pied Flycatcher. Mr. Hewitson, in his pretty work on bird's eggs, states that *Muscicapa atricapilla* is most abundant in the lake district. I may perhaps be allowed to add, it is rather plentiful in Wharnccliffe-wood, near this town; it is exceedingly local, only being found in a space of fifty or sixty acres of venerable oak trees, near some fish-ponds; the trees are a good way apart: here alone it is found, never, so far as I know, frequenting the thick wood. The males arrive the first; they are continually fighting about the tops of the trees: on the arrival of the females they take possession of the lower branches, from which they make frequent sallies after passing insects. The nest is built in a hole of a tree. An adult male was shot a few years ago in a meadow near the town, and the same year I observed a young bird in our garden. This species is said to be fond of the vicinity of water; in the two former localities this holds good, but not in the latter. I have specimens from Studley-park, near Knaresboro', where it is said to be pretty abundant.—*John Heppenstall; Upperthorpe, near Sheffield, December 24, 1843.*

Note on the occurrence of the Rose-coloured Pastor at Thetford. A female specimen of this bird (*Pastor roseus*) was shot at Thetford in September last. It had perched on a tree in one of the church-yards, and is now preserved in the possession of Mr. Reynolds, a bird-stuffer of that place. He tells me he never heard of its occurring there before. The head and neck are glossy black, but have not the green and violet reflections of the male bird; there was a slight violet reflection, but very faint: feathers on crown very elongated. Back, rump, breast and belly dirty white, with *very faint* shades of rose red: under tail-coverts and thighs black, beak and legs dark brown.—*Frank Clifford, December 29, 1843.*

Note on a singular noise made by a Sparrow. I have more than once heard the singular noise made by the house-sparrow, noticed by the Rev. A. Hussey in the December number of 'The Zoologist,' (Zool. 353). The first time I heard it was about two years ago. My attention was attracted by a strange note which proceeded from a bird in an apple-tree, which tree I cautiously approached, fully expecting to discover some *rara avis*. In this, however, I was disappointed, for after carefully scrutinizing every branch, I could discover nothing but some sparrows: and feeling pretty sure that no bird had flown from the tree since I heard the sounds, and being unable to discover any cause from which they were produced, not suspecting at all that so common a bird as a sparrow was in reality the author of this unknown noise, I began to think it was *vox et præterea nihil*. But hearing it repeated, it struck me it must have proceeded from the sparrows. After watching them for some little time, I presently heard the noise again, and this time I was fortunate enough to detect an old cock sparrow in the

act. He appeared at the moment to be in a state of considerable excitement; his head was stretched out almost on a line with his back, his wings and tail were fluttering, and he was evidently under the influence of some passerine emotion. My impression at the time was, that the sounds (which appeared to me to be a sort of buzzing croak) proceeded from the throat of the bird, but I might be mistaken. I have heard the same sounds once or twice since, but have not again been able to see the bird in the act of emitting them, although I knew that sparrows were the authors of them, as they were the only birds I could see in the trees from whence the sounds proceeded. From the attitude of the bird in question, and his whole gestures, I am inclined to think the sounds must have been used as a sort of love-note. But then the question arises, if it be so, why do we not hear it more frequently? And this, I confess, I am unable to answer.—*J. Pemberton Bartlett; Kingston Rectory, December 4, 1843.*

Note on the Bullfinch breeding in confinement. The bullfinch, though naturally of a shy disposition, readily becomes tame in confinement. In the spring of 1837, a pair of these birds, which had been caged some months, were observed eagerly picking up moss and hair in the room in which they were accustomed to fly loose, and on their being furnished with materials, speedily constructed a nest, chiefly of fibrous roots, similar to that of the bullfinch in a state of nature. The female laid five eggs, from which three young birds were hatched: they appeared to thrive well for ten days, the old birds feeding them regularly on egg boiled hard, but at the end of that time they suddenly forsook them, perhaps from the want of insect food. In consequence of this desertion, two of the young birds died, but the third was saved, being brought up in a nest of young canaries. At an early subsequent period of the same year, the female again laid five eggs in the same nest, but soon deserted them.—*E. E. B.;* Leyton, Essex.*

Tame Pigeons perching in trees is by no means uncommon; it is usually the young birds that take this position, and I think it is for sport, as they frequently chase one another along the boughs, although not very elegantly.—*John Heppenstall; Uppertorpe, near Sheffield, December 20, 1843.*

Anecdote of the Dovecot Pigeon. Some years ago a male dovecot pigeon, the sole survivor of a small colony which had inhabited a pigeon-hutch fastened against one of the walls of an out-building, took up his abode during the winter season in the kitchen of the public-house which stands close to the sea-bank at Ingoldwells in Lincolnshire. He was perfectly tame and familiar, feeding off the table, or warming himself before the fire, and passing the nights in the apartment, and in fact making himself very happy and contented. When spring arrived, however, he disappeared for a brief space, but shortly returned with a female of his own species, and the pair took possession of the neglected pigeon-hutch on the wall, where they reared their young. After the season of incubation, they took their departure, but at the approach of winter the male bird returned alone, and again commenced his life of single blessedness in the inn kitchen, as free and familiar, and doubtless as welcome, as before. On the return of spring, he again disappeared, and it seems exerted his seductive powers successfully in inducing the same or another female to return with him. Again they took up their abode in the deserted pigeon-hutch—again reared their young broods—again at the same time departed—and with winter the old male bird again resumed his favourite hibernal quarters. This was repeated several seasons, until at length, it is probable,

* Communicated by J. Gurney Barclay, Esq.

some accident had befallen him, for after one of these periodical migrations, he returned no more.—*J. F. Dawson; Ventnor, I. W., December 9, 1843.*

Note on the Food of the Ringdove. In an article on the benefit and injury accruing to agriculture from birds, by Mr. Archibald Hepburn, that gentleman observes of the ringdove (Zool. 372) that he hopes to be able to add to the list of benefits it confers on the farmer. I beg leave to state that in the Roothings of Essex this bird performs signal service by eating great quantities of the seeds of charlock (*Sinapis arvensis*), which plant is a serious nuisance in that part of the country, sometimes almost smothering the crop of barley, and after harvest the seeds lie astonishingly thick upon the ground. I have frequently shot the ringdove with its crop completely distended with these seeds, and I should think I have taken a quarter of a pint from one bird.—*Alfred Greenwood; Penzance, December 21, 1843.*

Note on a Guinea-hen's Eggs being found in a Partridge's Nest. I was informed lately by a friend who resides in this neighbourhood, of the following curious circumstance which came under his own immediate observation. The nest of a partridge was found on his grounds, not very far from the house, in which a guinea-hen had laid three eggs, and which the partridge had commenced sitting on, with her own usual number, when, most unfortunately, the nest was disturbed, and I believe the eggs destroyed. Had not the nest been disturbed, there was every probability of the partridge's hatching the stranger eggs.—*John Pemberton Bartlett; Kingston Rectory.*

Enquiry respecting Montagu's Snipe and the Roseate Tern. Permit me to enquire through the medium of 'The Zoologist,' whether the following birds, namely, Montagu's snipe (*Scolopax Montagui*) and the roseate gull (*Rossia rosea*) are British? They are included in Mr. Doubleday's 'Nomenclature of British Birds,' but Mr. Yarrell does not mention them in his excellent work just completed.—*F. E. Thomas.*

[With regard to the snipe, I can only say that it appears from the Prince of Musignano's Catalogue, that that author considers the great snipe of Montagu as distinct from the *Scolopax* (or *Gallinago*) major, figured in Gould's 'Birds of Europe,' plate 320, and has called it *Gallinago Montagui*, but Mr. Yarrell considers them only variations of plumage arising from the age of the bird. I can give no opinion of my own from the few opportunities I have had of examining the birds. With regard to the gull (*Rossia rosea*), I was informed a specimen had been shot on the coast of Ireland, but I believe the information was erroneous.—*H. Doubleday.*]

Note on the occurrence of the Stilt Plover in New South Wales. I do not know whether it is generally known that this rare British bird is also an inhabitant of New South Wales; it may therefore perhaps be worth mentioning that I have just received specimens from a friend who lately returned from that distant country.—*T. Mansell; Farnham, November 3, 1843.*

Notes on the occurrence of the Bones of enormous Birds allied to the Ostrich, in New Zealand. At a late meeting of the Zoological Society, Professor Owen read a paper on *Deinornis*, an extinct genus of tridactyle Struthious birds, the remains of which have been discovered in considerable abundance in the muddy banks of the fresh-water streams of the North Island of New Zealand. The first notice of this genus which embraces species far surpassing in size that most gigantic recent bird—the Ostrich, appeared in the Society's Proceedings for November, 1839, and the Memoir read by Prof. Owen at the meeting of that date, was subsequently published in the Society's Transactions, with a figure of the shaft of a femur, from the examination of which he came to the conclusion that there formerly existed in New Zealand a gigantic Stru-

thious bird, heavier and more sluggish than the ostrich. By means of specimens afterwards transmitted by the Rev. Wm. Williams to Dr. Buckland, Prof. Owen was enabled to define, in the Proceedings for January, 1843, the characters of the *Deinornis*, as afforded by the bones of the hinder extremity. On a second and more extensive collection sent by Mr. Williams, to which have been added three additional bones, confided to Prof. Owen by Dr. Richardson of Haslar, the author of the paper establishes five distinct species, differing much in size, and, to a considerable degree, in their proportions. The largest of these the Professor estimates to have been about ten feet in height, and the smallest about equal in bulk to the common bustard; the three others were of intermediate sizes, and from resemblances in size or proportions to other species of *Struthionidæ*, have respectively been named by Prof. Owen, *Deinornis struthioides*, *D. didiformis* and *D. dromæoides*. To the largest species the specific name *giganteus* is applied, and to the smallest that of *otidiformis*. Fifty bones, including five pelves more or less perfect, five vertebræ, eighteen femora, eleven tibiæ, six tarso-metatarsi and five phalanges are carefully described in the paper, and referred to one or the other of the five species. The bones alluded to in the paper were laid before the members, together with diagrams in illustration of the subject. Some recent bones of the ostrich were also exhibited, upon which the Professor pointed out the differences indicative of the young and adult states of that bird; and he afterwards called attention to similar differences in certain bones of *Deinornis*. The species of *Deinornis*, there can be little doubt, possessed only very rudimentary wings.—*G. R. W.*

Note on the occurrence of the Spoonbill at Lynn. The north-west winds which blew about the 23rd of 9th month last, brought over a spoonbill, which was shot.—*Daniel C. Burlingham; Lynn, 1st of 11th Mo., 1843.*

Note on the occurrence of the Scoter, near Farnham. A specimen of this rare duck was shot on a pond near the canal on the 2nd of November: it has very rarely been seen in this neighbourhood, indeed it is far inland for it to come.—*T. Mansell; Farnham, November 3, 1843.*

Note on the Black-headed Gull. I have much pleasure in confirming Mr. Jerdon's remarks (*Zool.* 246), as to the insectivorous habits of the black-headed gull (*Larus ridibundus*). In the warm summer evenings of June and July, they may be seen in great numbers hawking for moths in the fields and meadows; and I have frequently heard their cry above head at all hours of the night, when they were returning from their feeding-grounds. They may also, as Mr. Jerdon remarks, be seen wheeling around trees, picking up the moths. They prefer, however, meadow ground by a river's side for this purpose, because there the ghost moth (*Hepialus Humuli*) is found in greatest plenty. It is amusing to see a number of gulls all engaged at the same time in the pursuit of the ghost moth, which, from its hovering manner of flight, is easily captured. It is rather a singular circumstance that the nocturnal *Lepidoptera* should form, during the breeding season, a considerable proportion of the ordinary food of a natatorial bird.—*Wm. Brown; Dunse, November 13, 1843.*

Note on the change of Plumage in the Northern Diver. An adult specimen of the northern diver (*Colymbus glacialis*) was picked up dead, after some stormy weather last November, on the beach between Penzance and Marazion. Upon dissection there was found in its intestines, near the vent, a calculus larger than a duck's egg, and of the weight, when nearly dry, of $3\frac{1}{2}$ ounces, which, upon fracture, exhibited an appearance as if it had been deposited in successive layers or strata: this, no doubt, had some

counnexion with the death of the bird. The back of this bird is adorned with the beautiful markings of black and white which characterize the species, but upon close examination, dark slate-coloured young feathers, beginning to cover the black and white ones, are discernable: the chin and throat are mottled with black and white, nearly concealing the upper band on the neck, but the lower one is very conspicuous. The bird has been set up by that excellent artist Mr. Vingoe of this town, and is certainly a splendid specimen, and in the best state of plumage of any bird of the kind remembered to have been procured here. Ornithologists do not tell us that the fine black and white plumage of *Colymbus glacialis* is peculiar to the summer season; but from the appearance of the bird under notice (its neck having young white feathers, and its back young slate-coloured ones appearing), I am strongly inclined to suspect that such is the case, and that this species invariably assumes, or partially assumes in the winter the plumage of the imber or young bird. The lateness of the change in the present instance might be accounted for by the weakly state of the bird having delayed its autumnal moult. The same observation as to change of plumage in winter, might be made regarding the black-throated diver (*C. arcticus*); and even with respect to the red-throated bird (*C. septentrionalis*), authors seem at variance as to whether it does or does not lose its red throat in the winter. Might I request information on the subject from some of your numerous correspondents? — *Alfred Greenwood; Penzance, December 21, 1843.*

Two Fulmar Petrels, taken twenty miles out at sea, were brought here on the 18th of December. These birds are seldom found so far south. — *Wm. R. Fisher; Great Yarmouth, January 15, 1844.*

A word on Nomenclature. The inconvenience arising from the diversified nomenclature of British birds has become so great as really to present a formidable difficulty in conducting 'The Zoologist.' I allude not simply to technical names—the order, genus and species—but also to the English names. In an early number I shall recur to the subject, and in the mean time solicit advice.—*Edward Newman.*

"Table showing the period of Arrival of several Summer Birds of Passage, in the neighbourhood of Twizell-house, for the last twenty years. By P. J. SELBY, Esq., of Twizell-house.*

"The annexed table, showing the period of arrival of several of our summer birds of passage, in the immediate neighbourhood of Twizell, for upwards of twenty years, is taken from such entries as I had made each year, as the various species came under my personal observation. Imperfect as this table may probably appear to the members of the Club, I may be allowed to remark, that in many cases where the entries seem to be the most deficient, this has not always arisen from neglecting to record or watch the first appearance of a species, but from other and various causes. Thus, the non-appearance of a particular bird for one or more seasons within the limits of my observations, prevented an entry, as did also the absence of any species from the precincts of Twizell, till a period considerably posterior to its known presence in other localities,

* Extracted from the 'Proceedings of the Berwickshire Naturalists' Club,' which have been obligingly forwarded to us. We could wish to see associations of this kind established throughout the Kingdom.—*Ed.*

within a short distance or in the same parallel of latitude. Absence from home at the time of arrival also occasionally prevented the registration of some of the birds enumerated. As examples of birds which seem to have deserted the district, or which are now but rarely met with, are the *Locustella avicula*, grasshopper warbler, the *Hirundo urbica*, window-swallow or martlet, and the *Saxicola rubetra*, whin-chat. The first, some twenty-five years ago, used to be common, I may almost say plentiful, about Twizell. This was when the plantations were young, with an abundance of thick herbage and an undergrowth of whin, broom, &c., a cover congenial to the retired habits of this curious little bird. As this undergrowth died out and gave way to the growth of the forest trees, the grasshopper warbler gradually forsook the locality, and it is now a bird of very rare occurrence, and for the last few years has only been heard occasionally at a distance on the verge of the moors to the west of Twizell, where the ground still remains favourable to its habits. The martlet is also now rarely seen at Twizell on its first arrival, or during the breeding season, though it formerly had its clay-built tenements in the angle of almost every window of the house, and beneath the eaves of the stables and other out-houses. Its desertion I also attribute to the change produced by the growth of the large body of plantation around the house, for open districts are the favourite resort of this species, as is shown by the multitudes which select, as breeding places, the eaves and windows of houses in open exposed districts, the rocky precipices of the sea-coast, as about St. Abb's Head, or those of the interior, as I observed to be the case in Sutherland, where the limestone or marble cliffs near Inch-na-Damff are annually visited by large colonies of martlets.

“To the whin-chat (*Saxicola rubetra*), which is annually becoming less frequent in this neighbourhood, I may add the sedge-warbler (*Locustella Phragmitis*), the white-throat (*Sylvia cinerea*), and the cuckoo (*Cuculus canorus*). The gradual desertion of this species, I think may chiefly be attributed to the great change that has taken place in the features of this northern district within the last twenty or thirty years, in consequence of the improved system of agriculture that has been pursued, and under which the draining and reclaiming of marshy and waste pieces of ground has been so generally effected. Many of our members can no doubt recollect when bogs of greater or less extent, and pieces of ground covered with natural herbage and low brushwood, were to be seen in almost every direction, I might say in almost every field; these, however, have now vanished under the spirit of improvement, and their loss, though no doubt considered a gain by the agriculturist, is, I believe, not unfrequently regretted by the botanist and the ornithologist, as it was in these favoured spots that the one was wont to pull the rarest gifts of Flora, and the other to listen to the various notes, or watch the habits of some of the most interesting of our feathered visitants.

“An inspection of the table will show that a considerable difference takes place in the period of arrival of the various species in different years; this however may always be traced to the advanced or retarded state of the season, as the migratory flight seems in a great measure regulated by the state of vegetation; thus I have observed that the arrival of the willow-wren and blackcap may be expected with the first southerly wind, as soon as the larch becomes visibly green, and that of the wood-wren with the first bursting of the buds of the oak and beech. In some seasons the arrival of the earlier visitants is found to be at the usual or average period, whilst that of the later comers is postponed considerably beyond it; this always happens when the spring has been favourable to the first, but has been succeeded by cold and ungenial weather about the time the flight of the latter should have taken place.

“Table showing the Period of the Arrival of several of our Summer Birds of Passage, as observed in the immediate neighbourhood of Twizell House.

YEARS.	Wheat-eat.	Lesser Pety-chaps.	Willow-wren.	Wood-wren.	Black-cap.	Greater Pety-chaps.	Comm. White-throat.	Sedge Warbler	Grass-hopper Warbler	Whit-chant.	Swallow	House-Martin.	Sand Martin.	Swift.	Cuckoo.	Tree Pipit.	Pied Wagtail.	Grey Wagtail.	Sand-piper.
1816	April 19	April 24	.....	.....	.....	.....	.....	.....	May 2	April 15	May 16	April 18	.....	April 27	.....	.....	.....	.....
1817	April 8	.....	28	.....	.....	.....	.....	May 5	.....	21	.....	.....	.....	.....	May 5	.....	.....	.....
*1819	1	April 11	.....	18	.....	.....	.....	.....	April 24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1823	13	21	May 2	.....	May 6	May 6	.....	April 29	April 28	May 2	April 25	May 8	.....	April 27	.....	.....	.....
+1824	18	.....	.....	.....	.....	.....	.....	.....	.....	April 20	.....	.....	.....	.....	.....	.....	.....
1825	April 5	8	April 13	April 29	April 26	.....	April 30	April 29	.....	April 15	.....	April 30	.....	.....	April 28	Mar. 8	Mar. 10	April 30
†1828	1	.....	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1831	11	.....	April 10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1832	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1833	23	.....	April 25	May 15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1834	18	May 2	18	10	April 27	May 7	.....	27	.....	.....	.....	.....	.....	.....	.....	.....
1835	20	.....	.....	.....	.....	.....	.....	27	.....	.....	.....	.....	.....	.....	.....	.....
1836	24	.....	.....	.....	.....	.....	.....	27	.....	.....	.....	.....	.....	.....	.....	.....
1837	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1838	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1839	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1840	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1841	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1842	26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1843	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

The other visitants all earlier in their arrivals by a week or ten days.

In the above table the dotted time ... indicates that the arrival of the bird against which it is placed was not observed.

* Entries for 1820, 1821, 1822, lost.

+ Between April 20th and May 1st, all the other visitants, with the exception of the Swift, Flycatcher, and Goshawk, had been observed.

‡ No returns to be found for 1826 and 1827.

A Fauna of Shetland. By THOMAS EDMONSTON, JUN., Esq.

I BELIEVE there is no district which, to the out-of-door naturalist, affords a more varied and attractive field than the Shetland Islands. And to those especially who delight in observing birds — their different habits, migration and nidification, — these lone islands of the Northern Atlantic afford numerous facilities.

In different publications I believe nearly all the animals of Shetland are enumerated, but I am not aware of there being any complete connected list of them. To supply this deficiency, I have drawn up the following, in which all the species known to me are enumerated.

BIRDS.

Common buzzard, *Buteo vulgaris*. Resident, but not common. A few pairs breed in the higher cliffs.

Golden eagle, *Aquila Chrysaëtus*. Apparently very scarce, and I do not know if it ever breeds; probably only a straggler.

Erne or sea eagle, *Haliaetus albicilla*. Breeds in a few of the most inaccessible precipices, as in Unst, Ronas hill, Foula, &c.

Osprey, *Pandion Haliaetus*. Appears only as a straggler. Last spring three or four individuals frequented the Bay of Bunafirth in this island, for some weeks, fishing in the sea; and a few years ago a pair were seen in the same place at the same season, but I could not ascertain if they remained to breed.

Kite, *Milvus regalis*. A straggler; two individuals have occurred to myself.

Iceland falcon, *Falco Gyrfalco*. A straggler: I have seen two fine specimens killed in this island, and one or both are now I believe in the Edinburgh College Museum.

Peregrine falcon, *Falco peregrina*. The most generally distributed of our larger rapacious birds. Breeds in cliffs.

Merlin, *Falco Æsalon*. A straggler.

Kestrel, *Falco Tinnunculus*. Resident and not very rare.

Goshawk, *Accipiter Palumbarius*. Rare, but I believe occasionally breeds.

Sparrow-hawk, *Accipiter Nisus*. Not common.

Hen harrier, *Circus cyaneus*. Not common, and I do not know if it ever breeds.

Snowy owl, *Syrnia nyctea*. Resident, and not *very* rare in this island; said to breed, and its nest is reported to have been found on a low cliff not far from this place. Frequents barren and stony hills,

but descends in the evening to the cultivated grounds, in search of mice and small birds, on which it preys; it also frequents rabbit-warrens. Young reported to have dusky brown markings, such individuals are frequently seen in winter, (vide Dr. L. Edmonston in Werneian Memoirs).

Great eagle owl, *Bubo maximus*. Said to have been seen in this island.

Short-eared owl, *Brachyotus palustris*. Sometimes seen in spring.

White screech owl, *Strix flammea*. A straggler.

Swift, *Cypselus Apus*. A straggler.

Swallow, *Hirundo rustica*.

House martin, *Hirundo urbica*. Both these species regularly visit us in spring, but in small numbers, and do not remain to breed.

Night-jar, *Caprimulgus europæus*. An individual of this species, very much emaciated, and which died shortly afterwards, was caught in June this year in this island. Another was seen a few days afterwards, and one individual has occurred to Mr. Dunn.

Common roller, *Coracias garrula*. One instance occurred some years ago.

Grey fly-catcher, *Muscicapa grisola*. Not common.

Raven, *Corvus Corax*. Resident and common.

Rook, *Corvus frugilegus*. Sometimes seen in spring with the following species.

Carrion crow, *Corvus Corone*.

Hooded crow, *Corvus Cornix*. Very common.

Jackdaw, *Corvus Monedula*.

Magpie, *Pica melanoleuca*. Both stragglers.

Jay, *Garrulus glandarius*. A rare straggler.

Rose-coloured pastor, *Pastor roseus*. I observed one of these beautiful birds in April last, associating with its relations the starlings. It was very shy, and I always failed in getting near enough to shoot it.

Starling, *Sturnus vulgaris*. Very common at all seasons, breeding in caves, crevices of rocks &c., generally near the sea; it congregates in large flocks after the breeding season. The young are of a uniform dingy grey colour, and in this state have been termed the solitary thrush (*Turdus solitarius*). They assume the plumage of maturity at the first moult.

Blackbird, *Turdus Merula*. Solitary individuals occur in early spring.

Fieldfare, *Turdus pilaris*. Small flocks sometimes rest on their way southwards in spring, as also does the following species.

Redwing, *Turdus iliacus*.

Missel-thrush, *Turdus viscivorus*. I shot two birds out of a flock of sixteen last May : it seems only an occasional visitant.

Redbreast, *Dandalus rubecula*. A straggler.

Wheatear, *Saxicola Cenanthe*. An abundant summer visitant ; it arrives generally in March, and departs about the middle of September, but some of the young birds linger till the 1st of October.

Willow wren, *Phyllopneuste Trochilus*. I obtained a specimen about the middle of April last, but it occurs only as a straggler.

Gold-crested kinglet, *Regulus auricapillus*. Seems to be resident but is scarce.

Common wren, *Troglodytes europæus*. Resident and common.

Pied wagtail, *Motacilla Yarrellii*. Occasionally breeds here but leaves us in autumn.

Grey wagtail, *Motacilla Boarula*. A few pairs breed.

Anthus sp.? I believe two, three, or more species of this genus are resident in Shetland, but I have not yet sufficiently investigated the genus to name them.

Skylark, *Alauda arvensis*. Common, but chiefly leaves us in winter, very few individuals being seen at that season.

Corn bunting, *Emberiza Miliaria*. Common in large flocks during winter, a few pairs remain to breed.

Snow bunting, *Plectrophanes nivalis*. A winter visitant ; the earliest individuals I have seen were on the 16th of September in this year, generally they are not seen till the 1st of November : they continue in straggling flocks until the beginning of May.

Chaffinch, *Fringilla cœlebs*. A winter visitant, but rare.

Goldfinch, *Carduelis elegans*. An irregular winter visitant.

Brown linnet, *Linota cannabina*. A winter straggler.

Mountain linnet or twite, *Linota montium*. Resident and very common. This species supplies the place of the preceding in Shetland : it is very destructive to corn in winter, and to turnips, cabbages, &c. in summer. As soon as the latter plants appear above ground, the bird pulls them up and nips off the seed-leaves, and the field remains strewn with the fragments of the young plants. I have often shot them in this act, and found their crops stuffed to the throat with the seed-leaves of Cruciferæ. This destructive propensity in the twite, renders regular watching of the turnip-fields during the two or three days the plants are coming up, absolutely necessary. I am not aware of any other bird that has this peculiar habit. The twite collects in very large flocks in winter ; I have killed eighty at three successive

shots — twenty at the first, sixteen at the second, and forty-four at the third.

Grosbeak, *Coccothraustes vulgaris*. A rare winter straggler.

Greenfinch, *Chlorospiza Chloris*. A winter visitant.

Sparrow, *Passer domesticus*. Resident and common.

Crossbill, *Loxia curvirostra*. A rare straggler.

Bullfinch, *Pyrrhula vulgaris*. A straggler.

Hoopoe, *Upupa Epops*. A small flock appeared here some years ago, in the beginning of January.

Common cuckoo, *Cuculus canorus*. Two or three individuals have occurred at different times.

Rock dove, *Columba Livia*. Abundant at all seasons, breeding in caves by the sea-shore.

Ring dove, *Columba Palumbas*. A rare straggler.

Heron, *Ardea cinerea*. Resident and not rare.

Bittern, *Ardea stellaris*. A straggler: I observed an individual in this island last spring.

Crane, *Grus cinerea*. A flock was seen in the parish of Tingwall during the harvest of 1807.

White stork, *Ciconia alba*. One was shot a few years ago.

Water-rail, *Rallus aquaticus*. A rare straggler.

Corn-crake, *Crex pratensis*. A summer visitant.

Coot, *Fulica atra*. An occasional visitant.

Avocet, *Recurvirostra Avocetta*. I observed an individual of this species a few years ago, in winter, associating with the whimbrel on the sea-shore.

Common curlew, *Numenius aquaticus*. Resident and abundant: it frequents the heaths in the breeding season, and the sea-shore in winter.

Whimbrel, *Numenius Phæopus*. Resident; habits as in the last.

Redshank, *Totanus Calidris*. A scarce winter visitant.

Greenshank, *Totanus Glottis*. Occurs in winter but is rare.

Woodcock, *Scolopax rusticola*. Two individuals have occurred to me in March, and it has been killed in this island.

Snipe, *Scolopax Gallinago*. Resident and common.

Jack snipe, *Scolopax Gallinula*. Abundant in winter.

Bar-tailed godwit, *Limosa rufa*. An irregular winter visitant.

Red coot-foot, *Lobipes hyperboreus*. A rare winter visitant; it breeds in Orkney.

Spotted sandpiper, *Actitis macularia*. I have twice observed it in winter.

Common sandpiper, *Actitis hypoleucos*.* A winter visitant.
 Dunlin, *Tringa variabilis*, and
 Purple sandpiper, *Tringa maritima*. Both common at all seasons.
 Little sandpiper, *Tringa minuta*. Breeds on the margins of some
 of the small lakes in this island.

Knot, *Tringa Canutus*. Resident but not common.

Turnstone, *Streptilas interpres*. Resident.

Lapwing, *Vanellus cristatus*. Breeds in a few places, but is not
 common.

Long-legged plover, *Himantopus melanopterus*. A bird of this
 species was observed some years ago by my father, associating with
 a flock of the following species.

Golden plover, *Charadrius pluvialis*. Breeds on exposed moors,
 congregating in immense flocks in spring and autumn, but especially
 at the latter season: a few remain on the sea-shore and on the moors
 during winter.

Ringed plover, *Charadrius Hiaticula*. Resident and common.

Sea pie, *Hematopus Ostralegus*. A summer visitant, arriving in
 the beginning of March, and departing at the end of September.

Velvet scoter, *Oidemia fusca*. An uncommon winter visitant.

Eider duck, *Somateria mollissima*. Breeds on some of the smaller
 uninhabited islets or *holms*.

King eider, *Somateria spectabilis*. Sometimes seen: it breeds in
 Orkney.

Golden-eye, *Clangula chrysophthalma*. Appears to breed here, as
 I have killed it in summer: abundant in winter.

Long-tailed duck, *Harelda glacialis*. Common in sheltered bays
 in winter; it arrives about the middle of October, and continues in
 small flocks till the end of April.

Pochard, *Nyroca ferina*. A winter visitant.

Scaup duck, *Nyroca marila*. Sometimes seen in winter.

Tufted duck, *Nyroca fuligula*. A straggler.

Common stock duck, *Anas Boschus*. Resident; it breeds near
 lakes, and frequents the sea-shore in winter.

* [I should think there must be an error about these birds, as *Actitis hypoleucos* is
 a common *summer* visitant to Europe, retiring southwards with the rest of the migra-
 tory birds in autumn, and is not likely to occur in Shetland in winter: and *A. macu-*
laria is an American species, said to have been killed a few times in Europe, and is
 the representative of our *A. hypoleucos*, frequenting fresh water during summer, in the
 United States.—*H. Doubleday*].

Wigeon, *Anas Penelope*. Sometimes appears in flocks during winter, especially in long snows.

Garganey, *Querquedula Circia*. Resident, breeding near lakes.

Teal, *Querquedula Crecca*. Resident, but not common.

Hooper, or wild swan, *Cygnus ferus*. Frequently rests in small flocks on our lakes, in the passage northward in spring, and southward in September and October.

Grey goose, *Anser palustris*. Flocks sometimes appear in spring.

Bean goose, *Anser segetum*. A winter visitant.

Brent goose, *Anser Brenta*. An irregular winter visitant.

White-fronted goose, *Anser albifrons*. Stragglers sometimes occur during the winter months.

Goosander, *Mergus Merganser*. A winter visitant, breeding in Orkney.

Red-breasted goosander, *Mergus serrator*. Common in sheltered bays in winter, and a few pairs breed among the more sequestered islands.

Cormorant, *Phalacrocorax Carbo*. Common.

Shag or green cormorant, *Phalacrocorax cristatus*. Common. Whether the "crested shag" of the Bass rock, figured by Bullock in his illustrated catalogue, be the *Carbo cristatus* of Temminck or not, the figure referred to evidently represents the common shag, in adult summer plumage.

Razor-bill, *Alca Torda*. Common in summer, breeding with *Uria Troile* on shelves in the cliffs. Young birds constitute the black-billed auk (*Alca Pica*) of authors.

Puffin, *Fratercula arctica*. Breeds in immense numbers in grassy parts of the precipices, where it burrows and deposits its egg. It generally arrives about the 1st of April, and departs constantly on the 23rd of August. This year a flock was seen a week later than the above-mentioned time; an unprecedented occurrence, for the puffins are generally as regular as clock-work in their departure.

Rotche, *Mergulus melanoleucos*. A regular winter visitant, but shy and scarce.

Foolish guillemot, *Uria Troile*. Arrives and departs at the same time as the razor-bill.

White-winged guillemot, *Uria Grille*. Resident and very common.

Crested grebe, *Podiceps cristatus*. An occasional visitant.

Eared grebe, *Podiceps auritus*. Solitary individuals sometimes seen.

Little grebe, *Podiceps minor*. A rare winter visitant; it appears stationary in Orkney.

Great northern diver, *Colymbus glacialis*. Resident, and seems to breed; old birds seen chiefly in winter, young frequent in winter: very tenacious of life and shy.

Red-throated diver, *Colymbus septentrionalis*. Breeds on the more inland lakes. The difference between this and the black-throated diver (*C. arcticus* of Linnæus) appears merely sexual; but the difficulty of procuring specimens, owing to the shyness of the bird, prevents my speaking confidently on the subject.

Gannet, *Sula bassana*. Seen at all seasons, but does not breed.

Fulmar, *Procellaria glacialis*. Occurs at all seasons around the islands, but seldom approaches the land: does not breed it Shetland.

Stormy petrel, *Procellaria pelagica*. Resident, and breeds in stony beaches.

Manx petrel, *Procellaria Puffinus*. A summer visitant; it arrives sometime in May, but I am not able to ascertain the exact time either of its coming or departing. It breeds in deserted rabbit-burrows in the cliffs.

Burgomaster, or great Iceland gull, *Larus glaucus*. A regular winter visitant, arriving in September and departing in April. It sometimes frequents the bays in large flocks, but is more frequently seen in pairs, or solitary individuals associating with their congeners.

Lesser Iceland gull, *Larus Islandicus*. A rare winter visitant.

Black-backed gull, *Larus marinus*. Resident.

Yellow-legged gull, *Larus fuscus*. Very abundant in summer; it breeds in moors &c., not in cliffs.

Herring-gull, *Larus argentatus*. Resident and common, breeding in cliffs.

Common gull, *Larus canus*. Resident.

Kittiwake, *Larus Rissa*. A summer visitant, breeding in immense numbers on some of the higher cliffs. It arrives at the end of February or the beginning of March, and departs towards the end of August. A few birds remain during the winter; these differ from the summer state in having the back of the head, and a spot behind each ear, pale greyish blue; in this state the kittiwake is vernacularly termed "*craa-maa*," or crow-gull, it is also called "*yeeld*" (or barren) kittiwake. My father was once inclined to consider it distinct, and named it *Larus Corvus*, (Ed. Phil. Journ. viii. 99).

Black-headed gull, *Larus ridibundus*. Not rare; breeds about fresh water.

Ivory gull, *Larus eburneus*. One individual was killed in December, 1822, near Baltasound, (Wern. Mem. iv. 501); and another spe-

cimen, which I had an opportunity of seeing when fresh, was killed some years ago.

Common tern, *Sterna Hirundo*. Breeds in low islands.

Black tern, *Sterna fissipedes*. I observed one a few years ago.

Skua gull, *Lestris Cataractes*. Breeds on a few remote moors: Hermaness in Unst, Ronas hill in Northmarm, and the island of Foula, are, I believe, the only places.

Richardson's skua, *Lestris Richardsonii*. Breeds with the preceding, but is much more common. A very curious anomaly prevails with regard to the colouring of the plumage. Birds are found indiscriminately breeding together, of a uniform blackish brown colour, quite resembling, in this respect, *Larus Cataractes*; and others having the under parts, throat and cheeks yellowish white. This difference in colour is apparent when the young birds are in the nest; and the parents may be both black, or both of the other kind, or one of the black and one of the white-bellied variety, and the young will be either two black, two white-bellied, or one of each indiscriminately. I have seen two black young birds in the nest of two white-bellied. I have shot, dissected, and domesticated many individuals, without obtaining any clew to this singular anomaly; the two varieties being precisely similar in every particular but that of colour.

The above catalogue shows sixty-two land-birds and seventy-five water-birds, making altogether one hundred and thirty-nine birds, resident, migratory and stragglers. About fifty-nine species breed in Shetland, the remainder being only seen in winter, or as irregular visitants.

It seems strange that no wild gallinaceous birds are found. The absence of wood, and extensive cultivated grounds, debar the pheasant and partridge, and sufficiently extensive and abundant heath is in most instances wanting, for the shelter and maintenance of the red grouse; but I am strongly inclined to think that our lonely hills, scantily covered with heath and ling, would, in many instances, afford eligible situations for the grey ptarmigan: the experiment of introducing this bird has not, however, so far as I am aware, been tried. The brown ptarmigan, or red grouse, is not uncommon in the neighbouring islands of Orkney, which also possess the king eider, the red phalarope and dabchick grebe, birds rarely found with us.

The birds sought after by the sportsman are, however, not few in Shetland. Several kinds of wild geese and ducks, the noble and majestic hooper, rock pigeons, the curlew and whimbrel, the vast flocks

of ringed and golden plovers, great abundance of snipes, plenty of small game, as starlings and wheatears, — would furnish work for many barrels; not to speak of the multitudes of sea-fowl. On the whole, the scientific ornithologist, as well as the mere sportsman, will find both a varied and extensive field in *Ultima Thule*.

I shall conclude with a list of the arrivals and departures of our summer birds, as far as I have been able to ascertain them; the arrivals and departures of our winter species shall also be communicated to 'The Zoologist.'

	ARRIVES.	DEPARTS.		ARRIVES.	DEPARTS.
Kittiwake	March 1	Aug. 20	Puffin	April 3	Sept. 1
Wheatear	March 7	Sept. 28	Skua gull and Lestris		
Sea Pie	Febr. 22	Octo. 3	<i>parasiticus</i>	April 20	Sept. 1
Guillemot and Razor			Yellow-legged gull...	April 3	Sept. 20
bill.....	March 8	Aug. 20	Common tern	May 16	Sept. 14

The puffin almost always leaves on the 23rd of August.

I have not been able to ascertain the exact time of arrival or departure of the Manx petrel (*Procellaria Puffinus*), as this bird comes towards the shore very quietly, and is rarely seen during the day; it seems later in its arrival than any of those I have mentioned.

The Mammalia and fishes of Shetland will form the subject of another paper, and complete our vertebrate Fauna.

THOS. EDMONSTON, JUN.

Baltasound, Shetland, October 5, 1843.



The Edible Frog (*Rana esculenta*, Linn.)

The Edible Frog. Through the kindness of Mr. Gray we are enabled to present our readers with a figure of one of the edible frogs mentioned by Mr. Bond, in a late

communication to 'The Zoologist,' as having lately been taken in Cambridgeshire, and deposited in the British Museum (Zool. 393).

Note on the occurrence of Rare British Fishes. 1. The Smelt (*Osmerus operlanus*). "Two specimens have been taken in the Tweed during the present summer, both of which came into my possession.—*G. Johnson*." 2. "*Syngnathus Ophidion*, Yarrell, Brit. Fishes, ii. 447. I obtained this species in Embleton-bay during the summer.—*R. Embleton*. 3. "*Syngnathus Anguineus*, Yarrell, Brit. Fishes, ii. 445. Two specimens were taken in Berwick-bay in October, 1842; and in the same year the species occurred to Mr. R. Maclaurin, at Coldingham shore.—*G. Johnston*.—*Proceedings of the Berwickshire Naturalists' Club*, p. 78.

Notes on Lepidopterous Insects. By EDW. DOUBLEDAY, Esq. F.LS.

(Continued from page 198).

Genus.—HETERUSIA, *Hope*.

Soutia
Heterusia Risa. Above: anterior wings olive-green, with a broad transparent yellow fascia before the middle, margined, especially externally, with black, over which however numerous blue and green scales are sprinkled. Posterior wings pure yellow, the base slightly shaded with blue and black, the apex broadly deep black. Below: the yellow band of the anterior wings is much wider than above, and all the wings have a curved fascia along the outer margin, and the extremities of the nervures are glossed with blue. Head and thorax above, green, the latter tinged with blue towards the base. Abdomen above yellow, the base blue, the apex olivaceous, the sides with a row of black dots; below olive, the segments margined with whitish. Expanse of wings, 2 inches, 6 lines.

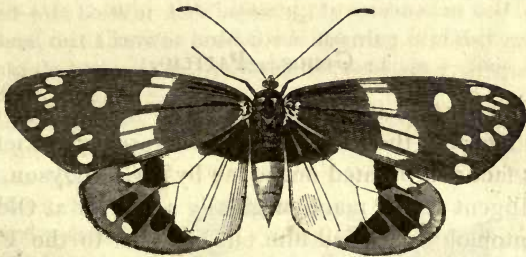
Inhabits Nepal. In the British Museum.

Pemang
Het. Edocla. Above: anterior wings nigro-fuscous or deep chocolate-brown, with an olive hue in certain lights, traversed before the middle by a broad, macular, whitish band, a spot at the base, one on the disco-cellular nervure, and nine others which form a flexuous series near the outer margin, also whitish. The nervures, where they traverse the macular band, are of a brilliant blue, and there is a more or less distinct shading of the same colour round all the markings. Posterior wings black, glossed with brilliant blue towards the outer margin and along the extremities of the nervures. The anterior margin

is pale, and there are four indistinct pale dots near the outer angle. Below : all the wings black, the markings as above but more distinct, especially the four pale spots of the posterior wings. The anterior margin of these wings wants the pale colour, but has a yellowish dot just within the discoidal cell. Antennæ black glossed with blue, head and thorax fuscous shaded with olive-green, the former with a tuft of brilliant blue scales between the antennæ, the latter glossed with blue at the sides, and marked anteriorly with two white dots. Abdomen above luteous, the two basal segments of a splendid blue, the sides marked with a row of black dots; below black, all the segments margined with whitish. Expanse of wings, 2 inches 9 lines.

Inhabits Sylhet, in Bengal. In the British Museum.

Het. Ædea. P. Ædea, *Linn. Syst. Nat.* ii. 757; *Clerck, Icon. t.* 41, *fig. 2.* Acræa? Ædea, *Godt. Encyc. Méth.* ix. 236, *no. 19.* This species, which Linnæus described as a *Papilio*, and which Godart, who had never seen it, thought might be an *Acræa*, may be at once known from the preceding by the broad whitish or yellow band of the posterior wings, which, commencing on the anterior margin, spreads across the disk so as to occupy more than half the inner and a portion of the outer margin. The space beyond this band is of a most brilliant blue, with four or more white and five jet black spots, the margin itself being narrowly edged with black. The anterior wings also



Heterusia Ædea.

differ from those of *H. Edocla* in having two additional white spots near the apex, and the blue gloss around the markings is more distinct. These characters will be seen in the accompanying wood-cut, from a specimen in the British Museum, sent by Mr. Stainsforth from Sylhet.

Het. tricolor, Hope. The British Museum possesses a pair of this species, and I am thus enabled to correct an error in Mr. Hope's figure and in his character of the genus, though for some time I have hesitated as to whether or no I could consider them identical with Mr. Hope's insect, having been assured by Mr. Westwood that the antennæ in that individual were undoubtedly setaceous. This was about a year and a half since, when I first exhibited at the Entomological Society the specimen of *H. Ædea* now in the Museum cabinet, and after pointing out its identity with Clerck's figure, expressed an opinion that it was congeneric with *H. tricolor*. Since that time, however, Mr. Westwood, probably forgetting the precise words of my remarks, has stated that *H. tricolor*, *Hope*, is synonymous with *P. Ædea*, *Linn.* Although this statement is incorrect, it confirms my opinion of the two insects belonging to the same genus, and leads to the inference that Mr. Westwood has found that the antennæ, as figured in the 'Linnean Transactions,' are erroneous.

The truth is that the antennæ of this genus offer a structure as singular as any which I know to exist in the nocturnal Lepidoptera. In the male they are strongly bipectinate; in the female they are much longer than in the male, the pectinations, except at the apex, so short as to be hardly observable, but at the apex they are longer and lamellicorniform, forming when closed a compact club, but evidently capable of being expanded, as in the lamellicorn beetles. On this, however, I have some further remarks, but must defer these to a future time, when I shall point out the tendency to this structure in the genera *Chalcisia*, *Erasmia* and *Amesia*.

Genus.—PAPILIO.

Papilio Turnus, L., and *P. Glaucus*, L. These insects in reality are but one species, the latter being an obfuscated variety of the former.* This fact was pointed out to me by Mr. D. Dyson, of Manchester, an intelligent young man, originally a weaver at Oldham, whose zeal for Entomology carried him out last year to the United States. To myself the idea had never occurred, but I have only once or twice seen *P. Glaucus* on the wing, and then soaring above the underwood, which I had only seen *P. Turnus* occasionally do, and which I imagined to be the constant habit of *P. Glaucus*, L. In this I have found

* Boisduval perhaps suspected this. He thrice, in his description of *P. Glaucus*, compares it to *Turnus*, and adds in a note, "Ce beau Papillon, malgré sa couleur noire, a beaucoup de rapports avec *Turnus* sous ses premiers états."

from other sources that I was mistaken, and have ascertained the range of *P. Glaucus*, *L.*, to be more northern than I had believed. The larva and pupa of both as drawn by Abbott are identical. Henceforth the name *Glaucus* must be dropped. The merit of the discovery belongs not to any scientific naturalist, but to one whose only book has been the best of all books — that of Nature.

Genus.—LOBOPHORA.

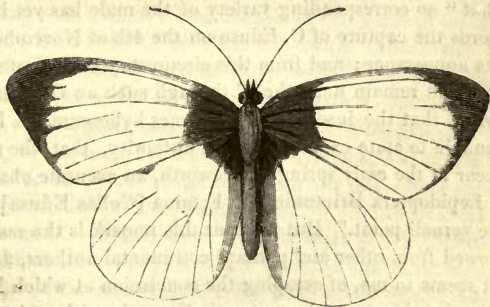
Lobophora polycommata. There is a misstatement in Mr. Humphreys' 'British Moths,' relative to a specimen of this insect in the British Museum, and which is figured in that work. Mr. Westwood states that this specimen belongs neither to the genus nor the species. Now the *correct* figure is from the *Museum specimen*, the *incorrect* one from *Hubner*, the error being in copying Hubner's figure, *Geom.* 89, which is *A. Æscularia*, by mistake for his fig. 90, which is *L. polycommata*. Of this fact Mr. Westwood is well aware. Why the reference to the figure was reversed I cannot say.

EDWARD DOUBLEDAY.

Note on a remarkable Variety of Hipparchia Galathea. At the latter end of last July I captured a very remarkable variety of the common *Hipparchia Galathea*, in a field on the heights between Dover and Walmer. The specimen is a male, of a clear milky white colour, and has not, on either the upper or under side of its wings, the smallest speck of black. Its thorax, abdomen and palpi are also entirely clothed with white. The varieties of this insect heretofore described appear to have been more than usually suffused with black or dark brown. My specimen so decidedly agrees with *Galathea* in form, that I have no hesitation in referring it to that species, which was very abundant at the spot. It is in perfectly fine condition.—*Thos. Marshall; King William St., City, November 4, 1843.*

Note on a singular Variety of the large Cabbage Butterfly. The enclosed sketch is of an unusual variety of a male *Pontia Brassicæ*. It was captured in a garden in Leicester last year, and is now deposited in our local cabinet at the museum of the Philosophical Society.—*J. Plant; Leicester, January 17, 1844.*

Note on the occurrence of Colias Edusa in the Isle of Wight. The following record of my own brief experience of the periodical appearance of *Colias Edusa* may be considered as rather corroborative, than otherwise, of the quad-



Variety of the large Cabbage-butterfly.

rennial theory. There is a favourite resort of this insect, where I was informed by a friend that they were plentiful in 1839, about half a mile from my residence. In the following season of 1840, I did not meet with a single specimen. In 1841, though I went almost daily in search of them, about the same locality, and in many other places, during the season, with considerable anxiety and most laudable perseverance, I found only two weather-beaten specimens. In 1842 not a single individual appeared, neither do I believe that it was met with in any part of the kingdom. This year, my vast anxiety to secure some splendid specimens of this charming butterfly, and all my patience and perseverance in the previous years' most fruitless search for it, were destined to receive their full reward. The males first made their appearance with us on the 2nd of September, the females about four days later; and they were abundant when I left the island a week after. They were equally so on the other side the water; a friend of mine captured about thirty specimens near Alverstoke, the last pair so late as October 14, and also saw several times, but did not secure, a remarkable variety, having the ground colour of one of the anterior wings *white* instead of orange, the other three being of the ordinary hue. I noticed them on my route to Brighton, near Casham, Chichester and Arundel, flying up and down by the side of the road. But by far the largest proportion were in the neighbourhood of Brighton. Between that place and Rottingdeane especially, they were in great profusion, and had I been disposed, I could have taken above a hundred with the greatest ease. They were by far the commonest butterfly of that season of the year, appearing even on the beach, and in front of the houses on the Marine Parade. There were a few of the pale variety with them. *J. F. Dawson; Ventnor, Isle of Wight, December, 1843.*

Note on Colias Edusa, var. Helice. Mr. Jordan (Zool. 396), speaking of the beautiful white variety of the female *Colias Edusa* (sometimes raised to the rank of a species by the name of *C. Helice*), asks whether "it ever occurs in the male insect?" I believe I may safely reply that it never does. And this, I may observe, affords a strong argument in addition to others, that *C. Helice* is a variety only, not a species; since in most butterflies the females are far less abundant than the males. As far as my own experience goes, I should say in the particular instance of *C. Edusa*, that the males are as ten or twelve to one female, or, perhaps, even in still greater proportion. The only time I ever had the pleasure of seeing *C. Helice* alive and capturing it, I had all but demonstration of its identity with *Edusa*, as a union was about to take place with a male of that species, had it not been for my interference, (*Mag. Nat. Hist. v. 332.*) It is stated in Humphreys' 'British Butterflies,' under the article *C. Helice*, that "no corresponding variety of the male has yet been observed." Mr. Jordan records the capture of *C. Edusa* on the 4th of November, which is certainly very late for its appearance; and from this circumstance he argues with much probability, that "if it could remain unscathed" through such an October as that of 1843, "it appears to prove that the insect may sometimes hibernate." I have always understood, though unable to state exactly on what authority, that the species does hibernate and re-appear in the early spring. Haworth, an accurate observer in such matters, says in his 'Lepidoptera Britannica,' "Femina [*Colias Edusa*] vivit per hyemem, et ova tempore vernali ponit." But whether this remark is the result of his own experience, or borrowed from other and perhaps continental authors, does not appear. The only way, as it seems to me, of escaping the conclusion at which Mr. Jordan arrives, is by supposing that his example captured November 4th, "in very good condition," was a late-bred specimen, which had come from the chrysalis *after* the cold weather of October. *W. T. Bree; Allesley Rectory, January, 1844.*

Note on rearing the Death's Head Moth. Having observed in your January number (Zool. 396), an enquiry concerning the larvæ of *Acherontia Atropos*, I am induced, from having successfully reared a fine specimen of that species from the larva state, to send you a short account of my mode of treating it. I obtained the caterpillar in September, 1840, and put it into a flower-pot three parts filled with earth, and covered it with gauze, feeding it with leaves of the potato. In this state I kept it for three days, taking care to keep the earth sufficiently moist to enable it to bury itself with ease. On the fourth day it retired under the earth, and remained there until the middle of January, when I took the chrysalis out of the earth and put it into a box filled with bran. I found it near the bottom of the flower-pot, encased in a sort of cocoon of earth; this I took care not entirely to destroy, but merely broke away enough to allow the moth room to come forth. It remained in the bran until the 23rd of the following June, when it came forth a beautiful and perfect insect. I was first induced to try the experiment of removing the pupa from the earth into bran, in consequence of having failed in rearing several larvæ of those species which undergo their transformations under ground; and as I could only attribute this failure to the earth becoming too hard for them to extricate themselves, I determined to assist them by removing them in the winter into bran: and since I have pursued this plan, I have scarcely failed in one instance.—*H. B. Rashleigh; Horton Kirby, Kent, January 15, 1844.*

Note on Formica rufa. *Formica rufa*, "the fallow ant" of Huber, occurs in vast abundance at Buddon-wood, on the skirts of Charnwood-forest. The tract of ground called Buddon-wood, consists of an abruptly rising hill of sienite, separated from the Cambrian rocks of the forest on the N.W. by the marls of new red sandstone, and bordered on the S.E. by the lias of Barrow. The hill is clothed with oak, pine and shrubs, in many places huge masses of rock protrude, or lie scattered, as if a tremendous wall had been thrown down by a giant hand. The roots of the oak wrap and bind around these masses, as if to hold them on the steep ascent. Under the projection of these rocks, and also the large protruding roots of the oak, the nests of these ants are generally constructed, the ant taking advantage of the overhanging rock and root to make a solid covering to the nest. When the nest is formed in these situations, it has invariably a broad surface in front, composed of a quantity of small bits of sticks, lichens and leaves, mingled with the earth which accumulates around it, and varying in depth from two to six inches, forming the covering to the various passages underneath. In other places the nest is formed in a dry spot where a tree has been cut down, consisting of the same heterogeneous materials, but mingled with a greater quantity of earth; rising in shape like a depressed cone, with a basal circumference of two yards or more. Some of these conical nests which I have tried to demolish to procure some larvæ, I found to vary from two to three and a half feet deep, containing several bushels of materials; in one I inserted my walking-stick to the tip before I met with resistance, and when withdrawn it was covered in several places with crushed larvæ. What few plants are found in the immediate vicinity of the nests are stunted and withered, but in most cases the ground is entirely bare for several yards round the nests; the ants either preferring such situations at the commencement of the young colony, or afterwards clearing them in the formation of their nests. The number of these nests in this locality is very great; for with the exception of the lower part of the wood, on the N.W. side, where a large brook borders it, which, by overflowing, keeps it continually damp, they cover the whole hill: and from sunrise till an hour after sunset, armies of the population traverse every part of their dominion, the wood, seizing with relentless jaws every

living or dead insect which falls in their way. It requiring a good amount of food to satisfy the wants of such numbers, the ants are kept so active that they appear never to rest during the day-time. I have often seen many of their nests about noon, present such an excited and tumultuous appearance, from the number of ants covering their surfaces, that it could only be compared, as Huber correctly describes it, "to a liquid in a state of ebullition." The influence exerted by these ants in diminishing the abundance of other insects, mollusks, and even the smaller animals in this wood, is very great, as I always experience when entomologizing there. For although many good captures may be made on the borders of the wood, scarcely any insects but ants can be found beneath its shade. The pairing or swarming takes place from the end of July to the beginning of September; and during these months the boughs and shrubs are covered with the winged males and females, which about dusk on fine evenings fly in swarms, and cause so great an annoyance by their venomous bitings to the fairer sex of the parties of pleasure who have tea and dancing in the woods, as prematurely to put a stop to their amusements, and drive them from its precincts. The insects and larvæ of these nests furnish a good supply of food to the pheasant and partridge, many of which I have watched scratching off the covering of the nest to arrive at the larvæ. The size of the neuter ant varies from 3 to $5\frac{1}{2}$ lines, the stretch of the posterior pair of legs is as great as 8 lines: sometimes they have a black spot on the upper surface of the thorax and scales. There are only two other localities on Charnwood-forest where I have met with this species. In the Out-woods there is a very large nest, and in Sheat-hedges wood there is also one; and though I have observed this last for several years, I have never seen it swarm, or known of another colony in its neighbourhood.

—*J. Plant, Curator to the Leicester Philosophical Society's Museum.*

Note on the scarcity of Wasps last summer. Writing of last summer, Mr. Smith asks — "What became of the wasps, the true *Vespidæ*?" (Zool. 408). Their history during the last two summers, in reference to this part of Scotland, is not a little singular. In the spring of 1842 they appeared in their ordinary numbers; but, owing to the weather, most propitious for warmth and dryness, they multiplied before the autumn season in a most surprising and unwonted manner. The whole country seemed to swarm with them. In many places, particularly in the vicinity of woods, the hives of the honey-bee were plundered and destroyed: every sort of fruit was attacked and eaten by them, not even hard and juiceless pears escaping. In a newspaper notice it was stated that they had become so voracious, that some fish, hanging to dry in a house in Forres, were devoured, all save the bones. The wasps so infested the woods that the wood-cutters, in some instances, gave up work, and in others, as at Cawdor, were obliged to use gauze coverings for their faces, to protect them from the stings when a tree fell and roused the angry insects from their nests. In the spring of last year (1843) the wasps appeared at the usual time, in far greater numbers however than before; but, numerous as they were, they were only in proportion to the swarms that existed in the autumn. Dreading that by summer, if they increased as in the preceding year, the country would scarcely be habitable on account of them, many people set about killing them by every means in their power, concluding that the destruction of one wasp in spring was the prevention of a whole colony in summer. But all the artificial means resorted to for diminishing their numbers would have been of little avail, had not a tract of severe weather providentially set in during six weeks in May and June. The long-continued cold of that period, the easterly winds and rains, reduced the number of wasps so much that comparatively few were to be seen throughout the

remainder of the summer and autumn. On the evening of a very fine and warm day in April of the same year, a number of wasps and earth bees were seen upon the catkins of a sallow (*Salix Capræa*), all in a stupified, torpid, or dying condition. Several had fallen to the ground, and all were in such a depressed state that the chilly cold of the coming night would finish their existence. The baneful influence, whatever its nature might have been, seemed to arise from the *Salix*, as there was abundance of light and warmth to enable the insects to reach their proper quarters for the night. But this mode of lessening the numbers of the wasps must have been of partial effect compared with the general one already mentioned, which was peculiar to the unseasonable weather, and not to any particular locality.—*G. Gordon ; Elgin, Jan., 1844.*

Note on mutilated Humble-bees. I have lately been enabled to unravel, in some degree, the mystery of the mutilated humble-bees, a query about which I recently inserted in 'The Zoologist' (Zool. 336). My informant was the Rev. R. M. White, D.D., of Magdalene College, Oxford, who, some years since, saw, towards the end of August, several large humble-bees lying on their backs in an ant-path. They were speedily seized by the ants, who tore off their wings with their jaws, and carried them off towards their nest. In the instances observed by myself, the bees were crawling about at liberty; and if there had been ants near them, I think I should have noticed it, but they might have escaped after mutilation.—*F. Holme ; Corpus Christi College, Oxford, January 8, 1844.*

Note on Beetles inhabiting Ants' Nests. As the attention of entomologists seems at present much drawn to the strange captivity of the Claviger, Atemeles, and other minute Brachelytrous species in the nests of ants; I may be excused for referring to an incident published by myself in the 'Entomological Transactions,' vol. iii. p. 121, which proves that their attentions are not confined to the smaller species of that family. The captors in this instance were the large red and black ants, not uncommon in the West of England, and the Philonthus, which they were carrying along the bar of a gate, was "all alive and kicking." I had no other idea at the time than that he was destined to become their prey, as I think that the residence of Brachelytra in ants' nests had not then (1833) been observed.—*Id.*

Note on the Glow-worm. In reference to Mr. Jordan's communication (Zool. 413) I may mention that the larva of the glow-worm is luminous, as well as both sexes of the imago. I have found them shining as late as November, among the long wet grass by the side of ditches.—*Id.*

Note on the Bombardier beetle. In reference to Mr. Lighton's note on *Brachinus crepitans* in the same page, I may refer him to a note of mine in the 'Proceedings of the Entomological Society,' vol. ii. p. 7, of my having obtained discharges from the insect four days after death.—*Id.*

Note on the comparative numbers of Coleoptera affecting meadow lands. From my captures in the floods of last March, April and May, I have made the following list, showing the comparative numbers that these families of beetles bear to each other.

SPECIMENS.	SPECIMENS.	SPECIMENS.
Aphodiidæ 257	Harpalidæ 130	Bembidiidæ 34
Histeriidæ 228	Sphæridiidæ 118	Silphidæ 18
Tachyporidæ, Sta.	Chrysomelidæ..... 114	Brachinidæ 6
phylinidæ 222	Scaritidæ 98	Salpingidæ 2
Curculionidæ 194	Byrrhidæ 81	Cerambycidæ 1
Elatridæ 190	Helophoridæ 73	

The most plentiful species were as follows:—*Aphodius fossor*, *Hister carbonarius*, *Phædon marginella*, *aucta*, *Polygona*, *Chrysomela Staphylæa*, *Clivina fossor*, *Pæcilus cupreus*, *Hypolithus riparius*, *Notaris acridulus*. The rarer species were:—*Clivina collaris*, *Dyschirius minimus* (*Curt.*), *Patrobus rufipes*, *Blemus micros*, *unifasciatus*, *Epaphius Secalis*, *Hydrochus elongatus*, *brevis*, *Balaninus Brassicæ*, *glandium*, *Otiorynchus singularis*.—*J. Plant* ; *Leicester*, *January 17*, 1844.

Note on Epaphius Secalis. It is rather a curious fact, but this sea-coast *Geodephagon* is a well known native of the neighbourhood of Leicester. I should think I have seen some scores of specimens, all obtained from the damp meadows of the Soar, and particularly during the floods of last summer. Our individuals are generally pale testaceous, now and then a little dusky towards the head and tail, but in the marginal obliteration of the striæ and the proportions of the segments of the body, they do not differ from the descriptions in Stephens's works.—*Henry Walter Bates* ; *Leicester*, *January 6*, 1844.

Note on Ocys melanocephalus. The *Ocys* is the most extraordinary runner in the whole circle of the Carabides. Like the typical *Dromii*, it is somewhat arboreal in its nature, and is most generally met with in its hibernations, where we frequently take it, but never in any numbers. In these two habits we may suppose it affording a good fact in support of the theory of representation, where its style of colouring, in addition to the other peculiarities, may place it in the same line with *Dromius agilis* and its *Brachinideous* congeners.—*Id.*

Note on the capture of Clytus 4-punctatus &c. near Bristol. It may be interesting to the readers of the 'The Zoologist' to know that a specimen of *Clytus 4-punctatus* (*Fab.*) was, about two or three years ago, taken by a friend of mine at Baptist-mills, near this city, and by him kindly presented to me. I may also mention that I have reared *Callidium variabile* (*Lin.*), but it is singular that only one has the elytra of the usual colour (violet), the others being wholly testaceous. In January last I took three specimens of *Licinus depressus* (*Pk.*) under a stone on Leigh-down, near this city, which I believe is quite a new locality for this insect.—*Stephen Barton* ; *Upper Maudlin Street, Bristol*, *January 8*, 1844.

Description of Toxotus rugipennis, a new Beetle belonging to the Stirps Macrocera, and the Order Cerambycites. The head is black, considerably elongated towards the mouth, and is not swollen behind the eyes: the antennæ are less than half the length of the body, and are of uniform thickness throughout; the fifth is the longest joint, and the second, as usual, the shortest; their colour is dark, with the basal portion of all the joints, from the first to the eighth inclusive, pale testaceous: the prothorax is scarcely longer than broad, its anterior margin is nearly straight, its posterior margin sinuous, on each side is a blunt tubercular tooth rather before the middle, its colour is black, and the dorsal surface is rough, like shagreen: the elytra are broad and short, their extremities are slightly truncate, their colour is nearly black, with a central, transverse, cream-coloured band on each, this band reaches neither the sutural nor costal margin, it is somewhat crescent-shaped, the convexity facing the base of each elytron, their surface is most singularly uneven, the deep wide depressions leaving only a kind of raised net-work, and the depressions themselves being rough, like shagreen: the under side of the body is black, the legs and the apical joints of the abdomen pitchy red; both the body and legs are clothed with short silvery hairs. Length of the largest specimen .7 inch, breadth .275 inch. The form of this insect seems to fix its station between *Toxotes* and *Rhagium*, but certainly nearer to the former than the latter.

Four specimens, taken in Canada by Mr. Barnstone, are in the cabinet of the British Museum.—*Edward Newman ; Peckham, January, 1844.*

Description of Callidium rubeocolle, a new Beetle belonging to the Stirps Macrocera and the Order Cerambycites. The upper or dorsal surface of the prothorax is of a dull red colour, and every other part of an intense black, and more or less clothed with short black hairs, which are more particularly observable on the antennæ and legs. The prothorax and elytra are completely covered with large irregular confluent punctures, these punctures are largest about the base of the latter, and gradually decrease in size towards the apex: the femora are incrassated externally: the under side of the abdomen is punctured and tomentose. Its length is .65 inch and its breadth .225 inch. A single specimen, found by Mr. Lea at Cincinnati and sent to Mr. E. Doubleday, is now in the cabinet of the British Museum.—*Id.*

Captures of Coleoptera in Gloucestershire, in December, 1843. The following is a list of Coleoptera, which I captured during a residence on the Cotswold-hills in Gloucestershire in December last. The season being unusually mild, the greater part of them I took in the utmost profusion. Farmington-grove, in the neighbourhood of Northleach, is decidedly the best locality, where, by examining the moss at the roots of trees, I met with tolerable success. And although it may be observed that several of the following insects are common in most localities, yet having never seen them in such abundance before, I think them worthy of being noticed.

Cercyon piceum	Atomaria nigriventris	Apion subsulcatum
Trechus minutus	Cis Boleti	Salpingus planirostris
Ptomophagus velox	Ceutorhynchus sulcicollis	Haltica atra
Latridius lardarius	Nedyus Erysimi	Salicariæ
porcatus	contractus	Thyamis melanocephala
Corticaria ferruginea	Orchestes Calcar	lurida
Atomaria phæogaster	Dorytomus affinis	Macrocnema Spergulæ
atricapilla	Sitona crinita	Chilocorus renipustulatus
carbonaria	Apion vorax	

—*T. V. Wollaston ; Jesus Coll. Cambridge, January, 1843.*

Note on the occurrence of the Locust in Yorkshire. Thinking that the following account of the appearance of the Asiatic locust in Yorkshire last year, may not be uninteresting to your readers, I have taken the liberty of troubling you with a letter on the subject. Two of these insects were given to me on the 9th of September, 1842, by a labourer at Holmpton (a village situated quite on the sea), who had found them in an oat-field, where he, his wife and some others were harvesting. Not having seen any of the species before, they were, at first, afraid of touching them; but happening to know that I was a collector, they were so kind as to catch them for me, which they succeeded in doing without injuring any part of their bodies. I placed them in a box with a supply of green food, of which they partook very sparingly. On the 18th of September, finding one of them nearly dead, and that the other had eaten part of its wings, I killed and preserved it: the other specimen lived until the 26th of September. During their confinement, I frequently amused myself by letting them out of the box and seeing the distance they could spring, which, when I first had them, was certainly not less than ten or twelve feet. A window, a little more than a yard from the ground, was the point to which their aim was always directed, and they generally, if placed at a distance, say five or six feet, sufficient to enable them to attain power enough, succeeded in getting into it. Three more specimens were taken in my neighbourhood,

one at Hollymor, a village about two miles from the sea, and two more by a gentleman residing at Roos, which is little more than a mile from the coast. According to the following paragraph from the 'Hull Packet' of September the 9th, 1842, this insect has also been taken near Scarborough. "Scarborough, Sept. 8. Extraordinary visitant. Rarely has the locust, that terrible scourge of so many warmer climates, been seen in our favoured land. But exceptions do occur; and two specimens of the African species, upwards of three inches in length, were taken last week in this vicinity; one is yet alive in the possession of a gentleman in Scarborough, and the other has been preserved by Mr. Williamson for the Museum. It is truly to be hoped that these are only accidental stragglers, and not the *avant couriers* of a flight such as alarmed the southern parts of England, and especially London, in August, 1748." I have also copied a paragraph from the 'Yorkshire Gazette' of January, 21, 1843, from which it appears that this insect was also found further inland about the same time last year. "Locusts in England. About three weeks ago a labouring man took a specimen of the *Gryllus migratorius*, or Asiatic locust, in a field at Stonegravels, near Chesterfield. The man, being struck by its unusual appearance and activity, after a severe chase, succeeded in capturing it in safety. It is now in the cabinet of a gentleman in Chesterfield. We understand that several others have been taken in this and the neighbouring counties in the present year; one in Sheffield in the beginning of September, another in Mickleover, near Derby, nearly at the same time; a third about the middle of the same month, near Burton-on-Trent; the latter was found to be a female, containing about forty or fifty eggs, apparently ready to be deposited. The gentleman who captured the last-mentioned specimen, says that he disturbed it in getting over a hedge near which it was reposing; and that, when first discovered, the insect sprang a distance of fourteen yards. — *Stamford Mercury*." — *William Sherwood; Rysome Garth, near Patrington, Holderness, Yorkshire, January, 1844.*

*Notice of Branchiæ in Pteronarcys regalis.**

THE labours of Marcel de Serres, Leon Dufour, Savigny and Straus-Durckheim, have justly excited the admiration of all those, who going beyond the superficial and arbitrary distinctions on which the genera of insects are founded, have studied their organization, and sought wisdom from the fountain-head—Nature herself. Beautiful and truly wonderful are the facts, the adaptations, the contrivances which these authors have unfolded, illustrated and explained; and the obligations they have conferred on the students of insect-anatomy, is cheerfully and universally acknowledged. Still, when we analyse their labours and divide them into so many separate discoveries, not one of those

* On the existence of Branchiæ in the perfect state of a Neuropterous Insect, — *Pteronarcys regalis*, *Newman*, and other species of the same genus. By GEORGE NEWPORT, Pres. Ent. Soc. &c. Read at the Meeting of the Entomological Society, Dec. 4, 1843, and printed in the 'Annals and Magazine of Natural History' for January, 1844.

discoveries appears so anomalous, so important, so intensely interesting, as that just made by Mr. Newport, of the external branchiæ of a perfect winged insect. It is well known that many of the same order of insects—the Perlites — possess external branchiæ in their preparatory stages; but an obvious reason exists for this, in the fact that in their earlier stages the Perlites are almost entirely aquatic; and this form of lung, so to speak, is admirably adapted for abstracting from the water the necessary supply of air: but it has been generally supposed that the only mode by which animals could inspire or expire atmospheric air, was by its entrance into or propulsion from internal receptacles through apertures in the outer covering of the body. This is not, however, strictly the case; for although it is common with isomorphous Neuroptera to spend the period of their preparatory states in the water, exceptions occur, and we find the immature state of a not uncommon *Perla*, secreting itself by hundreds in the crevices of the bark of pollard willows, when growing in districts abundantly intersected by running streams. The creatures appear very inactive by day, and crouch flat on their bellies, but probably at night they sally forth in quest of the insects which the bark of trees seems to attract. Be this as it may, these creatures, although no longer subaqueous — or, supposing they resort to the water by night, of which we have no evidence, at least not constantly subaqueous — yet retain an external apparatus for breathing very similar to that of their subaqueous congeners. Still we are prepared for this close coincidence between creatures of the same genus, and in the same states: but that an instance should have been found in which an entire genus carries this structure with it into its ultimate or imago state, seems to baffle all our researches for precedent, and present a feature in insect anatomy for which we are wholly unprepared. Many of our entomological readers will recollect the ingenious hypothesis suggested by Latreille, that the wings of insects were transmuted organs of respiration: the idea that the same organs would serve the double purpose of respiration and locomotion, is due, we believe, to the fact that such was actually the case with the external branchiæ of the subaqueous larvæ of Perlites and Ephemerites, the insect using its branchiæ as fins to propel it through the water. Mr. Newport's discovery places a direct negative on the hypothesis, since throughout the genus *Pteronarcys* the wings as well as branchiæ are invariably present, the wings occupying the dorsal, the branchiæ the ventral surface. He describes the branchiæ as follows.

“ They are of the tufted or filamentous form of branchiæ. They consist of eight

pairs of branchial sacs, from the exterior of which proceed numerous elongated, setose filaments, which together form a thick tuft on each sac. These branchiæ are situated, as described by Pictet in the larva state of *Nemoura cinerea*, *Pictet*, over the proper spiracular orifices or entrances to the great longitudinal tracheæ of the body, at the inferior lateral parts of the thorax and basilar segments of the abdomen. The first pair of sacs is in the tegument of the neck, between the head and prosternum; the second and third pairs, each of which is composed of two tufts, between the prosternum and mesosternum, behind the coxæ of the first pair of legs: the fourth and fifth between the mesosternum and metasternum, behind the coxæ of the second pair of legs: and the sixth pair behind those of the third pair of legs, at the junction of the thorax with the abdomen. The seventh and eighth pairs, formed each of single tufts, are attached more laterally, the seventh to the first, and the eighth to the second basilar segments of the abdomen. These latter branchiæ correspond in situation in the segments to that of some apparently closed or obsolete spiracles at the sides of the succeeding segments. The situation of the branchiæ themselves is thus as anomalous as their existence in the perfect insect. In most instances branchiæ are arranged along the sides of the abdominal segments of the larva, and are often employed to assist in locomotion: but they cannot be of use for this purpose in the larvæ and pupæ of these Perlidæ, which move by means of large and powerful limbs. In *Pteronarcys* the two posterior pairs of legs of the pupa have the tibiæ densely ciliated, for swimming, like those



Pteronarcys regalis.

of the Dyticidæ, so that the uenicate filamentose branchiæ can afford little, if any, assistance in this function. The structure of the filaments themselves differs also from that of the filamentose branchiæ of the Sialidæ, in which these organs are said to be quadri- or quinque-articulated, and are employed as organs of locomotion. In *Pteronarcys* they are simple unarticulated filaments. Each filament is soft, delicate, and gradually tapered from its base to its extremity, and ends in a slightly obtuse point. Internally each filament is traversed longitudinally by a tracheal vessel, which becomes, like the filament itself, more and more slender, and at last divides into two branches,

which may be traced to the extremity of the filament: but I have not been able to discover any orifice in the extremity of the filament, nor any direct communication whatever between the external surface and the ramifications of these tracheæ, and I doubt much whether any such direct communication exists."

Mr. Newport's specimen was brought by Mr. Barnstone in spirits from Canada, together with many other highly-interesting North-American insects, the whole of which have been presented by that gentleman to the cabinet of the British Museum. Mr. Barnstone, who appears much devoted to Natural History, paid great attention to the Perlites in their native localities, and made some highly interesting observations on their economy. He remarked that the so-called *pupa* of *Pteronarcys regalis*, in the state immediately preceding its attaining the power of flight, lived constantly in the water at the bottom of streams; while the corresponding state of *Perla abnormis*, — the largest species yet known of the genus *Perla*, — was invariably hidden in the clefts of water-logged timber, the trunks of trees and other places on the banks, and he has found its exuviæ under stones along the banks of rivers; thus closely corresponding in economy with the English species to which we have already alluded. Mr. Newport enquires whether any analogous discrepancy exists in the habits of the perfect insects of the two species. The species of *Pteronarcys*, as observed by Mr. Branstone, shun the light of day, hiding themselves under stones in damp places, and it is only at nightfall, when the air is charged with moisture, that they appear on the wing. In this respect, however, they differ but little from the true *Perlæ* of the old continent. It is a most interesting question, as proposed by Mr. Newport, whether this peculiar structure is a provision of Nature for the damp atmosphere in which the *Pteronarcys* generally passes its life, or whether the persistent branchiæ are accidentally retained, the functions of aëration being performed by other means. Mr. Newport observes: —

"In regard to the function of aëration being performed by these branchiæ in the perfect insect, I may remark that it is of little consequence to the preservation of animal life whether aëration of the fluids of the body be effected *directly*, by means of air received *into* the body in lungs, or in spiracles and tracheæ, or *indirectly*, by means of water or vapour, that holds air intermixed with it, through the agency of external branchial organs, in which case the air is brought into contact with the fluids through the surface of these organs in water equally well as in the open atmosphere, when air is taken *into* the body through the spiracles. The function of branchiæ, or aquatic organs, is equally well performed in the open air as in water, so long as the air is charged with a sufficiency of fluid to preserve these organs in a healthy state."

We trust Mr. Newport will pursue the enquiry he has so ably com-

menced, and we wish him every success; in the mean time he has our honest thanks for the boon he has conferred on the science of Entomology. The figure of *Pteronarcys regalis* was engraved for Gosse's 'Canadian Naturalist,' and has been most obligingly lent to 'The Zoologist,' to illustrate this paper.

Enquiries in Practical Entomology. I gladly embrace this opportunity to thank Mr. J. W. Douglas for his excellent description of the method of capturing moths with sugar; and to express a hope that other experienced metropolitan entomologists will from time to time favour their provincial and less experienced "brethren of the net" with similar remarks on practical Entomology. The general usefulness of Mr. Inge's 'Instructions for Collecting Insects,' has been much impaired by omitting to give detailed descriptions of the method of constructing the apparatus, on the plea that there are now several shops in London where such can be procured; but no data are there given by the aid of which the rustic tyro, who perhaps has never seen these articles, can give the necessary directions to a tradesman. So little has Entomology been cultivated in Scotland, that there is not a shop, even in Edinburgh, where a single article, except the forceps, no, not even proper pins, are sold; but these can now be procured from London by post. My friend Mr. E. Brown has described a collecting-box (Zool. 177), the merits of which I have fully tested; and by his advice I have adopted the folding hoop of an angler's landing-net, which screws into a handle or walking-stick, and is fitted with three bags of different sizes, of gauze, coarse canvas and linen, and I have found it to be the best and handiest weapon of any. I should feel greatly obliged by some of your correspondents describing the best way of fitting up a lantern for *mothing* purposes, and also for a list of such flowers and shrubs as are most frequented by the pretty rovers of the night, that, if necessary, I may add them to our borders. Such practical hints are invaluable to every one that is seriously bent on self culture. For want of such knowledge how many sigh after returning from an unprofitable excursion, though undertaken at the sweet hours dedicated to silence and meditation, and mourn over the sad loss of time, of which, as Seneca nobly says, "It is a virtue to be covetous!"—*Archibald Hepburn; January 9, 1844.*

[In my 'Familiar Introduction to the History of Insects,' I have endeavoured to give the information required by Mr. Hepburn. I quote the observations on apparatus; those on localities, mode of collecting, &c. I would willingly transfer to these pages, but I cannot afford the space they would occupy.—*E. N.*]

"The principal instruments of the collector are boxes and nets. The boxes should be of mahogany, opening readily on brass hinges; length seven inches, breadth four inches, depth two inches; the top and bottom should be lined with fine soft cork, and covered with white paper. The pockets of a shooting jacket will readily carry three or four such boxes as these. Besides these boxes, there should be two long cylindrical tin boxes for the caterpillars of Lepidoptera: the tin not only keeps the caterpillars cool, but it causes the leaves on which they feed to retain their freshness many days. Tin boxes are also useful to bring home Diptera alive: in this case a cylinder of tin passes through the lid of the box, and is corked at the top.

"The clap-net, represented at the head of this chapter, is the grand weapon of the entomologist. This is a large piece of muslin, four feet long and nearly three wide,

supported on two light rods, which pass along a border made of brown holland or other strong substance, bend towards each other at an obtuse angle, and meet at the top of the net. One of these rods is held in each hand, the handles being the parts uncovered; the net is fixed to each rod by means of a piece of tape, which passes through a hole made in the rod, and is tied firmly in a bow.

“The rods of the clap-net are each composed of five pieces united by ferules; when taken to pieces and placed in the net, the latter may be folded in a very moderate compass, slipped into a brown holland case, and put in the coat-pocket. For this kind of net both green and white muslin are used; but white is much the best, as the small insects are more readily distinguished on it; green muslin however has the merit of being less conspicuous, which under some circumstances is an advantage, for instance, in those country lanes where the pedestrians are unused to such an exhibition, the white net never fails to attract a little crowd, which causes some slight inconvenience to the entomologist, as well as loss of time, for he is invariably under the necessity of explaining to the by-standers what he is doing.

“This net is the best for pursuing butterflies and moths on the wing; the hunter tries to get the net under the object, and strikes upwards, closing the rods at the same time. A loose bag is formed, by a fold of the muslin, across the bottom of the net; this prevents anything from getting out. The same net is held in one hand under the boughs of trees, &c., while these are beat by the stick of the water-net held in the other hand; and thus, besides perfect insects, a great number of caterpillars may be obtained.

“The other nets used by entomologists are of many kinds; these two are the best: first, the forceps, with handles like those of scissors, with holes for the finger and thumb, and two circular or octagonal frames of iron, on which muslin or cheese-cloth is stretched. This instrument is particularly useful for taking the Diptera and Hymenoptera, which settle on umbelliferous flowers. The forceps should be kept in the right hip pocket of the coat, to afford a greater facility in taking them out when wanted to be used with celerity: but it must be borne in mind that this weapon is never to be trusted when insects are on the wing; because its size is so small that the object at which you snap is beyond your reach before the forceps can close, however correct your aim; and a repetition of the snap is seldom attended with better success.

“The second net is the water-net. It is composed of a strong hoop of iron, jointed so as to fold up in a convenient form; on this hoop is fastened a strong bag net, made of cheese-cloth; the hoop has a male screw, which fits a female screw at the end of a stout stick about four feet in length. With this instrument all water-insects are taken; the water straining off through the net, and the insects remaining at the bottom.

“The same net, or a lighter one of similar form, screwed on a similar or the same stick, is called the sweeping net, and is used for sweeping grass, on which myriads of minute insects are always to be found: the weeds on the banks of rivers and canals are also excessively productive in insects, which can only be taken in this manner. In walking through meadows it will be found a good plan to hold this net in such a position that it may continually strike the projecting blades of grass.

“The entomologist should be provided with two wide-mouthed vials; one empty and perfectly dry, having a quill passing through the cork, and going a considerable way below it: this quill may be stopped at top by a second small cork: within the vial some blotting-paper may be kept, which not only absorbs any moisture, but serves as something to crawl on for the living insects which are taken from time to time and

dropped through the quill. The other vial should be made very strongly, well corked, and three parts filled with spirit: common whisky is the best spirit; pure alcohol injures the colours of beetles, and gin makes them sticky.

"A digger is another useful instrument: it is simply a piece of round iron, about fifteen inches long, bent round at one end, and furnished with a wooden handle at the other. This serves to rip the bark off dead trees, and to dig at the roots of living ones for chrysalides.

"Quills cut off close to the feather are very useful for bringing home minute insects of all classes. The aperture should be most carefully corked, the corks being cut expressly for the purpose, and should be of sufficient length to go half an inch into the quill, and thus not liable to come out in the pocket.

"Finally, pill-boxes, obtainable of any druggist, complete the outfit of the entomologist. There is now an excellent kind manufactured, the tops and bottoms of which never come out: it is important also to avoid sitting on pill-boxes, as it must interfere with their structure: to avoid this, the author carries them in a breast pocket."—*Familiar Introduction to the History of Insects*, p. 92.

Note on Colias Edusa &c. *Colias Edusa* has been more abundant during the past season in this neighbourhood than I have ever before witnessed. It is usually confined to the immediate fields and cliffs bordering on the sea, but in August and September last, I observed many pursuing their undulating course at some distance from their usual sporting grounds. *Cynthia Cardui* has certainly not been so abundant as in previous years. I once met with *Hipparchia Galatea* in a small coppice and meadow on the borders of Dartmoor in considerable numbers: they were confined to these two places, not a single individual being seen in the adjacent country. I perhaps should state that I never before or since saw this insect nearer this place than Teignmouth.—*W. S. Hore; Stoke, Devonport, February 2, 1844.*

Notes on Captures of Lepidoptera. March 19, *Epigraphia avellanella*, on palings at Penge. April 5, *Depressaria ocellana*, Dulwich wood. May 28, *Capua ochraceana*, *Pseudotomia fraternana*, *Anchylopera siculana*, Dulwich wood. June 18, *Hadena ochracea*, *Panalia Latreillella*, *P. Leuwenhoekella*, *Anchylopera unculana*, *Carpocapsa grossana* on beeches, *Pseudotomia nigricana*, *P. Ehippana*, near Mickleham. June 25, *Macrochila bicostella*, *Pseudotomia simpliciana*, West Wickham woods. July 9, *Xerene procellata*, *Scotosia vetulata*, *Argyrolepis tesserana*, *Macrochila parenthesesella*, Sanderstead downs. July 16, *Anchylopera cuspidana*, *Pseudotomia Petiverella*, *P. strigana*, *Pterophorus microdactylus*, *P. pallidactylus*, Sanderstead downs. August 6, *Eupithecia subfulvella*, *Anchylopera Lundana*, Sanderstead downs. August 13, *Lozopera Francillana*, *Acleris subtripunctulana*, *Steganoptycha unipunctana* and *Sericoris aurofasciana* out of holly, *Macrochila marginella* worn, Riddlesdown. Sept. 2 and 3, larvæ of *Cucullia Asteris* on *Solidago Virgaurea*. *Peronea* —? a new species allied to *P. boscana*, larvæ of *Acronycta Ligustri* on ash trees, *Segetia neglecta* and *Ceropa cha diluta* by sugar; Birch wood. Sept. 11, 17, *Calocampa vetusta* (three), *Xanthia aurago* and *citrago*, *Orthosia litura*, by sugar; two larvæ of *Cerura bicuspis*? on sallow; one larva of *Apatela Aceris*; Birch wood. Oct. 25, Five *Thera juniperata*, on Sanderstead downs. Nov. 5, twenty-five *Thera juniperata* (twenty being females), on Sanderstead downs. The above are the best of my captures in Lepidoptera during the past season. From nearly every collector I hear of the paucity of captures; and although some species, usually rare, have been somewhat common, I believe that Lepidoptera have been generally scarcer than usual: at least the unfavourable weather

has prevented their capture. — *J. W. Douglas* ; 6, *Grenville Terrace, Coburg Road, Kent Road, December 1, 1843.*

Note on Captures of Lepidoptera near Sudbury, in 1843. I send for 'The Zoologist' a few notes on my captures in this neighbourhood during the past summer, excluding Assington-thickets, and omitting many of the commonest species. *Gonepteryx Rhamni*; this butterfly was on the wing as late as the 23rd of October. *Colias Edusa*; took one and saw two others between the 20th of August and the 7th of September. *Melitæa Euphrosyne*; plentiful in Brundon and Bulmer woods in May. *Vanessa Urticæ*; saw a specimen of this butterfly on the wing on the 28th of November. *Thecla Betulæ*; saw a few females at Bulmer and Lamarsh in the beginning of September. *Ægeria Tipuliformis*; in attempting to nail up a branch of the common black-currant tree in my garden, it broke, when I discovered that it had been hollowed of the pith by a white caterpillar, which I put, with part of the branch, into the breeding-cage, and on the 23rd of June it produced a beautiful specimen of *Ægeria Tipuliformis*, and from that date to the 10th of July I took about ten specimens, some drying their wings and others resting on the leaves of the currant. *Ægeria Mutillæformis*; I took two specimens in my garden on the 3rd and 12th of July, one of them from a blossom of Valerian and the other resting on a rose-tree. *Zeuzera Æsculi*; one female on the premises of R. A. Allen, Esq., August 1st. *Pygæra bucephala*; the larvæ of this moth were unusually abundant, the ground beneath many of the oaks and elms was completely covered with their excrement. *Dasychira fascelina*; took a larva changing its skin on some palings at Lamarsh, in the breeding-cage it fed on the blackthorn, and produced a fine female on the 17th of July. *Leucoma Salicis*; rare in this neighbourhood, I met with only one specimen. *Diaphora mendica*; several males of this moth were found on the breeding-cage, which contained some females, a continuance of the Lavenham brood. *Nudaria mundana*; one specimen, July 16. *Xylina Lambda*; plentiful in September and October. *Amphipyra pyramidea*; one specimen bred August 1st from a larva found on the currant. *Euplexia lucipara*; one specimen May 27. *Polia dysodea*; rather plentiful round the Valerian in July. *Polia seladonia*; took one specimen of this very variable species on the 14th of September. *Apatela Aceris*; took a female in June and two larvæ in October. *Catocala nupta*; saw a specimen of this moth on the wing in the end of July, and took one on the 31st of October, in fine condition. *Geometra tiliaria*; a few specimens taken round the gas lamps in the end of September. *Geometra erosaria*; saw several wings of this species floating on the river Stour near a small plantation. *Geometra lunaria*; one specimen taken in Brundon wood on the 14th of May. *Hemithea vernaria*; one specimen in Brundon-lane, August 1st. I had not taken this species since 1835, when I met with it rather plentifully by the side of a small wood at Kedington. The male in my cabinet was taken in an excursion by twilight, at 2 o'clock in the morning of the 10th of July in that year. *Ephyra omicronaria*; not scarce in Brundon-lane in June. *Aniatis plagiata*; rather plentiful throughout the neighbourhood in May, and again in August and September. *Abraxas Grossulariata*; although a very abundant species, good varieties are rarely met with, but this year I obtained one with the upper wings nearly all black. *Xerene adustata*; rather plentiful in Brundon-lane in the end of May and beginning of June. *Phibalapteryx tersata*; a few specimens taken in Brundon-lane in the end of June. *Phibalapteryx vitalbata*; took one specimen at Great Cornard, and two in Brundon-lane, May 24th and June 21st. *Emmelesia decolorata*; plentiful in Brundon-lane from the end of May to the end of July. *Eupithecia pusillata*;

one specimen in Brundon-lane on the 24th of July. *Eupithecia venosata*: in Brundon-wood and lane, May and June, not rare. *Paracolax nemoralis*; one specimen in Brundon-lane on the 12th of June. *Hypena rostralis*; took one specimen of this rare moth in Brundon-lane on the 1st of June. *Spilonota fenana*; one specimen taken in a lane at Great Cornard.—*W. Gaze*; *Ballingdon, Sudbury, December 15, 1843.*

Note on Lepidoptera bred from Larvæ. The following were bred from larvæ found feeding on the common currant, in my garden at Ballingdon during the past summer.

<i>Ægeria Tipuliformis</i>	<i>Halia vauaria</i>	<i>Electra spinachiata</i>
<i>Amphipyra pyramidea</i>	<i>Cidaria fluctuata</i>	<i>Abraxas Grossulariata</i>
<i>Polia flavocincta</i>	<i>Steganolophia prunata</i>	<i>Diaphania forficalis.</i> — <i>Id.</i>

Note on Captures of Coleoptera near Sudbury in 1843. *Pristonychus subcyaneus*; one specimen. *Chlænien nigricornis*; plentiful on the water-plants by the Stour in April. *Calathus melanocephalus*; one specimen at Great Cornard in September. *Hydromus Alismatis*; abundant on the leaves of the water-plantain, in the middle of a ditch at Henny, May 4th. *Cleonus sulcirostris*; two specimens at Great Cornard and one at Lamarsh, April 24th and May 10th. *Monochamus sutor*; on the 25th of July I had two specimens of this rare beetle brought me by a labourer who found them crawling on the grass near some old poplars, alders and willows at Henney, about two miles from Ballingdon. *Saperda populnea*; took one specimen from an aspen at Bulmer-wood, and another from a post at Ballingdon. *Callidium variable*; rather plentiful in the brick-yard of R. A. Allen, Esq. *Chrysomela sanguinolenta*; one specimen at Great Cornard on the 23rd of April. *Helodes Phellandrii*; abundant in the corolla of the buttercup in Friars' meadow, Sudbury, on the 24th of April.—*W. Gaze*; *Ballingdon, December, 1843.*

Note on Locusts in India. Extract from a letter to Dr. Bostock from his son, dated Agra, Oct. 21, 1843, describing the occurrences of a journey from Allalabad. "Between Cawnpore and this place I witnessed one of the extraordinary phenomena peculiar to tropical climates, viz., a flight of locusts. The direction of the flight was nearly due east, and the rate four miles per hour: and you will form some idea of the immense host, when I tell you, that travelling at the same rate and in the opposite direction, I was between two and three hours in passing through them. During the whole time, the horizon, as far as the eye could reach, was darkened, and every nearer object was obscured. On looking directly upwards the appearance was that of a very heavy snow-storm, and the ground, which was covered by them, resembled the fields strewed by the dried leaves of the autumn. Several of them flew into my palken. They were 2½ inches long, of a pink colour, marked with dark brown. The poor natives were shouting and endeavouring to prevent their devouring the crops, to which they prove most destructive."—*Proceedings of the Linnean Society, January 16, 1844.*

Enquiry concerning Naturalists' Note-books. In Loudon's 'Encyclopedia of Gardening' is given a model of the Honble. Daines Barrington's 'Naturalist's Calendar,' which we all know, was so successfully used by his friend, White of Selborne; at the same time mention is made of Graves's 'Naturalist's Pocket-Book,' but of the plan therein adopted I know nothing; the fact of its being adapted to the pocket, gives it a decided advantage over the ponderous quarto form of the former. Seeing that 'The Zoologist' is entirely supported by those whose delight is to read —

* * "Nature's volume broad displayed,

And to peruse her all-instructive page."

It would greatly conduce to the economy of our time, could we hit upon a method

combining the tabular form for the purpose of noting such observations as more particularly appertain to a kalendar, together with sufficient space in the page, or in the book itself, for recording our little excursions and our notes upon animal life in connexion with the surrounding scenery, and the general aspect of nature, whether appertaining to the season or to the passing hour. The pages of this Magazine afford clear testimony to the fact, that many such plans must be known to several of its contributors; I would therefore beg to propose that these should be submitted to Mr. Newman, who would perhaps be kind enough to decide on their respective merits, and then to publish the best. Surely it is not presumptuous to expect that much good would accrue to the cause of Natural History in general. By presenting such a pocket-book to a friend who is "not in the habit of paying much attention to Natural History," it would ever act as a silent monitor to improve each daily walk in field or woodland, and to record many interesting traits in "the life and conversation" of animated Nature, which would otherwise pass into oblivion. The more interesting notes might be published in 'The Zoologist,' and the list of its subscribers and contributors would be thereby greatly increased. And I will venture to predict that few, after putting their hands to this right pleasant task, will, under favorable circumstances, ever fail to carry on the good work.—*Id.*

Microscopical Society of London.

January 17, 1844.—J. S. Bowerbank, Esq., F.R.S., in the chair.

The Secretary, Mr. John Quekett, made some observations upon the structure of some human bones which had been discovered in a bog about 10 feet below the surface. When first taken up they were as black as ebony, but on drying the colour had changed to a dark brown. The specific gravity was exactly twice that of water. The most remarkable circumstance connected with these bones, was the fact that the earthy matter had not only penetrated into the Haversian canals, but had made its way from them through the canaliculi into the osseous corpuscles. The specimens exhibited had been boiled in Canada balsam to render them very transparent, and to show the great contrast between the corpuscles which had been filled with earthy matter, and those which were still empty. The same fact had been noticed by Mr. Ince, in the bones of a mummy. The author stated that he had not been able to succeed in filling the corpuscles with injection.

Mr. Dalrymple alluded to a portion of a skull of a Peruvian, in the Haversian canals of which he had seen not only a single vessel running in the canal, but a number of capillaries on the walls of the canals. Dr. Goodfellow mentioned that he had seen the osseous corpuscles artificially filled by Mr. Tomes.

Mr. Quekett then made another communication on the arrangement of the blood-vessels in the lower part of the lung of the chameleon, which were so precisely like those in the air-bladder of the eel, that it left no doubt in his mind of the respiratory function of that organ.

February 15, 1844.—J. S. Bowerbank, Esq., F.R.S., in the chair.

This being the Anniversary of the Society, Reports from the Auditors and from the Council were read, laying before the Society the expenditure, and an abstract of the Proceedings of the Council. After which the Secretary, in the unavoidable absence of the President, read an Address, in which he gave a brief summary of the present

state of the Society, and also the substance of the various papers read during the past year. He also stated the various presents made to the Society since the last anniversary, and concluded by noticing the death of two of the members.

The Society then proceeded to the election of the President and other officers, and of four members of Council for the ensuing year, when Thos. Bell, Esq., F.R.S., Professor of Zoology, King's College, was elected President, the other officers remaining as before.

The Society afterwards adjourned to a soirée, at which upwards of two hundred persons were present, and some exceedingly beautiful and interesting objects were exhibited by the aid of the three microscopes belonging to the Society, and of a number of others furnished by the kindness of the members present. —*J. W.*

Some Remarks on the habits and utility of the Stoat and Weasel.

By SIR OSWALD MOSLEY, Bart., F.L.S.

IT appears to be the beneficent intention of an all-wise Creator to keep within due bounds the increase of animal life, by permitting one race of beings to prey upon another; but the short-sighted policy of man not unfrequently interferes with this salutary provision, and the bad effects of such interference is soon felt in the losses he sustains from the inordinate increase of the less persecuted race, in consequence of this natural check upon it having been removed. Thus, rats and mice have multiplied exceedingly since the indiscriminate destruction of their appointed enemies — stoats and weasels. Not long ago there was hardly one of the latter to be met with, so vigilantly had sportsmen and gamekeepers pursued their attempts to exterminate them, but our hedge-banks and fields were almost riddled into holes by the swarms of the former vermin which frequented them; and in proportion as the slaughter of their persecutors has been stayed, rats and mice have become less prevalent.

With these facts before me, I feel desirous of advocating the cause of stoats and weasels, and of claiming for them some slight share of protection. I will not deny that they may occasionally make free with the innocent inhabitants of game-preserves and poultry-yards, but I merely contend that the good they effect in one way, more than counterbalances the evil they may produce in another. My gardener has fortified this opinion of mine, by stating that last summer his hot-beds were infested with rats and his borders with mice; their decrease has partly been accomplished by the incessant warfare he has been carrying on against them; but he had a very useful ally, of which he was not aware, until the removal of a plank discovered the abode of a little weasel, and revealed at once its active services by the number

of dead mice he found there. The intelligent bailiff of a Staffordshire nobleman has of late given protection to stoats and weasels in his farm and stack-yards, and has been amply repaid for this indulgence by the almost total extirpation of rats and mice: at present I do not learn that his poultry have been injured, but I will not undertake to guarantee their safety, when the more favourite objects of pursuit shall have become less abundant. The sagacity and perseverance with which these little animals follow their predatory sport, is admirable. They will track both rabbits and rats by scent, and when they are at a fault, they will return and quarter the ground with as much precision as the most experienced fox-hound would. I have often watched their graceful motions, when thus engaged; but the following field-adventure, which I happened to meet with some years ago, gave me a more intimate knowledge of their habits than I could have acquired with all my vigilance upon ordinary occasions. A deep snow was gradually melting away, and, as I was walking in my grounds, I observed something moving among the long grass, which was just beginning to appear through it. Its colour was as white as the surrounding snow, and had it not been for the black tip of the tail, I think I should scarcely have distinguished it. After a time this ermine stoat (for such it was) caught a field mouse, which it conveyed in its mouth to an adjoining plantation, where it ascended a fir tree, and deposited the mouse in a nest near the top of it. I afterwards caught it among some dead leaves, and although it made several attempts to bite me, a pair of thick gloves sufficiently guarded my hands, and some heavy blows on the head soon checked its energies. Having repeated them several times, I believed that I had effectually killed it, and carried it some distance in what I conceived a dead state, but the little hypocrite had only assumed the appearance of death, for the moment I threw it down on the ground, it found the free use of its legs, and effected its escape, to my great surprize and disappointment. I have read anecdotes of foxes and other animals feigning death when surprized on a sudden, but I should conceive it impossible for any creature to act the part more perfectly than this ermine stoat did. I saw the mouse after it had been deposited in the nest, but a departure from home prevented further observations.

The courage of the stoat and the weasel far exceeds that of the ferret, and their more slender forms give them a great advantage over that animal in following rats through the intricacies of their burrows: added to which the constitution of the ferret is more delicate, in consequence of its being a native of a tropical climate. For these reasons

I am persuaded that they might be substituted for the ferret with great advantage. I do not see why they should not be capable of domestication in an equal degree with the Egyptian ichneumon; and if so, their good qualities would be in like manner appreciated. In any case, it is worth the trial, and I have requested my gamekeepers to bring me some young ones of both species, if they can find any in the spring, that I may be enabled to discover their respective merits. If I should succeed in rearing them, it will give me great pleasure to communicate to the Editor of 'The Zoologist' the results of my experiment, with such further observations upon the habits of these interesting animals as a nearer inspection of them must necessarily enable me to make.

OSWALD MOSLEY.

Rolleston Hall, near Burton-on-Trent,
January 10, 1844.

Note on the Keen Scent of the Stoat. In a recent number (Zool. 344) there appeared a note from the pen of my father on the subject of the stoat hunting by scent. Since the appearance of that note it has come to my knowledge that the stoat not only hunts by scent, but also in packs and in full cry. I am indebted for the information to a gentleman of Hutton; and one of the instances he mentioned, has occurred within the past year. As he was fishing one day in the Whitadder, he observed a rabbit come down the bank under apparent alarm; and presently a stoat came in sight, following the track of the rabbit and "giving tongue." The other instance was as follows. He was seated on the bank of the river at a point where the opposite bank, which is very steep and is planted, terminates in a sort of ravine. His attention was aroused by seeing a hare issuing from this "bosky dell;" and immediately after a shrill chiding sound, resembling the combination of cries in the music of the hounds, struck on his ear. He looked with much curiosity for the solution of this unwonted noise; and presently emerged from the covert a pack of stoats, "just," added he, "as you may see a pack of hounds come into sight—first one or two, perhaps, and close behind, three or four others, and so on." The stoats were seven in number, and stuck to the trail in gallant style. What the result of the chase was, he could not see; but it may be anticipated.—*J. C. Atkinson; Hutton, January 22, 1844.*

Note on Birds of Prey found in the parish of Hursley, near Winchester. 1. Hobby, Stone-falcon, *Falco subbuteo*. This bird often builds in our woods, and is by no means the most uncommon of our birds of prey. It seems to be particularly fond of larks, and is sometimes called by the common people "the larker." It appears to build principally in the tops of high trees, and if the nest is approached, the parents show all the anger of the true falcons, even going so far as to attack the enemy with their claws. The food principally brought to the young is larks and pipits, and sometimes wheat-ears. 2. The Merlin, *Falco Æsalon*. This beautiful little hawk is extremely partial

to a well wooded country, and consequently is often to be found about us. It builds occasionally in our wood, and makes prey of much larger birds than the hobby; young partridges are the most common food. It is not nearly however so often seen as the hobby. 3. The Kestrel, *Falco Tinnunculus*. This little hawk is extremely common, more so than any other raptorial bird. It feeds principally on mice, sometimes on chaffers. Its manner of hovering in the air is remarkable, and the rustics call it "wind-hover." It is very easily tamed. 4. The Sparrow-hawk, *Accipiter fringillarius*. This hawk is more uncommon about us than any of the preceding, with the exception of the hobby. It is very bold, and often approaches the farm-yards for the purpose of picking up a stray chicken: it is very hard to be tamed. 6. Common Buzzard, *Buteo vulgaris*. This bird is rather common about our woods: it is a great coward, and is seldom seen without a mob of small birds following it. It breeds early in the year, and feeds its young principally on young birds. 6. The Kite, *Milvus regalis*. This bird formerly was very common, but of late has much decreased in numbers; still, however, it is not uncommon to see it wheeling in circles almost out of sight, or drifting away on the winds. It does not often breed with us. It is very destructive to young game. 7. The White Owl, *Strix flammea*. This bird is common enough. I once caught an old bird sitting, and having hatched the eggs on a stove, gave the young to the hen, but she made a meal of them both. — *W. P. Heathcote; Hursley Park, near Winchester, January, 1844.*

Note on the occurrence of the Goshawk off Yarmouth. A goshawk, which had alighted on the rigging of a ship, was brought in here towards the end of November last.—*Wm. R. Fisher; Yarmouth, January, 1844.*

Note on the Merlin Hawk. I have been surprised at the inattention of this bird to the presence of man, an instance of which occurred a few days ago: one perched in a tree a short distance from our house, I went on to the grass-plot and stood within twenty yards of it, apparently unnoticed. A man was sent for a gun whilst I stood watching it. Not having a gun at hand, the man went a considerable distance, and had nearly returned, before it very deliberately flew into an adjoining garden. The only way of accounting for this singular conduct is, that most probably many of these hawks are bred in some northern part of Europe, where they are undisturbed by man. *John Heppenstall; Sheffield.*

Anecdote of the Kestrel Hawk. I saw the other day, near the Strand, the collection of birds and animals called, I believe, the "Happy Family." I was much pleased at seeing one of the kestrels employed in pulling a piece of raw meat into small portions, and feeding with it some starlings and a blackbird, its fellow-prisoners. It was rather a novel sight to me to see a hawk thus employed.—*Fred. Bond; Kingsbury, November 23, 1843.*

Note on the occurrence of the Rough-legged Buzzard at Hull. I have just received a fine specimen of *Falco lagopus*, which was shot a few days ago in this neighbourhood.—*G. Norman; Hull, November 1, 1843.*

Note on the Honey-buzzard. The readers of 'The Zoologist' have, I have no doubt, been much gratified by the interesting papers recently communicated on the Natural History of the honey-buzzard, by Mr. Fisher and Mr. Wilmot; and I would take leave to suggest that the latter gentleman would confer an additional favor upon those ornithologists who are interested in the still obscure history of this very curious bird, if he could furnish them, through 'The Zoologist,' with the particulars of the plumage of any of the specimens which he mentions as having had nests at the time

they were killed, Such information would go far to show whether the honey-buzzard does or does not breed before it attains its adult plumage. My own impression is that it does, and I am confirmed in this opinion by the following notice in Pennant's 'British Zoology,' which runs thus. "Mr. Plymley has favoured us with a variety of this species supposed to be a female, *being shot off the nest*; it was *entirely of a deep brown colour*, but had much the same marks on the wings and tail as the male, and the head was tinged with ash-colour." Another fact which is somewhat in favour of this idea, and which also goes to prove that this bird remains in pairs throughout the year, has come to my knowledge, with regard to the specimen in the Norwich museum, marked "No. 2" in Mr. Fisher's paper. This individual was a male bird, and a female was shot at the same place, and within two days of the same time, in exactly the same state of plumage as the male, and I am informed that both of them had been seen together immediately before the first was shot, in the act of jointly destroying a wasps' nest on the side of a ditch. The migration of honey-buzzards to the coast of Norfolk, which occurred early in the autumn of 1841, and which, I believe, extended to several other counties in the southern and eastern part of the island, was remarkable both for the number of specimens procured, and also for the great variety of age which the plumage of the different individuals exhibited. This latter phenomenon is contrary to the usual course of our experience with regard to migratory birds, which is, that the individuals of different ages and states of plumage, generally journey in different routes, each company being composed of birds in the same state of plumage. This law, which is well explained in the preface to the first edition of Temminck's 'Manuel d'Ornithologie,' appears to be constantly in force in the case of a congener of the honey-buzzard—the rough-legged buzzard—considerable numbers of which bird have appeared at different intervals on our eastern coast; but always (so far as I have observed) in the immature plumage of the first, or at most the second year exclusively, without any old birds among them. In conclusion I may add an anecdote which was related to me by an intelligent ornithologist in the west of England, and which confirms the truth of Willughby's statement, repeated by Buffon and Vieillot, that the honey-buzzard "*runs very swiftly, like a hen.*" My informant shot a honey-buzzard, which he had been watching for some minutes through a hedge, and which had so entirely the gait and manner of walking of a large gallinaceous bird, that he fired under the full impression that he was shooting at some strange bird of that tribe, and had no idea, until he picked it up, that it was a bird of prey. — *J. H. Gurney; Norwich, February 6, 1844.*

Enquiry respecting a previous mention of an Owl's nest. In Mr. Duncan's "Notes on the Nests of Birds" (Zool. 383), it is mentioned that a gentleman saw, on a lofty and almost inaccessible branch of a tree, a nest resembling that of the carrion crow or of the owl, which proved to be that of a heron. I am not aware of an instance of an owl's nest ever having been placed upon the branch of a tree. May not the word owl in this case have been substituted for that of hawk? — *Alfred Greenwood; Penzance, January, 1844.*

Note on the Song of the Missel-thrush. A peculiarity in the song of the missel-thrush which I have never seen remarked, is that it is given forth for some time *continuously*. The period for which it lasts is generally from two to five minutes at a time. A pause of longer or shorter duration, in general of two or three minutes, then occurs, and the song is resumed again. On the 11th of February, 1842, I watched the motions of a missel-thrush which was singing near this house. It sang for about

five minutes without cessation, on one tree, then flew to the top of a tall poplar, and sang for about five minutes and a half, quitted that station and commenced singing a little further away from me, ceased again in about two minutes and a half, then remained silent for about two minutes, after which it recommenced its song near the house again. On the day before this I heard one sing for fully ten minutes without a pause, but this is a longer continuance than ordinary, the general duration of the song being from two to five minutes at a time. The song of the missel-thrush has always appeared to me to be a mixture of those of the blackbird and thrush, but of a wilder nature than either. The bird itself is very wild and shy, and even while singing is easily alarmed, and frequently changes its station. The missel-thrush often sings here during the winter months in fresh weather. During the fine weather which prevailed in the beginning of last month (December), it was frequently heard; indeed it seems to discontinue its song altogether after February or March.—*Archibald Jerdon; Bonjedward, January 20, 1844.*

Note on the Song Thrush. Our thrushes all leave this neighbourhood in the depth of winter, generally about the end of November, and are not seen again till their melodious voices are heard leading the vernal chorus in early spring. What becomes of them in the intermediate period? Do they resort to the sea-coast, or do they migrate southward to the more genial climate of the South of England? Perhaps some of the readers of 'The Zoologist' may be able to furnish a satisfactory answer to the question.—*Id.*

Note on the Nest and Eggs of the Blackbird. Several blackbirds haunt our garden the winter through, and it is pleasant to see them fare so bounteously on the coral berries of the holly, or sharing a handful of crumbs of bread or oats, with other little birds. As spring advances, they gradually withdraw to the woods and hedges, and seldom more than one pair remain to breed with us; and the male with his sweet songs charms the hearts of those who cherished his race in the wintry storms. Before the middle of May, 1841, my pair had led forth a young brood, and shortly afterwards commenced another nest on the branch of a wall apple-tree, filling up the interval between the wall and the branch with straws and hay, weaving the other end into the general structure of the nest, which was the first I ever heard of or saw in such a situation; when about half finished it was abandoned, and another was completed in an adjoining wall-tree, on the 25th of the same month; and in due season four eggs were deposited. On the 7th of June I observed that that nest was forsaken, and on taking it down I was lost in wonder to behold that two of the eggs which were slightly chipped showed another and entire shell below, of the usual colour of such eggs, whereas the exterior shell was much paler, though similarly marked. The curious eggs of the chanter and the double-shelled eggs of the blackbird, are now deposited in the cabinet of Prof. Macgillivray of Aberdeen, and I also intend to present him with the nests.—*Archibald Hepburn.*

Note on the Nest and Egg of a Hedge-chanter. During the happy season when our little birds are occupied with domestic employments, I am in the habit of directing my chief attention to a pair or two of those species which haunt our garden and the fields and hedge-rows of the farm; and the results attendant upon this method of out-door study, have been to me much more interesting than those generally derived from rambling over a large district. In the month of March, 1841, I noted the courtship of a pair of chanters; the joyous and oft-repeated songs of the male, his low gratulatory whispermings and odd gesticulations; the coyness of the female; and how, after much

cogitation, they agreed, on the 21st of March, that their nest should be built in a spotted Aucuba, within a few yards of the dining-room window. Though the loud winds of March were hushed and gone, though genial sunshine and gentle showers had renovated the beauties of long-lost flowers, and the happy murmurs of the early bee filled the willow grove, still little progress was made in the work. On inspecting the nest on the 29th, I found that the outer walls were well nigh complete, and to my great surprise a very curious egg had been deposited. I thought much on the strange egg, but being unwilling to give the birds any uneasiness, I delayed my next inspection until the 3rd of April, when I was still more surprised on observing that previous to completing the interior, the said egg had been removed, and slightly attached by a few blades of dried grasses to the outside of the nest, about an inch below the upper edge of the nest. With a joyous heart I secured my prize. The female recommenced laying eggs of the usual colour, but her charge came by an untimely end. I marked her next retreat; and have peered into many a chanter's nest, but never saw such an egg, nor one in such an odd situation. The ground colour of the egg was bluish white, mottled and specked with light brown. Length, 9 twelfths, breadth $7\frac{1}{4}$ twelfths. In its form it was much rounder than the common eggs of this species; and on piercing it with a needle, I found it empty. The locality is yearly frequented by a pair of these birds, and their nest is always built in some of the bushes or in one of the wall-fruit trees. I wish I could explain this curious proceeding of the quiet little chanter; but, as our worthy master in out-door observation remarks that "candour is the heart and soul of Natural History," and having no more facts to offer to the reader, I must forbear attempting to do so, for as he truly says, "theory is the bane of Natural History." What excellent precepts are found in the simple records of Selborne!—*Id.*

Note on the Black Redstart. On the 3rd of January, whilst walking on the beach at Teignmouth, I saw a specimen of the black or Tithys redstart (*Phanicura Tithys*), which settled on the rocks near me. Though I had never seen the bird before, it was impossible to mistake it, and accordingly, not wishing such a stranger to visit our coast without fitting welcome, my brother and myself went out in quest of it on the next day, when, after watching patiently for about half an hour, we succeeded in shooting a fine male specimen. Suspecting that this was not the only one that haunted the spot, we still made frequent expeditions there, for which we have been amply rewarded, as on the 9th, when my brother was returning in the dusk of the evening from an unsuccessful campaign, he saw a bird asleep on the rocks, which he shot, and it proved to be a Richard's pipit (*Anthus Ricardi*). Of course, as it was killed when asleep, nothing can be said of its manners or habits. Its admeasurements were as follows:—

	INCH.		INCH.
From tip of bill to end of tail.....	7	Length of hind toe	$7\frac{1}{2}$
Length of bill from the gape	1	Length of hind claw.....	$\frac{3}{4}$
Length of wing	4	Length of middle toe	$\frac{1}{2}$
Length of tail	$2\frac{1}{2}$	Length of outer and inner toes	$\frac{3}{4}$
From tip of wing to end of tail	$3\frac{3}{4}$		

On the morning of the 10th my brother again shot a female Tithys redstart, and has since seen several more of these last-named birds. It is not at all probable that they visit this coast every winter, as, if so, we must have observed them before, but it seems likely that their visit to us depends upon the very mild weather which we have had lately, thus, last winter (which was equally mild) several gannets chose to spend their Christmas here instead of journeying to the Bay of Biscay, which I believe is their

more usual haunt in this season; this, however, will not account for the presence of *Anthus Ricardi*, which is nearly as rare on the continent as in this country, therefore as this is the only specimen yet seen, it must be regarded as merely an accidental straggler. It is not the least singular feature in the economy of the black redstart, that most of the specimens shot in England have been procured in the winter season, whilst the commoner species is a summer visitant. It appears to be a shy and wary bird, approached with difficulty, settling chiefly upon the ground and running with great ease, and when at rest constantly jerking its tail like the common redstart, though it seems to approach a little nearer to the *Anthi* in habit than that species does. Its food must be similar to that of the rock pipit, as they both seek it in the same locality, and frequently in company the one with the other. The male bird may be easily distinguished when flying, by what appears to be two white stripes upon the back; this appearance is caused by the tertial quill feathers being broadly margined with that colour. Prevailing colour of the male blue grey, the hinder part of the head and the back being of that hue, gradually shaded into the deep black of the neck, throat and chest, which extends to a narrow band over the eye and to the auriculars; belly white, vent rufous, tail and tail-coverts orange-red, except the middle feathers of the former, which are umber brown. Wing-feathers black lined with bluish grey, except the primary and tertial quill-feathers, which are margined with white. Female a plain brownish grey bird; tail and vent similar to the same parts in the male, but not so bright, middle feathers of the tail also umber brown. The admeasurements were:—

	INCH.		INCH.
Total length of the male	6½	First primary quill feather	2
Tip of bill to commencement of wing	2	Second ditto	2¾
Length of wing.....	4	Tail	2½

Robt. C. R. Jordan; Teignmouth, January 20, 1844.

The Black Redstart (Phanicura Tithys) made its appearance during the present season in this neighbourhood in the first week of November, and about twenty specimens have been obtained by various persons. These interesting and rare birds have been observed regularly, for the last five years, to frequent the same locality, a line of coast about two miles in length, in which are situated lime-quarries and public buildings. On their first arrival they are to be seen in small flocks, which soon separate: perhaps the term *flock* is scarcely applicable, as they do not keep close together, but six or seven may be seen in the same quarry: solitary individuals are alone subsequently met with. They remain with us about three or four months, and I have never heard of a single individual being seen during the summer. There is some difficulty in procuring specimens, arising from a habit which these birds manifest of concealing themselves in holes, where they will remain for so long a time as to weary and exhaust the patience of the ornithologist. If not killed when first seen, they usually retire to these favourite hiding-places, from which it is almost impossible to dislodge them. Wounded birds also avail themselves of the same shelter, and I have known them in several instances taken out from holes which, from their disabled state, they had much difficulty in reaching. Very few old males in their black livery are seen; the flock consisting almost exclusively of young birds of the year; with one exception, the birds obtained this season were of the latter kind: indeed, on an average, not more than one old male is killed here annually. These birds appear to attach themselves to rocks and high buildings, where they may be seen on a bright sunny day busily engaged in the pursuit of small insects. They not unfrequently take up their abode for a few

days in the church-yard of this parish, a piece of ground above seven acres in extent: when alarmed, I have seen them immediately fly to the church, and conceal themselves on the double roof, thus evincing their strong inclination to retire from the observation of man. I may add that I have two duplicate skins of the blackstart which I shall be happy to send to any two of your readers who may apply for them.—*W. S. Hore; Stoke, Devonport, February 2, 1844.*

Note on Richard's Pipit. Four specimens of Richard's pipit (*Anthus Ricardi*) were obtained here in December, 1841: three of them were in excellent condition, one of which is in my collection. My young friend, Mr. John Gatcombe, who is an excellent practical ornithologist, and from whom I received my specimen, has been on the look out for this bird during the past and present seasons, but without seeing a single individual. He describes the flight of the birds killed in 1841 as resembling that of the wagtail; and his attention was first directed to them by their very peculiar note. They did not appear to be on friendly terms with some meadow pipits, which were constantly endeavouring to drive them from their feeding ground.—*Id.*

Note on a new genus of Sylviadæ. Zoological Society, January 9.—At the request of the chairman, John Gould, Esq. called the attention of the meeting to a hitherto undescribed bird from Western Australia, the habits of which he stated as follows. The bird is an inhabitant of the close underwood of the country, neither making its appearance in the open plains nor woods, thus rendering it extremely difficult to procure a specimen—the only means of securing it being to lie concealed in the thicket until the bird hops into sight, within two or three yards of the observer. Its note is the loudest of all the inhabitants of the grove. The great peculiarity which distinguished it from all others of the Sylviadæ, and marked it at once as a new genus and species, was the total absence of the vibrissæ or bristles at the base of the mandibles. From this fact, and the loudness of its voice, Mr. Gould proposed the name of *Atricha clamosa*.

Note on the Siskin. About the beginning of last month (December), I observed a flock of siskins, consisting of about sixty individuals, in this neighbourhood. They frequented some alder-trees by the side of the Jed, on the seeds of which they seemed principally to subsist. They were not at all shy, but, with due precaution, would allow me to approach and stand under the tree on which they were feeding. It was a pretty sight to see them all busily engaged in extracting their food from the catkins, every bird quietly attending to its own employment, and in no wise interfering with its neighbours. The various attitudes into which they would throw themselves in order the more easily to obtain the seeds, were also exceedingly pleasing and graceful. When disturbed they all took wing, and, uttering a somewhat harsh call-note, circled round in the vicinity for a minute or two, and then alighted on some other tree. Once when I had alarmed them, they betook themselves to a neighbouring wood, and dispersed themselves up and down in small parties, and did not reassemble for some time. Upon this occasion I remarked that some of them resorted to the ground, among the withered leaves, in company with some tits that happened to be passing at the time; but whether they were in search of insects or not, I could not ascertain. The call-note of the siskins was repeated at intervals whilst flying. The seeds of the alder seem to be the favourite food of the siskin in winter and spring; and this circumstance will account, I think, for its irregular appearances and disappearances in various localities. The abundance or scarcity of this food at different places and in different seasons, must greatly influence its motions and partial migrations. In the July No. (Zool. 222)

I have recorded the appearance of a small flock of siskins in this neighbourhood, which fed upon certain larvæ as well as alder-seeds. Indeed in the latter days of spring and the summer months, most of our so-called grain- or seed-eating birds must subsist in great measure on insect food.—*Archibald Jerdon ; Bonjedward, January 20 1844.*

Notes on the Moorhen. Some six or eight winters since while walking in the meadows by the river at Great Braxted in search of snipes, I came to a rather deep and broad ditch: my dog presently roused from its hiding-place on the bank a water-hen, which immediately dropped into the ditch and dived. The water happened to be remarkably clear, and I saw every motion made by the bird. It was working its way along the ditch, very near, if not actually touching the bottom; but though its efforts seemed very laborious, it did not make very rapid progress. Both wings and legs were called into play;—the former partly extended on either side,* just as if the bird, which seemed to *totter* as it moved, wished to preserve itself from falling by their means; with the latter, I think, it touched the bottom; but, looking down from above, I could not be sure. The moorhen, when disturbed by man or dog, sometimes takes wing, sometimes dives; but *after diving*, especially *if pursued by a dog*, it seldom comes to the surface again, but remains submerged, with merely its beak thrust out for the purpose of respiration. And it is impossible to say which of the two modes of escape is most frequently adopted. The same bird,† even on the same day, will sometimes dive and sometimes fly away. I mean that on visiting a nest in the morning, the bird has taken flight—visiting the same nest a few hours after, the bird dived. But disturb a moorhen on the water, at some little distance from the shelter of reeds, rushes or weeds, and I think it will be always found to fly and not to dive; whereas, on the contrary, the dabchick will always dive and not fly, under the same circumstances. Now whatever be the relative powers of flight of these birds, there can be no comparison between their powers of diving. To the moorhen the act of diving is, as we should be led to expect, laborious: and if the bird had far to go for shelter, it would soon be exhausted. But, all-fitted as the grebe is by Nature for subaqueous motion, diving is to it but sport, and is achieved with ease and rapidity, and without fatigue. It is on this account that I think—as I have intimated in the following article—that the dabchick, supposing it to have free scope for diving, must be “very hard pressed indeed” before it will try to conceal itself, as does the moorhen, by the submersion of its body. Mr. Selby mentions their doing so;—but under what circumstances? They were in pools left by the receding tide, and of small dimensions, in which their diving powers were of no use to them, as they found by experience on making the attempt: they had then the choice of flying away or hiding themselves; so not being very much addicted to the former—their spring vagaries being only the exception—they chose the latter. Again, when beating the rushes and flags by the side of the “fleets” on the marshes, I have often seen the dabchick come up in the middle of the fleet and dive again immediately. The dogs had so far alarmed him, that he thought it safer to leave the shelter of the rushes; and he did so by diving, whether across, or up or down the fleet. The adult coots and moorhens, and the well-fledged young ducks, when similarly alarmed, took wing: the young coots and moorhens and the half-feathered ducklings skulked in the covert, and were in divers instances caught by the dogs. But it is somewhat remarkable that I never witnessed the capture of a dabchick, young or old, on these

* See Montagu's ‘Ornithological Dictionary,’ article *Gallinule*.

† Of course when hard pressed they try both means.

occasions. The last expedition of this kind I made was in August, 1842. Coots were caught and shot in plenty, and others flew away; but although I *saw* dabchicks both before the hunt began, and afterwards in their hurried visits to the surface, not one was taken. By their power of diving they were alike safe from the dog and the gun, when once upon the alert; and to me it was evident, from their leaving the thick edging of rushes and reeds which bordered the fleets, that they trusted at least as much to that power as to the hope of concealment. Moorhens and young coots, on the other hand, trust to their concealment; and I have known dogs go over these birds again and again, and at last only detect them by actually treading on them. So well aware does a dog become of this habit of the moorhen, that one who is much used to hunt them, will try to discover their concealment, not by rushing into the reeds and trusting as much to his noise as his nose, but by trotting gently along the side of the covert in the hope of catching a hint from the tainted air. Two or three dogs of my acquaintance had this habit, and profited greatly by it. I have more than once had the curiosity, when my sudden appearance on the bank of a pond containing moorhens had caused one of them to seek concealment by diving, to wait for its emergence. I seldom waited in vain if I remained perfectly quiet; and especially if I could ensconce myself behind a tree or bush. The bill was first thrust higher out of the water—then followed the head as far as the eyes—and then the whole head. Careful glances were thrown around, and if all remained quiet the whole bird presently reappeared; and it resumed its search after food. I apprehend that no moorhen—that no bird whatever indeed, could put itself into this posture and retain it independently of external assistance. The feet are the instruments by which they are enabled to remain in the state of submergence: with them—and how tenacious of their grasp they are any one who has had a wounded bird in his hand can tell—they lay hold on some weed or flag, and by the purchase so obtained resist the tendency of the water to buoy up their body. I remember on one occasion seeing the legs of one extended in a most awkward fashion: and I have seen the weeds still retained by the toes after the bird had been shot in its concealment. Accounts of the almost domesticated state of waterhens are common; but their mischievous propensities when so encouraged near a garden are scarcely touched upon. I will narrate their achievements in a garden in Essex, with the owner of which I was intimately acquainted. The garden as well as house was surrounded by a moat, one end of which was grown up with willows and flags;—and the moorhens having been much encouraged, were very numerous. I have seen as many as fourteen or fifteen at once on one single bed of cabbages. They picked the peas, the strawberries, the currants, the gooseberries; stripped the newly-planted young cabbages and greens, till nothing was left but a bit of bare stalk. In short they destroyed much of the small fruit and vegetables in a productive garden; and it became necessary to destroy them. If I had not witnessed the havoc produced I should scarcely have credited it. The moorhen may frequently be found perching in a tree or thick hedge. When as yet shooting even a moorhen on the wing was to me an “event,” I remember finding a certain pond was frequented by two of them. I went with my gun, on “hostile purpose bent.” About thirty yards from the pond stood a thick thorn hedge. The bird flew from the pond towards the hedge, and just as it reached the hedge I fired. The bird fell into the hedge, and I went in great exultation to pick up my game: but none was forthcoming; and I was obliged to retreat with only my own conviction that I had “hit it very hard.” On repeating my visit to the pond shortly after, to my surprize both the birds flew out as heretofore. I fired

again, and with the like result, except that both birds "fell;" though I could not, in my most eager ambition, think I had hit both, when they were ten or fifteen yards apart. The fact was, they were unharmed by the lead, and preferred a hiding-place in a thick hedge to a more extended flight. And perfectly safe they were in their hiding-place: neither I nor my dog could give any further account of them at that time. An ivied tree also has charms for them; as well as a thick pollard oak. Where the banks of the Whitadder are wooded I often see them; and in one part a little below Edrington-castle on the opposite side, where are some ivied trees close by a path which overhangs the river, I have roused several. These always flew to the water, dived and did not reappear. On or near a large pond at Foulden, adjoining the road and separated by it from a row of cottages, six or eight may always be seen. They walk about in the road, and near the doors, and are almost as tame as common ducks. This does honour to the Scottish peasantry, for I am sure that in no part of England with which I am acquainted would the birds, in such a situation, be left unmolested. At Fawley-court in Herefordshire a single moorhen came to feed with the fowls and ducks during the hard weather, and often might be seen a few paces from where the labourers were getting their dinner;—it is almost needless to say that with them it was a favourite. But my notes are assuming an undue length: I therefore will not trespass further on the pages of 'The Zoologist' or the patience of its readers.—*J. C. Atkinson; Hutton, January 18, 1844.*

Notes on the Dabchick. Some months ago I threw together a few notes on the habits of the dabchick, which I intended for the pages of 'The Zoologist;' they were however left incomplete, and were consequently not sent for insertion. In the December number (Zool. 364) appeared Mr. Parsons' notes on the same subject, which served to remind me of my unfinished paper, and at the same time hinted, that if sent now, it would be *de trop*. But on reading Mr. P.'s account, I thought there was still ground open to me; and that, leaving out the observations which are common to both accounts, and noticing only such facts as Mr. P., from difference of locality, or other circumstances, has left untouched, or those which exhibited a little variety in the habits of the bird, my notes might yet be worthy of insertion. For a space of between two and three years, the dabchick or little grebe came almost daily under my notice during several months in the year. They frequented a piece of water—locally called a mere—of variable size. It averaged probably seven or eight acres; but at times, owing to drought and evaporation, its contents were almost exhausted towards the end of summer. But the rain and snow of winter soon refilled it, and it had attained its maximum about the middle or end of May. Up to this time it presented a surface unbroken by a single weed; but then speedily appeared a crop of water-herbage, so luxuriant and dense as in many parts almost entirely to conceal the water. A spot thus adapted to the habits of water-fowl was not likely to remain untenanted. Coots, moorhens, wild-ducks &c. frequented it, and the little grebe bred there in numbers every spring. Having taken their departure at the close of the preceding autumn, these little birds generally reappeared about or a little before the middle of April; the 13th or 14th are my dates in the years 1839, 1840. It was observable that the whole group, to the number of twelve or fourteen in those years,* made their appearance at the same time: there were no successive arrivals, if I except the occasional arrival of a single pair sub-

* This year I believe there were from fifteen to twenty pairs, besides numbers of coots and moor-hens.

sequent to that of the main body. The pairing seemed to have taken place previously to their advent; for at whatever time I regarded them, it was never difficult to make out the several pairs. Two or three weeks at least elapsed after their arrival ere the labours of nidification were commenced; for the weeds had not yet shown themselves, and there was consequently nothing on which to raise, or to which to attach, the superstructure. At this time it was by no means unusual to observe one or other of them on the wing: but they never extended their flights beyond the limits of the mere, and after circling two or three times around it they alighted not far from the spot from which they had risen. Their flight was tolerably rapid; more so certainly than that of the moorhen. They rose too from the water without apparent difficulty, and without flapping along the surface for so long a distance as both the coot and moorhen often do. This flight was quite distinct from the "flacking along the water" of which Mr. Parsons speaks, and which I also witnessed continually. Indeed it was not at all uncommon to see the bird flying at the height of from six to ten feet from the water. While making these aerial excursions, they frequently uttered their note or cry. It is remarkable that they never took wing when disturbed. I was often rowing about among them for two or three hours together, and however suddenly I broke from profound stillness into action, or even noisy exertion, and that within a few yards of some of them, they invariably dived; nor was the case altered at the report of a gun, whether near or remote. At first coming they were shy of a near approach, but afterwards they would permit the boat, if quietly propelled, to come within fifteen or twenty yards. When very quietly and slowly approached, they displayed the first symptom of uneasiness by gradually sinking themselves until only the head and rump were above the surface; and then, on the slightest motion, the little bird dived so quickly that it was most difficult to distinguish whether it went down head or tail first: after a few seconds it reappeared at the distance of some thirty yards, and, shaking its head, swam merrily away. If not further alarmed, and the boat could be kept near them while in this partially submerged state, they would continue in it for some minutes: but I never detected them in the position so often resorted to for safety by the moorhen, in which no part of the body, but the beak only, is left out of water. That they do so I am well aware, and I believe the young birds had recourse to this mode of concealment on the piece of water in question; but I am inclined to think that when the adults have *scope for diving*, they must be very hard pressed indeed before they imitate the moorhens in seeking safety by thus submerging themselves. At all events I could not detect them in that position, though I repeatedly sought to do so; and moreover, I do not remember one single instance* in which the dabchick I was watching did not reappear after diving. It emerged as quickly and suddenly as it had dived: and if, having made a correct guess at the direction it had taken, the boat were urged in that direction by a few vigorous strokes of the oars, so as to be near at hand when the bird emerged, the marvellous rapidity with which it again disappeared, was amusing and singularly striking. It seemed to be but the completion of a motion only begun when it rose; like that of a fish rising at a fly, and disappearing at the same instant. But I never failed to see it again a few seconds afterwards. When the appearance of the weeds in two or three parts of the mere permitted them to begin their nests, little time

* I speak of course of experiments made when the state of the weeds was such as both to permit me to make them with certainty, and at the same time give the bird the option of remaining submerged, if it would.

was lost. Those spots not very near the margin, in which grew a few bulrushes, were much affected. The nest seldom rose more than an inch or two above the water, although composed of a large mass of weeds; nor was it ever placed near the edge, but for the most part not less than twenty or thirty yards from it. Most of the nests seemed to be built altogether irrespectively of concealment. They were generally quite soaked with water, and the least depression by the hand or otherwise caused the water to rise in them: nor did a single instance come to my knowledge, whether by experience or in answer to enquiry, in which the nest was dry, excepting only those few cases in which it was left dry or nearly so by the shrinking of the limits of the mere in consequence of a hot dry season. I may also remark that I never saw a nest, not deserted, left uncovered, and the covering almost invariably consisted of freshly-gathered weeds, of what species I am not botanist enough to know. I have often seen the parent bird pecking away right and left, and then slip quietly off the nest as I drew near. I omit most of my remarks relative to the colouring of the eggs, which is, however, a very curious subject; for to what cause is it due? Not to mud (see Yarrell *in loco*) certainly in *this* case, for the soil adjacent is chiefly sand upon chalk. And if the colour must be ascribed to the weeds, is the dabchick's the only white egg so affected? The young birds are no sooner hatched than they take to the water. I have never succeeded in finding one in the nest, though I suppose it is probable they return to it for the night. In truth I cannot give any very accurate account of them after the young had made their appearance. The time for close observation, owing to the growth of the weeds, had gone by when the general hatch took place; and later in the season, all observation whatever was precluded. Hence too I was unable to ascertain with exactness at what period they left the mere; but by the time the weeds had died down, they were gone. Sometimes, indeed, the rapid wasting of the water must have precipitated their departure; and in 1839 the mere was almost dry in September. Neither could I ascertain whither they went. There were a few running brooks in the neighbourhood; and in them perhaps a few might have passed the winter. But from never meeting with even a solitary individual at any time during the winter months, I am quite inclined to think that the great bulk of the tenants of the mere accomplished a migration of some length. To the sea, at the nearest point, was from twenty to twenty-five miles. Could they have gone thither, as the coots most probably did, on their being driven away by the setting in of frost? I have noticed that the dabchicks' note might sometimes be heard proceeding from an individual on the wing. This sound, which was of frequent occurrence in the early part of the season only, may be nearly imitated by drawing a longish stick rapidly along common paling, so as to produce a rather shrill sound. I have not unfrequently come suddenly upon a little grebe in some of the pools formed in the large rills of the saltings where the water has exerted its wasting influence at the bendings of the channels. The bottom of these pools is soft mud, which does not permit the growth of sea-weed or other plants that might form a concealment; and yet I could never get a second glimpse of the little diver after he had once caught sight of me, which he was pretty sure to do at least as soon as I espied him. What became of him I was at a loss to discover. He could not have left the pool unseen, nor yet have remained in complete submersion, as I have staid ten or fifteen minutes at a time, hoping to see him again. If it had been able, by any means, to keep itself submerged all but the beak, I think I should have detected it; for I had but a small space to scrutinize, and have often succeeded in detecting the moorhen, even under less favourable circumstances. I can only account for its non-appearance

by supposing that it crept into some crab's hole, of which there were many in the hard mud of the bank. And the fact that it does resort to a similar means of concealment, namely, a rat's hole in the bank of a ditch, renders this supposition less improbable. The fact to which I allude is the capture of a grebe by my father, many years ago. He saw it go into the hole and caught it there. I have shot others of the genus—the tippet-grebe &c.—from a boat in the larger creeks and channels of the sea, as well as at some distance from the coast: but I never met with the little grebe in any part of the salt water, except the pools above named. That their transit to these haunts from the “fleets” mentioned by Mr. Parsons, occasions them but little trouble, I cannot doubt, from the frequency of their indulgence in the aerial trips above mentioned, in which, moreover, they proved themselves possessed of both strength and considerable rapidity of flight. And having thus conducted them over the sea-wall “on the strength” of their wings, I bid my amusing little friends heartily farewell, wishing them “good luck to their fishing.”—*Id.*

Note on the occurrence of the Crested Grebe in Middlesex. I have received a specimen of the great crested grebe (*Podiceps cristatus*), which was shot in that part of the Thames called Penton-hook, near Laleham, Middlesex. It is a young bird in its first winter, and consequently the crest is imperfect. Whole length $22\frac{1}{2}$ inches, from the carpal joint to end of the longest feathers 8 inches. I mention this because it is the first I ever knew captured in this part of the country.—*F. A. Chennell; Stoke, Guildford, February 16, 1844.*

Note on the occurrence of the Iceland Gull at Yarmouth. The occurrence of the Iceland gull so far south as Yarmouth, is so rare, that a notice of its capture, though not recent, will perhaps be interesting. Three birds of this species were killed near the harbour's mouth on the 14th of January, 1830, by Mr. D. B. Preston of this town, and several others were obtained about the same time, one of which was in adult plumage. I learn from Mr. Preston that the birds which he killed were all immature, apparently in the plumage of the second year, and he adds that they are immediately known by their flight, which resembles that of a hawk. I should have mentioned in my notice of the fire-crested *Regulus*, that it forms an addition to the list of birds found in this neighbourhood.—*William R. Fisher; Great Yarmouth, February 7, 1844.*

A Fauna of Moray. By the Rev. G. GORDON.

(Concluded from p. 429)

II. BIRDS.

THE Province of Moray, particularly that part of it which surrounds its capital, the town of Elgin, has been long famed for the salubrity of its climate. Its Ornithology, as shown in the following list, will not detract from this celebrity. And perhaps by no more impartial or stronger criterion could it be tested. The Grampians may prevent the more tender plants of southern Floras from crossing their lofty range, but they present no barrier to the migrations of the feathered tribes in search of a genial summer clime. The growth and flourish-

ing of exotics are often liable to challenge, as sufficient proof, on the score of their suspected natural hardihood or of the artificial heat or protection they may receive: or, the favouring tradition, or the love of fatherland, might unconsciously influence the native, or make sceptical the foreigner; but no such prepossessions or antipathies can regulate the determinations of any species of bird to select our woods or waters for their winter abodes. The stated occurrence here in summer of the quail, the redstart, &c., and the permanent or winter residence of the creeper, the golden-crested wren, the two *Motacillæ*, and some others, mark the superiority of the "flat of Moray" over the same parallels, and even over many a more southern degree of latitude.

The knowledge of the Ornithology of Moray was greatly extended by the discoveries of the late Henry S. Foljambe, Esq., of Nottingham, who, during the few years that he resided at Grant-lodge, in the vicinity of Elgin, detected many species formerly unknown to the Province. Possessing an intimate acquaintance with many branches of Natural History, this department seemed to be his favourite study. Having devoted his leisure hours, while in England, to the observation of their characters and habits, he was able at once to point out and name several distinct species which had hitherto been overlooked or mistaken by observers in this district of Scotland.

Golden eagle, *Aquila Chrysaetos*. Resident only in the alpine districts of the Province, and even there becoming more scarce every year through the unremitting warfare waged against them by the shepherd and gamekeeper. A splendid specimen was trapped last year on Lord Cawdor's moors, in the Streens on the Findhorn. When a nest with young has been discovered, a most barbarous practice is in some places adopted. The poor fledgelings are maimed, shackled, or have ligatures tied tightly around different parts of their bodies, so as to make them keep up a constant screaming. The parents, thinking that this arises from the cravings of hunger, cease not to bring in a supply, chiefly of grouse, which, being unheeded by the tortured family, are daily carried off by their inhuman tormentor, in numbers and with an ease not experienced by any other mode of poaching.

The Erne, *A. albicilla*. The southern shores of the Moray-frith afford no cliffs suitable for the permanent abode of this species; but stragglers have been occasionally seen. A few years ago Mr. Martin observed one in a disabled state on the sandy beach near Innes-house, which was supposed to have been the one afterwards taken in the neighbourhood of Pitgaveny.

Osprey, *A. Haliaeetus*. Builds on the ruins of the castle in Lochaneilan, Badenoch — the “Lochandhu” of Sir Thos. Dick Lauder. The nest of the osprey has also been found at Almore, in Glenmore, by Mr. Grigor, Forres; and the bird itself along the line of the Caledonian canal.

Peregrine falcon, *Falco peregrinus*. Occasionally met with in the upland districts. Many specimens have at different times been killed at the falls of Glenlatterach, and especially in 1834, 5, 6 and 8, when one or two were annually obtained by Mr. Foljambe.

Merlin, or stone falcon, *F. Æsalon*. Not unfrequent throughout the county. It is generally seen to skim along the ground, and to perch on dikes, and the larger stones and mole-hills. Although one of our smallest hawks, yet the merlin often pursues and strikes down the partridge for its prey.

Kestrel, windhover, *F. Tinnunculus*. This is the most abundant of the hawk tribe at all seasons of the year; often seen about rocks and precipitous cliffs, where it builds, as at Covesea, &c. Feeding chiefly on mice and insects, it is of much more service by their destruction than the damage, if any, done to the young of poultry or game; yet it is as ruthlessly persecuted, and its extirpation as eagerly desired, as that of some of its really injurious congeners.

Sparrow-hawk, *Accipiter fringillarius*. In the north of Scotland the kestrel and merlin share the name of sparrow-hawk in common with this species.

Kite, *Milvus Ictinus*. Sparingly diffused over the more wooded parts of the country. A beautiful specimen, noticed by Professor M'Gillivray in his work on the Rapacious Birds, was killed in the wood near Cawdor-castle, where it had its nest, in 1832. Another was killed by Mr. Foljambe's gamekeeper, in the hill near Rothes, in 1838.

Common buzzard, *Buteo vulgaris*. Although regarded as a common British bird, yet it is believed that its actual occurrence in this district was first ascertained by Mr. Foljambe, whose gamekeeper trapped three specimens in the hills between Rothes and Knockando.

Hen harrier, “Grey gled,” *B. cyaneus*. The most abundant and destructive of our larger hawks. Resident throughout the year; and in common with the peregrine falcon, buzzard and kite, has the name of “gled” applied to it. It is the male that is the “grey gled.”

Long-eared owl, *Otus vulgaris*. This appears to be by far the most abundant species of the owl tribe in this part of Scotland. It is resi-

dent, and almost invariably the species found in the keeping of our young bird-fanciers.

Short-eared owl, *O. brachyotos*. "One killed between Elgin and the Mannoeh-hill in 1836," Mr. Foljambe.

White owl, *Strix flammea*. "A live specimen taken at Pluscarden in 1836," Mr. Foljambe.

Tawny owl, *Syrnium Aluco*. "Killed near Elgin in 1837," Mr. Foljambe.

Snowy owl, *Noctua nyctea*. In the spring of 1833, after a severe gale from the north-east, an individual of this rare and splendid species of owl was wounded and caught among the sands of Culbin. Supposed to have been driven by the storm from the Shetland or Orkney Isles. Another specimen of this beautiful bird was found about four years ago on the shore of the Moray-firth near Innes house driven likely from the Northern Isles, also by stress of weather.

Cinereous shrike, *Lanius Excubitor*. Of two specimens known to have been seen north of the Grampians, one is now in the Elgin museum, and was presented by the Rev. C. W. Barclay, of Easter Calcots, where it was killed in December, 1836. "This shrike was also shot at Glenmoriston in Lochness, in November, 1843, by Mr. Birkinshaw, gamekeeper to Sir H. Meux, Bart." Mr. Snowie, Inverness.

Spotted flycatcher, *Muscicapa grisola*. Discovered by Mr. Foljambe at Grant-lodge, Elgin, where it is a regular summer visitor. Two pair hatched their young there in 1838.

Water-ouzel, "Water-cock," *Cinclus aquaticus*. Frequent on the Lossie and other streams, where it remains all the year. The rocks of Kellas on the Lossie is a favorite haunt of the ouzel: it was observed there, by one of the water-bailiffs, to contend with the common trout in carrying off and eating the ova of the sea-trout (*Salmo Trutta*), even at the very time that the latter (the sea-trout) was lying and shedding its spawn on the "redds" or spawning-ground. From its known partiality to, and destruction of the spawn of, the salmon tribe, this bird has probably obtained no enviable place in the following ancient distich:—

"The Gordon, the guile, and the water-crow,
Are the three warst ills that Moray ever saw."

The hooded crow is sometimes erroneously substituted for the water-crow or ouzel in these lines. The former, it is believed, is a comparatively late importation from the western shores of Scotland, and in Moray has only increased in consequence of the extended plantations of fir which afford it shelter. The "guile" is *Chrysanthemum sege-*

tum, a weed which must have been very destructive to corn-fields under the old system of husbandry : while the "Gordon," as well as the neighbouring Highland clans, no doubt paid a visit to "the bonny land of Moray, where," it is said that of old, "every man might take his prey."

Missel thrush, *Turdus viscivorus*. Often mistaken for the common thrush, and on that account deemed less common than it really is. "Breeds every season at Grant-lodge &c.," Mr. Foljambe.

Fieldfare, "Feltifer," *T. pilaris*. In Mudie's 'Feathered Tribes' Moray is justly particularized as a favorite winter haunt of this bird. Before the frosts set in it keeps to the open fields, and after that they eagerly seek the fruit of the mountain-ash and hawthorn.

Common thrush, "Mavis," *T. musicus*. Abundant wherever there is any plantation or natural brush-wood, and resident throughout the year.

Red-wing, *T. iliacus*. A winter visitant, often mistaken for the preceding. "Seen at Grant-lodge in 1839," Mr. Foljambe.

Blackbird, *T. Merula*.

Ring-ouzel, *T. torquatus*. A regular summer visitor, but only seen sparingly dispersed over the range of hills immediately above the cultivated districts, where it remains and breeds.

Hedge-sparrow, "Wren," *Accentor modularis*. Common, resident.

"Robin Redbreast," *Sylvia Rubecula*.

Redstart, *S. Phenicurus*. An interesting addition made to our Fauna by Mr. Foljambe, who observed it remaining throughout the summers of 1834, 5, and 8, at Grant-lodge, near Elgin, where it annually brought out its young. It is not known to have been met with elsewhere in Scotland north of the Grampians. Dumfriesshire has been recorded as a locality for it, and this is not the only species said to be confined in Scotland to the counties of Elgin and Dumfries.

Sedge-warbler, *S. Phragmitis*. Not uncommon during summer in marshy and sedgy grounds, where it continues its song throughout the whole nights of Midsummer.

Blackcap warbler, *S. atricapilla*. "Frequents Grant-lodge ; bred there in 1838," Mr. Foljambe.

Greater pettychaps, *S. hortensis*. "Seen at Grant-lodge," Mr. Foljambe.

Whitethroat, *S. cinerea*. "Met with in summer," Mr. Martin.

Lesser whitethroat, *S. Curruca*. "Frequents whins in the neighbourhood of Elgin," Mr. Foljambe.

Wood-wren, *S. sibilatrix*. "Main wood near Elgin," Mr. Foljambe.

Willow-wren, *S. Trochilus*. Common in summer.

Chiff-chaff, *S. Hippolais*. "Grant-lodge," Mr. Foljambe.

Gold-crested wren, *Regulus aurocapillus*. Found in all our larger woods, where it remains the whole year; it is, however, more abundant in winter.

Common wagtail, *Motacilla alba*. Said to migrate in winter from the north of England, but stationary in Moray.

Grey wagtail, *M. Boarula*. Occasionally to be seen at all seasons of the year about the Lossie and other streams.

M. flava. "Grant-lodge," Mr. Foljambe.

Meadow-pipit, "Cheepert," *Anthus pratensis*. Common; particularly upon flat moorish ground.

Rock-pipit, *A. petrosus*. Common along the shores of the Moray-frith.

Wheatear, *Saxicola Cenanthe*. A regular and common summer visitant, appearing about the first week of April.

Whin-chat, *S. Rubetra*.

Stone-chat, *S. Rubicola*.

Greater titmouse, *Parus major*. Cawdor-woods, 1833. "Grant-lodge," Mr. Foljambe. Not common.

Blue titmouse, "Ox-eye," *P. cæruleus*. Common. In the winter season it approaches gardens, houses and towns.

Crested titmouse, *P. cristatus*. This rare species is said by Latham and Montagu to inhabit the pine-forest of Glenmore.

Cole titmouse, *P. ater*.

Long-tailed titmouse, *P. caudatus*. These two are to be found in most fir-woods and larger plantations, but the former in more abundance than the latter species.

Bohemian wax-wing, *Bombycilla garrula*. A rare straggler. One was killed about ten years ago at the Knock of Alves, by Mr. G. Taylor.

Skylark, "Laverock," *Alauda arvensis*. Most abundant in spring, summer and autumn; but, although a few may be met with scattered throughout the stubble grounds in the depth of winter, there is unquestionably a migration of the great bulk of this favorite bird at that season. Their absence is not protracted: they appear again in the middle or end of February, when, if the frost and snow continue, they are seen in flocks about the stack-yards, or congregating on any projecting bank whence the snow may have been driven, and which the sun's rays may be softening at noon.

Snow bunting, "Snaw-fleck," *Emberiza nivalis*. Met with in flocks

every winter and spring (March 11, 1842), about the Mannoeh-hill and other upland districts. It does not invariably, even in milder weather, continue on such elevated ground, but at times descends to the lowest flats it can find.

Common bunting, *E. Miliaria*. Albino varieties have been seen.

Reed-bunting, "Ring-fowl," *E. Schaeniculus*.

Yellow bunting, "Yellow yarling," *E. citrinella*. These three are resident, the first and third in great abundance. While the robin and lark have ever been looked upon as special favorites, and protected and cherished with more than usual care, the poor yellow yarling, surpassing them in beauty, and neither behind them in usefulness nor before them in destructiveness, has been branded with the title of "the devil's bird," and invariably persecuted by the rising generation with all the zeal of an inveterate superstition, not sufficiently to be condemned, but whose origin and history it would be curious to trace.

Chaffinch, "Tree-lintie," *Fringilla Cœlebs*. One of the most abundant of the feathered tribe in Scotland. At the approach of winter there is a large accession of chaffinches in this part of the country; and the vast flocks which, during that season, are seen around the homestead of almost every farm, show in most cases a preponderance of males.

Mountain finch, *F. Montifringilla*. Met with sparingly, and that only during severe winters, among the flocks of chaffinches &c. that frequent the farm-yard.

House-sparrow, *F. domestica*. Albino varieties have been seen, but rarely. An instance of their known propensity to attack the nests of other birds, has been observed in their seizing and turning out the young of a chaffinch, which had built in a pear-tree trained on the front of a house in Elgin. After destroying the helpless inmates, the sparrows teased and tore up the nest, which they did not appropriate to themselves.

Tree-sparrow, *F. montana*. "Main-wood, near Elgin," Mr. Foljambe, February, 1838. It has hitherto been considered as confined to the middle districts of England. Seen also near Walkmill, January, 1844.

Green grosbeak, finch or "lintie," *F. Chloris*. The same remarks apply to this species as to the chaffinch, only that in the winter season there is not the same disproportion in the number of the sexes.

Goldfinch, "Goldie," *F. Carduelis*. Not very common.

Siskin, *F. Spinus*. Has repeatedly been met with in small flocks in autumn and winter, both in Elgin and Nairnshires. There is a

well-ascertained instance of the siskin having brought out its young at Elginhill, near Innes-house.

Lesser redpoll, "Rose lintie," *F. Linaria*.

Common linnet, "Whin lintie," *F. Cannabina*. Both these species are resident and generally dispersed over the province.

Mountain linnet, (*F. montium*). Seen in flocks at the Gedloch, five miles south of Elgin, and about 400 or 500 feet above the sea level, February 8, 1844.

Common bullfinch, *Pyrrhula vulgaris*. Much more common than the goldfinch.

Common crossbill, *Loxia curvirostra*. A crossbill was shot some years ago in the Oakwood near Elgin, by Mr. G. Taylor; and in 1841 there were a few seen both at Calcots, Elginshire, and at Cawdor, Nairnshire.

Starling, *Sturnus vulgaris*. Seen almost every year in small flocks of from four to eight in the spring and autumn, and even sometimes in December; a few, like a young brood, observed one summer by Mr. Martin at Stotfield, has been the only indication of their breeding in this part of Scotland; except "at the church-yard of Petty, where it has been known to build for many years in the roof of the Mackintosh's tomb, and at Moy in Strath-dearn," George Anderson, Esq., Inverness. They frequent Caithness, and rear their young among the rocks that bound its southern shores.

Raven, "Corbie," *Corvus Corax*. Found in the upper and more inaccessible parts of the country; but its numbers are much circumscribed by those appointed by sportsmen and sheep-farmers for destroying vermin.

Carrion crow, *C. Corone*.

Hooded crow, *C. Cornix*. Much more abundant than either of the two preceding, particularly in the lower and better cultivated parts of the country, where they build most frequently in trees, and remain all the year. They here perform many of the offices assigned to the vulture in warmer climes, and have been known to attack and partially devour a wounded partridge, the moment that they saw it fall to the ground, after being carried away upon the wind about a quarter of a mile from the place where it rose and was shot at. The grey parts of the plumage are occasionally found shading through brown, down in some individuals to pure black, which, when they mate with others of the ordinary colours, have been regarded by some as carrion crows. A variety, with its colours in an opposite direction, was killed at Broadley, near Nairn, some years ago. "It had the head, wings &c.

which are generally black, of a fawn colour, and the other parts which are generally ash grey were white," W. A. Stables, Esq.

Rook, *C. frugilegus*. There are many rookeries in this part of the country, the chief of which is Gordonston in the parish of Drainie. Much speculation has at different times been entertained, and very opposite conclusions drawn as to the effect the prevalence of the rook has upon the agriculture of a country. The injury done by these birds in winter to the young wheat, is the heaviest charge that can be brought against them; and, being palpable and confined to a short period, has by some been exclusively dwelt upon, without reflecting that throughout the whole of the rest of the year, and even in many fresh days of that season, they are almost incessantly occupied in the destruction of innumerable insects so detrimental to vegetable growth, but which must multiply in proportion as the richness of the soil under cultivation increases. In this part of the country the rooks repair to the hills and moors for a short time after the breeding season, where they are supposed to be attracted by the crowberry (*Empetrum nigrum*). It is fully as likely that this movement is made in order to feed upon some larvæ that may then be making their appearance in these subalpine districts. When hard pressed for food, as in the severe winter of 1841, the rook has been known to feed on carrion, and even on the carcasses of its own species.

Jackdaw, "Kae," *Corvus Monedula*. Abundant: often seen herding with the rook. Varieties in the plumage of this species have at different times been observed; and at Rafford there is one, beautifully speckled with white spots, which has been observed by Mr. Watson to remain in that neighbourhood for several years, and supposed to build in the ruins of the old church.

Magpie, "Piet," *C. Pica*. Since the extensive plantations have got up to the requisite height, the magpie's nest is not so frequently found as formerly in the vicinity of houses: this leads to the suspicion that its selection of these latter localities was not at all times a matter of choice. Generally met with in pairs, but at times in flocks of eighteen or twenty.

Great spotted woodpecker, *Picus major*. Two specimens were procured in 1838, by Mr. Wink, from the woods of Castle Grant, which it has long been known to inhabit. It has also been found near Inverness; see Jameson's Journal, No. 62.

Creeper, *Certhia familiaris*. Found in all our fir and oak plantations, and continues throughout the winter. Seen also in Aberdeenshire in December, 1838. Accompanied by the golden-crested wren

and the three small species of titmice, the creeper is not the most inactive member of a lively, stirring, amusing, foraging party, often seen scouring the woods, but forming a scene to be described only by the pen of an Audubon.

Common wren, "Thumb-wren," *Troglodytes europæus*. Frequent and resident in all parts of the country.

Cuckow, *Cuculus canorus*. If, as is probably the case from some observations that have been made, this bird arrive in this country some weeks before it begins to utter its well-known call, the records of its coming assign a rather late average date for its appearance, as they are given more by what enters the ear than the eye. Moreover, when only seen, it has not unfrequently passed for the merlin, or some small hawk.

The garrulous roller, *Coracias garrula*, is reported in a newspaper notice to have been killed at Ballindalloch in 1831.

Common kingfisher, *Alcedo Ispida*. "Aberarder, Invernesshire," see 'Magazine and Annals of Natural History,' for May, 1842.

Chimney-swallow, *Hirundo rustica*.

House-martin, *H. urbica*.

Bank-martin, "Sandy swallow," *H. riparia*.

Common swift, *Cypselus Apus*. All common in the summer season. No accurate account of the arrival or departure of the different species can be given relative to this part of the country. The Loch of Spynie, around whose waters a supply of their early food is found, is the first place where the swallow-tribe are found upon their arrival in spring. Occasional aberrations from the rule of their migrations, are met with, as in the present season, when one of the first two species, "either a swallow or martin, was seen on the 9th of December, flying backwards and forwards along the sunny side of the road near Raitloan, Nairnshire," W. A. Stables, Esq.

The following is a very meager list of dates referring to Moray. *H. riparia*, seen April 29, 1843. *H. rustica*, May 15, 1837, and May 3, 1839. *H. Apus*, May 17, 1837, and May 14, 1838. A large flock of *H. riparia* and two or three swifts arrived at the Loch of Spynie on the forenoon of the 8th of May, 1839. The former were resting, seemingly much fatigued, on the road and on the banks surrounding the Loch.

Goat-sucker, *Caprimulgus europæus*. Found in the summer months about all the larger woods and plantations.

Ring dove, "Cushat," *Columba Palumbas*. Resident, and becoming more numerous as the young plantations get up. Fond of the acorn: at Cawdor-castle no less than twenty-eight ordinary sized

acorns were taken from the stomach of one bird. When the snow is deep and the frost severe, they attack and often destroy the kail in the different gardens throughout the rural parts of the country; this is almost the only vegetable then accessible.

Rock dove, *C. Livia*. Occasionally found in its wild state, as at the rocks of Covesea.

Black grouse, "Black cock," *Tetrao Tetrix*. By no means so abundant as the wooded nature of the Province would indicate.

Common or red grouse, "Muir-fowl," *T. Scoticus*. Very abundant in most moors, where they are now protected with the greatest care, both by the Highland proprietors and their tenant sportsmen; and forming by no means the smallest source of revenue to the North of Scotland. Some very beautiful and rare albinos, one of which is now in the Elgin museum, were killed in 1842, at Advie, in Strathspey, by P. Brown, Esq., of Linkwood.

Ptarmigan, *T. Lagopus*. On Belrinnes, and the summits of all the other higher hills, from 2000 to 4000 feet.

Common partridge, *Perdix cinerea*.

Common quail, *P. Coturnix*. Mr. A. Duff, and several other sportsmen, have annually found the quail in the neighbourhood of Elgin, and other sheltered parts of the Province, which is supposed to be the most northern locality that has yet been recorded.

Great bustard, *Otis tarda*. A very rare straggler. One was shot near Oakenhead, in 1803, by the late Wm. Young, Esq., of Burghead. Another was taken a few years ago at Inchbroom, by Chas. Barclay, Esq.

Golden plover, *Charadrius pluvialis*. Frequent about the hills in summer, descending at other seasons to the low country.

Dotterel plover, *C. Morinellus*. "Frequently killed by sportsmen in Strathdearn and Badenoch," G. Anderson, Esq. Inverness.

Ringed plover, "Sandy laverock," *C. Hiaticula*. Common about the rivers and seashores.

Grey plover, *Vanellus griseus*. Seen by Mr. Foljambe.

Lapwing, "Peewit," "Pteuchat," *V. cristatus*. A regular and plentiful summer visitor; to be found in all marshy and damp grounds. Arrives about the first week of March. Does it winter in any part of England?

Oyster-catcher, "Sea-piet," "Culphleep," *Hæmatopus Ostralegus*. Not uncommon along the shore and on the shingly banks of the different rivers. Found inland as far as Granton on the Spey. Arrives at its breeding-ground on the Lossie about the middle of March and

remains until autumn. Does it then migrate to the sea, or further south, for the winter?

Common heron, *Ardea cinerea*. The heronry on the banks of the Findhorn adds not a little interest to one of the richest scenes in Scotland.

"A bird resembling the Egret (*Ardea Garzetta*) was killed a few years ago at Inch-broom," J. Barclay, Esq. And during a severe winter "a white wader was seen on the Lossie," which, from the description given, might also have been an egret. These, and numerous other such instances that might be quoted, show that much has yet to be observed and collected ere a complete Fauna of the country can be made out, even as regards the better-known tribes or classes.

Common bittern, *A. stellaris*. Occasionally met with as stragglers about the Loch of Spynie and other marshes.

The bones of a bird, allied to but not those of, the common heron, have been found in the cave at Hopeman quarry.

Curlew, "Whaap," *Numenius arquata*. Scattered sparingly over the country, both inland and at the sea-shore.

Redshank, *Totanus Calidris*. Observed both by Mr. Foljambe and Mr. Martin.

Common sandpiper, *T. Hypoleucos*. Mr. Foljambe and Mr. Martin. The latter gentleman has met with it in the breeding-season at the Scaat-craig.

Greenshank, *T. Glottis*. Mr. Foljambe.

Woodcock, *Scolopax rusticola*. A regular winter visitor. Some pairs breed in the larger woods, as at Darnaway, and at Cawdor. At the latter place a nest was found "on the ground at the foot of a fir-tree, formed of the leaves of the Scots fir, and with four eggs."

Common snipe, *S. Gallinago*.

Jack snipe, *S. Gallinula*.

Dunlin, *Tringa variabilis*. Observed by Mr. Foljambe.

Water-rail, *Rallus aquaticus*. Not unfrequent along the sides of lochs and rivers: but from its shy habit seldom seen.

Corn-crake or "skracke," *Crex pratensis*. Very common.

Water-hen, *Gallinula chloropus*. Very frequent. At the lake at Gordon-castle they are abundant, and nearly as tame as some of the domesticated water-fowl.

Common coot, *Fulica atra*. Abundant and resident at the Loch of Spynie.

Wild goose, *Anser* — ? As this genus contains several species that are said to migrate annually to the northern regions, it would be

impossible to say, without an examination of fresh specimens, which of them in their passage visit this part of the country. In the spring of every year (in April and May) flocks of from twenty to fifty are seen at short intervals for weeks, flying almost invariably (over the neighbourhood of Elgin) in a north-westerly direction, probably to their breeding-places in the northern shores of America. Instinct will tell them of a coming storm in the Northern Ocean, and make them halt for a little until it pass over. Hence an observation long ago made in this part of Scotland, that if the geese fly to the hill, the weather "it will spill," that is, get foul; but if they take to the sea, "fine weather it will be." It is to be hoped, that through the pages of 'The Zoologist,' will be communicated such observations as are made in different parts of the island relative to the appearance, numbers, &c. of these birds in their migrations *northwards*: for, at least in Moray, they are but rarely seen on their way *south* in autumn. These observations would show if, as is suspected, they have a beaten track which they regularly pursue, bounded by narrow limits. Or, on the other hand, these observations would tell their *vast numbers*, if they are seen spread over the breadth of Britain in their migration in the same proportion as in this district.

Swan, *Cygnus ferus*. A few are occasionally seen to visit the Loch of Spynie in severe winters.

Sheldrake, *Tadorna Belloni*. "Met with on the river Findhorn, where it breeds," Mr. Gordon, gun-smith, Elgin, who has some specimens from this locality.

Pintail, *Anas acuta*. Occasionally seen in the winter months about the Loch of Spynie.

Wild duck, *A. Boschas*.

Teal, *A. Crecca*. Both of these are common and resident.

Widgeon, *Mareca Penelope*. Occasionally met with on the rivers and lochs.

Velvet scoter, *Oidemia fusca*.

Black scoter, *O. nigra*. After a severe northern storm a specimen of each of these birds was found on the sea-shore near Innes-house, by Mr. Martin.

Scaup, *Fuligula Marila*. Killed at a loch near Cawdor, in October, 1834.

Golden eye, "Garrot," *Clangula chrysophthalmos*. Mr. Foljambe.

Red-breasted merganser, *Mergus Serrator*. Two were killed a few years ago in the loch of Spynie.

Smew, *M. albellus*. "A specimen of this rare species was shot at

Holm, Nairnshire, and is now in the possession of Sir John Rose," Mr. Snowie, Inverness.

Little grebe, *Podiceps minor*. A specimen, shot a few years ago in the Lossie by Mr. W. Taylor, is now in the Elgin Museum.

Northern diver, *Colymbus glacialis*. In winter not uncommon in the Moray-firth, and has been met with also inland on the rivers.

Black-throated diver, *C. arcticus*.

Red-throated diver, *C. septentrionalis*. "These two divers have been caught at Lossie-mouth, in the salmon stake net," Mr. Martin.

Foolish guillemot, *Uria Troile*. Not uncommon along the Moray-firth.

Black guillemot, *U. Grylle*.

Puffin, *Fratercula arctica*. "The black guillemot and puffin are to be met with in the Moray-frith," Mr. Martin.

Razor-bill, *Alca Torda*. To be seen along the shore, as at Covesea.

Common cormorant, "Scarf," *Phalacrocorax Carbo*. Common along the Moray-frith.

Solan goose, *Sula Bassana*. Occasionally seen in the firth. In 1820, a straggler was killed in the Moss of Rothes, some fifteen miles inland.

Common tern, "Sea swallow," *Sterna Hirundo*.

Lesser tern, *S. minuta*. Both these terns breed on the sands between Burghead and Findhorn.

Black-headed gull, *Larus ridibundus*.

Kittywake, *L. tridactylus*.

Common gull, *L. canus*.

Black-backed gull, *L. maximus*. These are the most common of our gulls: the following two have also been observed by Mr. Martin.

Herring-gull, *L. argentatus*.

Great black-backed gull, *L. marinus*.

Richardson's skua, "Dirten Allen," *Lestris Richardsonii*. Not uncommon at the frith.

Stormy petrel, *Procellaria pelagica*. Seen frequently in the Moray-frith, and sometimes during a severe storm driven on shore, as "at Burghead," Mr. Martin; and "at Inverness, in the winter of 1842-3," G. Anderson, Esq.

The loch of Spynie and the bay of Findhorn, as well as the whole line of coast, will likely furnish many species not contained in the above list of the wading and web-footed birds. G. GORDON.

Manse of Birnie, by Elgin,
February, 1844.

Notes on the Birds of the Isle of Wight. By the REV. C. A. BURY.

The Golden Eagle. About the year 1828 a golden eagle made its appearance in the neighbourhood of Appuldurcombe, the seat of the Earl of Yarborough. It was seen repeatedly, and returned constantly to the same tree to roost. At the expiration of three or four weeks the keeper waylaid and wounded it. It escaped for a time; but was captured two or three days subsequently by some labourers, and brought to the keeper's lodge. It refused to eat, though apparently wounded in the wing only, and died in about ten days. While in the neighbourhood it destroyed several lambs, and devoured the carcass of a sheep that had died; to which it was seen frequently to resort. Its remains were nailed over the dairy-door at Appuldurcombe; whence, in the spring of 1843, I obtained the skull and neck, as precious relics. They are now in my possession.

This account, with a description of the bird, was given me by Mr. Robert Loe, of Newchurch; to whom I am indebted for very much valuable information on the birds of the island. Mr. Loe saw the eagle frequently; and his correctness of observation and accuracy of memory are such, that I should from his description have felt satisfied as to its species, even did not the form and measurement of the beak clearly indicate it.

The White-tailed Eagle is known to have once visited us. At the Hermitage, the seat of the late Barlow Hoy, Esq., a tame eagle of this species has been kept for many years. One morning at breakfast-time, about seven years ago, the attention of the gardener and gamekeeper was arrested by the unusually loud screams of the bird, which was chained on the lawn at no great distance from the house; when a wild bird of the same species was seen by them to descend, and alight near the tame eagle. On being disturbed it flew to a neighbouring cliff; and after remaining there some hours, took flight, and was not again seen. The newspapers of the following week recorded the capture of a white-tailed eagle in the New Forest.

The Osprey is occasionally seen on our coast. Mr. Plumley, of the Freshwater Hotel, has in his possession a specimen, shot by himself on the adjoining cliffs, in the autumn of 1838. On September 15, 1843, I myself saw an osprey fly past within one hundred yards of my own residence. During the following week a bird of this species was killed on or near the Isle of Portland; and specimens have of late years been obtained not unfrequently along the Hampshire coast.

The Peregrine Falcon. This fine British bird is to be found more frequently along the southern shores of our Isle than is commonly supposed. Mr. Yarrell, in his 'History of British Birds,' has mentioned its building on the Freshwater-cliffs; but it is in fact known to breed regularly at four different points along our coast: on Main Bench, between Freshwater-gate and the Needles, as mentioned by Mr. Yarrell, its eyrie has been established for many years: and the same may be said of the Culver cliffs, at the eastern extremity of the island. On the cliffs to the westward of Shanklin chine, it has been observed for seven or eight years; and a fourth pair has been long settled in the neighbourhood of Black-gang chine. A fifth eyrie is, I think, to be found in Chale bay; but I cannot positively assert it.

That the peregrine is no recent settler on our coast, may be inferred from the fact that Sir Richard Worsley, in his 'History of the Isle of Wight,' published in 1781, mentions that the Culvers were once celebrated for a breed of hawks; and in the Appendix to his work, he has given a copy of the warrant of the Lords of the Privy Council to Richard Worsley, Esq., the Captain of the Island, as the Governor was then called, to search for Queen Elizabeth's hawks, which had been lately stolen in the Isle of Wight, from the place where they bred on Her Majesty's own land.

The parent birds are now well nigh considered sacred; or rather, if the truth must be told, it has been found more gainful to preserve than to destroy them; seeing that the young birds bring in half-a-guinea each to the fortunate possessor of the nest. It is unquestionably true, that if one of the old birds be destroyed, the survivor will find another mate, and return, at the period of incubation, to the wonted locality. Of the pair frequenting the Freshwater cliffs, what particulars I am enabled to give, were learned from one of the cliffmen, named Jackman. When I made his acquaintance, in the autumn of 1839, he told me that for fourteen years successively he had robbed these birds of their young. He had never known more than one pair to frequent that neighbourhood; yet though robbed every year, they have never left it. They build no nest, but deposit their eggs, four at most, on a ledge of the cliff, always the most inaccessible; never however a second time on the same spot, but seldom more than a hundred yards from the spot selected by them on the preceding year. The young are hatched about the first week in May, and the parent birds make ample provision for their wants. From ten to twenty yards from the eyrie is found a store well supplied, consisting usually of puffins, young jackdaws — their "daintiest bits" according to Jackman, and

kestrels ; of which latter birds, surprising as it appears, Jackman assured me he has found greater numbers than of any other bird, except the puffin.

A circumstance was told me connected with the history of this poor fellow, of a painfully interesting nature. His wife had year after year besought him to give up an occupation so fraught with danger to him, and consequently with anxiety to herself. In the fifteenth year he yielded to her entreaties ; and in that year she died.

Between this, and another pair settled within two miles of my own dwelling, there seems to be a marked difference of habit. Whereas the Freshwater birds disappear soon after their young have been taken, and are not seen again till the following spring ; the Shanklin birds inhabit the cliffs all the year round, and may be seen, at least one or other of them, almost any day, sitting on a projecting root immediately beneath the crest of nearly the highest point of the cliff. While perched there, some three hundred feet above me, I have, by the aid of my glass, made myself so intimately acquainted with their fine figure, that I almost fancy I could recognise these individuals among any number of their own species ; and methinks they consider me as not quite a stranger, for their full bright eye seems always as intently watching my movements, as I am scanning theirs : and yet they betray no signs of alarm, and will seldom quit their perch, even if shouted at. The baying of my Newfoundland dog, however, generally causes them to take wing.

There exists another marked difference of habit between these birds and those at Freshwater. The Shanklin birds invariably lay a second time ; while those at Freshwater, so far as I have been able to learn, never have done so.

The display of the well-known courage of this bird I had once a favourable opportunity of witnessing. The male of the Shanklin pair, seated on his usual perch, was disturbed by the croak of a pair of ravens, who were flying to and fro in his vicinity. No sooner did they appear, than he dashed at them and drove them off. The ravens returned : but the instant that a single croak intimated as much to the peregrine, he repeated his attack. This occurred again and again ; and though I think the ravens always succeeded in avoiding the blow of their enemy, they never ventured to resent it, but evidently shunned the conflict.

Yet the peregrine will condescend sometimes to a very humble quarry. I have, on two occasions, witnessed the same Shanklin pair in pursuit of a lark ; and was, on both occasions, surprised at the

length of time the poor bird avoided the fatal stroke. For twenty minutes did I watch the unequal contest. The male bird, rising above the lark, made his stoop, which was avoided with wonderful agility; the female falcon, which was usually below, then endeavoured to seize the quarry as it swerved to escape the stroke of her mate. On this occasion they actually disappeared over the sea: so that it is impossible to say how much longer the poor lark succeeded in deferring the fate that was inevitable. On the other occasion the lark was soon captured by the female. The attack was conducted as before.

The peregrine does not acquire its full adult plumage till after its third year; at least not when in a state of confinement; as I had opportunity of observing in the case of three birds in possession of a friend. I have never succeeded in rearing any myself. I once made the attempt; but being reluctant to kill so many small birds as were required for their support, they were fed on beef and mutton; and died, apparently for want of more suitable food.

Early in the spring of 1841, I observed a pair of these noble birds hovering about the landslip. It immediately struck me that they had an eye to the all-important business of incubation, and were actually examining into the resources of the neighbourhood.

The face of the cliff here presents a bold section, rising some sixty or seventy feet perpendicularly above the rocky ruins scattered in picturesque confusion over the seaward slope. In the holes and crevices a numerous colony of jackdaws have established themselves. There, for aught I know to the contrary, they have lived and bred in happy security from the time the fall of the cliff in 1819 laid bare the above mentioned section, inviting them to the snug shelter thus afforded. There too they have probably chattered away in full chorus, undisturbed by any more serious enemy to themselves or their families than an occasional idle gunner, who, from mere wantonness, or boyish vanity, may have been tempted by their noisy laugh to try his skill in starving the nestlings by the destruction of the parents. But they seemed to regard the appearance of the falcons amongst them with far greater alarm than would have been occasioned by the incursion of a whole battalion of marksmen. They seemed, like myself, to entertain more than a suspicion as to the real object of these to them, though not to me, unwelcome visitors; and when the male falcon perched on the summit of the cliff, as if to count heads, with a view of ascertaining how many young jackdaws would in due time show their noses beyond their safe retreats, a solemn silence succeeded to the noisy clamour. Some sat motionless on the neighbouring trees;

while others skulked away, as if in the hope of deceiving the intruder as to their real number. But in vain. Their fears and my hopes were to be realized: and in due time the falcons returned and took possession of a ravens' nest, built on a projecting point immediately above a wide fissure, which extended from the bottom to nearly the top of the cliff above alluded to. They soon set about their business in good earnest; a business which, I believe, was new to them; inasmuch as from the colour of their plumage, I judged them to be yearlings. The appearance of this youthful pair I account for in the fact, that a certain juvenile "fowler," who had been wont to rob the eyrie of the old stagers established in the Culvers, had, during the preceding year, gone to serve Her Majesty on the high seas; and consequently the brood escaped to add to the number of this fine species of British Raptores.

Many a time did I watch with admiring delight the evolutions of this pair. While the female was sitting, the male would perch upon the edge of the nest, and give me a fair opportunity of examining with my telescope, at the distance of a hundred and fifty yards, his fine proportions, richness of plumage and noble bearing. There certainly is something approaching to the majestic in the appearance of this bird. The erectness of its posture, its full bright eye, and the compactness of its figure, indicate at once high courage and great muscular power. And yet it is not on the wing that the appearance of this bird is most striking. I remember my feelings were those of disappointment the first time I had the good fortune to get sight of a peregrine. The rapid movement of the wings when flying, renders it a much less beautiful object than the graceful circling sail of that otherwise uninteresting chicken-slayer, the kite. It is only when it stoops that the peregrine astonishes you. Then indeed a rapidity the eye can scarcely follow, and a sound as it cleaves the air that may be distinctly heard at the distance of two hundred yards, convey a more correct notion of what are its full powers of wing.

But alas for the conclusion of my tale! The liveried lacquy of the proprietor of East Denc, after full many a time and oft proving his want of skill as a gunner, must needs bring with him, on a fatal day, a guest of his own to try his hand and eye; and that too on the very day the nestlings were hatched. Consequently they were starved; and the male falcon, after remaining a few days in the neighbourhood, took flight never, as I fear, to return. Thus were defeated my fond hopes of having another eyrie established; and that so near my own abode as to allow of constant observation of the habits of this bird.

no. 5

The Hobby is occasionally seen, but I cannot ascertain that it has been known to breed in the island. An adult male was shot in the land-slip, in October, 1841; and is now preserved as a specimen by my friend the Rev. J. F. Dawson. A pair was shot some years ago in the heart of the island, but also in autumn; these birds may, therefore, have been interrupted on their passage out of the country.

The Merlin is seen occasionally during the winter; but more frequently in the autumn: and is not so common as I have known it in other parts of the country.

The Kestrel is very common; more so than in any district with which I am acquainted. Two or three pairs breed regularly in my immediate neighbourhood: and nests abound along the whole line of coast from the Culver-cliffs to the Needles. The coast they evidently prefer, though found not unfrequently inland, but I think all come to the cliffs upon the coast for the purpose of incubation. Mr. Waterton has done much to rescue this elegant bird from the unmerited reproach it has lain under. Its principal food is unquestionably the mouse, the slow-worm, the lizard, and various kinds of beetles. In the autumn it feeds on the grasshopper, of which two or three species are very numerous on our Downs at that season of the year. It is in the winter and early spring, that the kestrel becomes a bird-eater. It will then destroy the blackbird and the thrush; as I have too frequently ascertained from the quantities of feathers about its immediate haunts: and I have lately found the remains of a skylark in the craw of a male bird. To this I imagine it is driven from the scarcity of insects: for during the summer and autumn, when if the birds were preferred to insects, the young broods of the year would afford an ample supply, I do not remember to have found the peculiar collection of feathers, forming sometimes a complete circle, which betray the destructive propensities of this bird. Other hawks pluck their prey; but none do it so cleanly as the kestrel. At the same time, while I must confess to the young partridge having been found occasionally in the nest, I am prepared to maintain that the benefits conferred by the kestrel far outweigh the mischief he may do by such depredations.

The kestrel often becomes an amusing bird in a state of domestication. I have had two that were perfect wags, and both ultimately proved tyrants. One, that had been remarkably docile, became the terror of cat, dog and servants. It would make its way to the kitchen,

and after driving puss from her snug berth in front of the fire, and a setter dog from under the table, would turn upon the cook herself, who was frequently obliged to summon me to expel the intruder.

The other bird alluded to afforded me an opportunity of proving, by actual observation, the use of the oil-gland. This, perhaps, is not the place to discuss an as yet unsettled question among naturalists; but as the pages of 'The Zoologist' are open for the recording of *facts*, I will just state what did occur. The arguments of Mr. Waterton (and all that proceeds from the pen of that accurate and indefatigable observer of Nature deserves the fullest consideration) had well nigh convinced me that birds made little or no use of the gland, or of the matter therein contained: but I was compelled to array the evidence of one of my senses against the forcible arguments of that gentleman. The kestrel perched one day on my finger and commenced the operation of preening; and I plainly saw the bird press the nipple with its beak, and rub the matter so expressed on its feathers. This was repeated and reiterated; and fifty times have I watched the bird deliberately take the nipple within its mandibles, and then pass its feathers between them. It was curious to see this bird refute what I considered one of Mr. Waterton's strongest arguments; namely, the impracticability of a bird's dressing the feathers of the head. This kestrel, after applying the beak to the oil-gland, would apparently deposit what had been expressed on one side of its neck or breast; and then rub the crown of the head on that part.

Mr. Waterton has, I think, asked, "Did any one ever actually see a bird make use of the oil-gland?" I can assure that gentleman, that what I have related above I not only witnessed myself, but made several others notice it, not once merely, but repeatedly. I do not mean to say I ever saw the matter expressed; but in taking the nipple in the mandibles, and the immediate subsequent passing of the feathers between them, I could hardly be mistaken. And after observing this a dozen times during one process of preening; and after watching the whole process a dozen times, with the bird on my fist, under a strong light, I think I may take upon me to answer the author of the agreeable 'Wanderings,' and of the useful and highly interesting 'Essays,' in the affirmative.

That birds in a state of domestication make little use of the oil-gland seems probable; and the apparent consequence is evident in the state of their plumage after exposure to rain: but it strikes me, if birds reclaimed from a state of nature, but still exposed to weather, were closely watched, this question would soon be decided.

The power possessed by this bird of poisoning itself in mid-air is remarkable. I have often watched it immediately before my windows, when a south-wester was at its height, maintaining its position head to wind with apparently but little effort; while the continual movement of the head showed it was fully occupied in scrutinizing the ground below. This bird is so regular and constant in its examination of a piece of rough ground in front of my house, that it serves me as a weather-cock. I almost invariably, on first looking out in the morning, ascertain the direction of the wind from it.

The propensity to hide the remainder of a meal is another curious trait in the character of this bird. Whether, when in a state of nature, it hides what it cannot eat, I know not; but judge it does from the fact of never finding any remains of a kestrel's meal, but feathers only. Every domesticated kestrel I have had opportunity of observing, has done so. It utters a peculiar clicking note when so engaged, which a cat of mine learned so well the meaning of, that whenever she heard it, she was on the alert to purloin the morsel as soon as the kestrel had left it deposited, as it supposed, in a place of safety. Puss was, however, at length detected in her depredations, and seen by the bird watching what sly corner he would select for his hoard. This brought on an amusing trial of skill between the kestrel and the cat, the one to effect, and the other to prevent, the concealment; and many a time have I stood and laughed at their manœuvres.

The kestrel is a favourite of mine; and I love to watch its easy graceful flight. It possesses, however, few of the characteristics of the true falcon, having little of the courage of the peregrine: for what I have related of it, when tamed, was impudence rather than courage. To the eye it is a falcon; but it certainly deserves to rank at the very bottom of the genus *Falco*; though it can hardly be called a connecting link between the falcon and the true hawk. Indeed I consider it the most insectivorous of British rapacious birds, and, in the nature of its food, removed but one step from the shrikes; to one species of which, namely, the red-backed shrike, there is also a curious approach, not only in general form, but also in colours and their distribution. The male shrike bears no slight resemblance to the male kestrel; while the female shrike is no bad miniature of a kestrel of like sex.

The Sparrow-hawk is as abundant with us as in most wooded districts. It certainly breeds in the island; as I have had eggs brought me, as well as young birds that had not long left the nest. I hold the sparrow-hawk to be the worst winged foe, both of the game-keeper

and the hen-wife. A gentleman told me lately, that only last spring his keeper took out of a sparrow-hawk's nest, no fewer than twenty breast-bones and as many pairs of legs of young pheasants. I am disposed to consider it as purely a bird-eater. I have never found the remains of quadruped, reptile, or insect in its crop.

Buzzards.—*The common buzzard* seems to have been not often met with lately. Some years back it was known to breed in the island, but I do not think it does so any longer.

Mr. Jenyns has mentioned the Isle of Wight as a locality in which the *Rough-legged Buzzard* has been met with; and I once thought I saw it in our neighbourhood on the wing, but I have not been able to fix its occurrence with certainty.

The only intimation I have received of the occurrence of the *Honey-Buzzard* was from my valued aid-de-camp — Mr. Robert Loe, who once disturbed what he supposed to be the common buzzard plundering a wasp's nest; but as I am not aware that *Buteo vulgaris* was ever known so to regale itself, I am led to infer that the bird found so engaged was *B. apivorous*.

The Hen Harrier is not uncommon in the island. I have met with it several times, and it has been known to breed in Bordwood forest, in the parish of Newchurch.

Montagu's Harrier (*Circus cineraceus*) has also been found. I have, through the kindness of J. B. Tulliett, Esq., had the opportunity of examining a specimen of a young female in his possession. I have the authority of Sir Richard Simeon, Bart., for stating that this bird was killed a few years back on his property.

Our owls are the *Long-eared Owl*, known to breed at Newchurch, but not of frequent occurrence; the *Short-eared Owl*, found pretty frequently during autumn and winter; the *White Owl*, and *Tawny Owl*.

C. A. BURY.

Bonchurch, Isle of Wight, March 12, 1843.

(To be continued).

Notes on Fishes, more especially Salmon and Eels.

By the Rev. J. C. ATKINSON, B.A.

LATE years have seen a large accession to the numbers of that class of naturalists which seems to have originated in Gilbert White of Selborne: men to whom the length of the longest quill-feather and the

weight of a full-grown bird, and the like, however scientifically described, appear not of such engrossing interest as to render unnecessary, or themselves indifferent to, the observation of the daily habits of the various creatures of God's hand. And without claiming for the followers at large any very near approach to the merit of the master, I cannot but think that Natural History is much indebted to their labours and recorded observations. We now possess a very fair general acquaintance with the habits of a large proportion of birds and quadrupeds, as also with those of numerous individuals of the insect tribe; while in not a few cases the general acquaintance has ripened into intimacy.

But widely different is the state of the case so far as the finny denizens of the waters are concerned. We have, it is true, particular and accurate accounts of their shape and size, weight and colour; and science has laid her finger on their less striking characteristics. We have, further, a perfect knowledge of their fitness for broiling or boiling, and of their excellence when stewed or roasted; and I am far from denying that such knowledge is highly interesting. Still, I think that however satisfactory a broil of trout or "a kettle of fish" may be, the accounts we have of their habits and mode of existence previously to making their appearance with the graceful accompaniments of melted butter and lobster-sauce, are by no means calculated to satisfy the mental appetite of the lover of Natural History: they are too meager by far for that; so that, having despatched them—*his consumptis*—he is but the more painfully sensible of *penuria edendi*.

Recent researches with respect to the habits and biography of a few species of fish, have served to remove certain gross errors and contribute something to the stores of sound knowledge. But still, only just enough has been done to increase the need for doing more, both by increasing the desire for knowing more, and at the same time insinuating the possibility that some portion even of the little already known may not be perfectly accurate. For that little, whether accurate or not, I think it must be admitted, the angler rather than the natural historian must receive our thanks. To him a certain amount of correct information as to the peculiar habits of the objects of his pursuit, varying it may be with the varying season, is indispensable: for without it he will be utterly unsuccessful. Consequently he has made it his business to acquire that species and degree of knowledge, and has, in many cases, made it public for the benefit of the "brethren of the angle." Of this the writer or compiler of Natural History has availed himself, and so far as he has transcribed the facts of his authority, he

is of course correct; but when he has adopted his inferences or assumptions, it becomes necessary to receive his statements *cum grano*. Scientific naturalists even, with the advantage of being skilful fishermen, have been in this manner led into error: witness the Natural History of the salmon during the first two or two and a half years of its life.

It must be acknowledged that the subject is one of no ordinary difficulty: and with the sea-fish in general this difficulty is apparently so far insurmountable that there is great reason to fear an accurate knowledge of their habits will ever be a desideratum. But there is no reason that this should ever be the case with river or pond fish. Mr. Waterton says that the naturalist who is more conversant with books than with bogs, must always be liable to error: and, if I remember right, he asserts also that the converse of this proposition is true. And in like manner if he, the naturalist, will take the trouble to study the brook rather than, or at least as much as, his books, I venture to foretell that we shall speedily receive most interesting accessions to the Natural History of fishes. The field is very extensive, is almost untrodden, and is open in the most favourable manner to every one who has sole access to a small part of a brook, or a pool capable of subdivision. Mr. Shaw's recent discoveries with respect to the young salmon, show in a very strong light what may be done by a person who has such an opportunity, and adds to it a strong taste for the investigation of Nature's secrets, and a perseverance not easily discouraged.

It has not been the naturalist only who has suffered from the prevalent ignorance as to the history of different species of fish: the public at large, and especially the owners of salmon-fisheries, have experienced great loss. I refer particularly to the wholesale destruction of the salmon-fry in various parts of the kingdom; which, even yet, in some districts, is not discontinued, and in others, only partially put down.* Thus, three years ago, when I was resident in Herefordshire, nothing was more common than to hear of the capture by one rod (and there were hundreds of anglers) in one day of from a hundred and fifty to two hundred of these little fish, which were afterwards publicly offered for sale, and readily found purchasers at one shilling per score. Some of the fishermen certainly did suspect that the spring shoals — the converted par of Mr. Shaw — must be the young salmon: but I

* Even in this part of the country where the matter is better understood, and great expense is incurred for the conservation of the fisheries, I have strong reason to believe that thousands of the fish in question are weekly destroyed in the Tweed and its tributaries during the angling season; and that the destruction is mainly owing to ignorance on the part of both anglers and fishermen.

am not aware that they generally held the same opinion with respect to the fry taken in small numbers during the summer months, and in large quantities in the autumn.* For the most part they, together with the authors or compilers of books on angling and the writers on Natural History, made the par to be a distinct species of trout, and strong arguments were adduced in support of their doctrine. The consequence was the slaughter of millions and millions of young salmon six inches in length, the majority of which, under other circumstances, would probably have grown up into salmon of some 10 or 15 lbs. each.

No future observer, certainly, however ambitious he may be, can hope to rival Mr. Shaw as to the positive benefits accruing from his discoveries: he must be contented with contributing to the increase of knowledge alone. And yet it is imaginable that the day may come in which such increase of knowledge will not be without its practical results. There can be no question that our rivers and lakes were once far more productive than they are now: † that at one time they really supplied no small proportion of the food of the population: why should they not (with few exceptions) do so again? Surely not because food is so abundant or so easily procured as to render unnecessary any addition to it. And what is infallibly to prevent the occurrence of an emergency in which such a supply of food would be almost invaluable? Should the emergency arise, and it seems not improbable that it may, that man will deserve well of his countrymen who can point out the readiest means of restoring to their former teeming condition the inland waters of our isle: and the readiest means could be ascertained only through the medium of an intimate acquaintance with the early history and habits of the several species of fresh-water fish.

Owing to the warm and dry summer of last year, the waters in the river were long both low and clear, and I was in consequence ena-

* The spring and autumn shoals had distinct names: the former were called salmon-pink, the latter last-springs. The great variety of names attached to the same fish (not only in different parts of the country but in the same locality) is worthy of remark: it seems to betoken perplexity, as well as to proclaim error. Thus, salmon-pink, last-springs, scarling or scurling, brandling, brandling-trout, fingerling, par, smolt, &c. all denote the same fish.

† The vast quantities of large trout &c. in preserved waters, for instance, in those of the Derbyshire Wye, sufficiently intimate the possibility of extracting, under favourable circumstances, a large and continued supply of food from the British rivers and lakes. And if we may take the statements of a recent work by a foreign author, the experiment would be worth making in more points than one.

bled to add one or two fresh facts to the meager store I already possessed as to the habits of the eel. My acquaintance with this first cousin of the serpent, as he is somewhat superstitiously accounted in this part of the kingdom, commenced when I was a school-boy. I was then very fond of what I should now vote a great bore: viz., the laying of night-lines for eels. There was an excitement in being out by the river's side after dusk, and a pleasure in the early morning-walk for the purpose of taking up the lines (to say nothing of the gratification arising from success) which completely overpowered in one feeling of delight all that was disagreeable: and I still remember those expeditions with pleasure, although by no means desirous to repeat them.

I then learned to think there must be an annual migration downwards, which at the least was facilitated by the autumnal floods. I never caught very large eels in spring or early summer; and never missed them in autumn:—fine well-grown fellows as big as my arm. Many of them weighed 3 and $3\frac{1}{4}$ lbs. I found, too, that if not actually inclined to astronomical pursuits in general, they paid great attention to the state of the moon; for I not only never caught them in moonlight nights—except the river were flooded or just subsiding, in which state of the water all fish are more easily taken, but the baits were not even touched: and this in a dark night was a most unusual circumstance; for in common not a particle would be left, at such times, out of ten or fifteen baits.* Their appetite, too, I found of a most accommodating kind, for few things came amiss to them. Not but that they had their tastes and preferences. Thus, a nice two-inch piece of a tender young eel as big round as your little finger, seemed to be as much relished by them as conger-soup by a Guernsey-man: a young sparrow or mouse and “such small deer” were indisputably their venison: while the head and shoulders of a moderate-sized roach was a feast no eel of aldermanic proportions could by any means leave untouched. A gudgeon was preferred to a minnow: a fresh sprat was evidently a delicacy: no eel of acknowledged taste ever turned up his nose at a fine earthworm, unless it happened to be somewhat ebony of hue; and if nothing better could be got, a meal of snails and frogs

* The solution of this circumstance which will immediately occur to many, that the eel in a light night can see the line, and is by that deterred from taking the bait, is insufficient. The tackle used in fishing for eels is never fine, and for the most part very coarse: but nevertheless the bait will be taken in broad daylight from the very coarsest kind of tackle, though most frequently perhaps in such a way that the eel escapes the hook. Rendered suspicious by the strongly apparent line, it carefully eschews the snare, but by no means leaves the bait untouched.

would be done ample justice to. A slice from the breast of a coot or a collop from its thigh was highly approved; and in salt water, the large prickly sand-worm as well as fresh fish of various kinds, are duly appreciated, but nevertheless are unable to prevent the use of that plebeian food, the salted herring. And yet in one piece of water which I used to frequent as a fisherman, and in which there were eels without end, I never could induce them to taste the Prussian carp. How to account for it I do not know. There were many large carp and tench in the same water, but no small ones; and the absence of fry I attributed to the voracity of the eels, for I had no doubt at all that spawn was deposited and impregnated. Hence it could hardly be said that the eels did not eat the small fish I offered them, because they were unaccustomed to a fish diet.

In the broad fleets on the marshes, during hot weather in summer, they seem to bask near the surface of the water, resting, meanwhile, on the support of the weeds: and on being disturbed by a boat, or if lying near the side, by a passer by, they quickly descend, making a kind of disturbance in the water which exactly resembles that caused by the emergence and instantaneous re-immersion of the dab-chick. Sometimes on these occasions the eel, in its attempt to descend, throws itself completely out of the water. On a calm summer's evening I have seen them in some waters throwing themselves out much after the manner of the porpoise when leaping: performing, that is, a kind of summersault. I have witnessed this but rarely, and never in streams. In the river Whitadder there are great numbers of eels; and when the water is unruffled, as well as clear, they may be seen in hundreds in the still, shallow parts of the river; while in the streams also, every stone almost which can boast a diameter of some six or seven inches, has one or more snugly ensconced under it. The cause, or one cause at least, of their abundance, is due to the prejudice on the part of the people against them above alluded to, so that they are not sought after by the fisherman as in the south of England: and though great quantities of them must be carried down by the impetuosity of the stream in time of floods, no other thing appears to thin their numbers. Owing to their abundance there was never any lack, when the water was sufficiently "fine" and still, of opportunities of watching them. I had frequently seen them moving slowly about and inserting their noses under every stone they came to; sometimes, if the nature of the ground or shape of the stone permitted it, insinuating the greater part of their bodies and remaining thus half hidden some short space of time: what they were doing

I could only guess. But one day while watching an eel thus employed, I saw a loach make its appearance from the stone under which the eel had thrust its head, and hastily seek refuge under another stone at no great distance. The eel instantly followed it; dislodged it again, and pursued it to its next hiding-place; moving at the same time much more quickly than it had been doing before it started its game. It was in short a regular hunt, and perseveringly prosecuted withal.

I also very frequently noticed another of the evolutions of this fish, performed when it was moving about in the manner above noticed. It might be seen suddenly to raise its head and neck, and dig, as it were, into the gravel and sand of the river-bed; at the same time throwing itself on one side, so that the white of the belly was plainly seen, while a waving motion, like that of a streamer moved by a gentle wind, went through the length of the body. The head was thrust downwards with energy; and much the same kind of effort seemed to be made as that a dog employs when catching a mouse in straw or long grass. I took for granted the fish was engaged in taking prey of some kind: I could not, of course, see what it was; most probably water-insects or larvæ which shelter amongst the stones.

Some naturalists I believe scout the idea that fish may be possessed of olfactory organs of strong power; and others maintain it. Among anglers the notion seems to be losing ground; for whereas in old fishing-books one finds multitudes of recipes for rendering the bait more attractive by imparting to it some powerful odour; modern ones say little or nothing on the subject. Mr. Ronald's experiments seem to prove either that the trout has no power of smelling, or that he has no dislike either to the scent or the taste of mustard and cayenne pepper. But in the loach-hunt it certainly seemed that the eel had some other guidance than that afforded by his sight; for having dislodged a loach which issued from one side of the stone, the eel being on the opposite side; yet the latter almost always went (and with accelerated motion) direct to the fresh hiding-place of the former.

That the eel is justly charged with destroying great quantities of the fry of other fish, cannot, I suppose, be doubted; but at what period in the life of the fry the destruction is committed, is not so easily settled. I believe it to be at a very early period;* and that later, when the young fish have acquired sufficient strength and size to leave the

* Thus Mr. Shaw says of the young of the salmon, that they take advantage of any inequality in the bottom of the river, such as the print of a horse's hoof, to shelter themselves in it: and other instances will strike every one accustomed to walk along the shallow edges of streams or ponds.

shallows or partial concealment in which they spent their earliest life, they are comparatively safe from the eel. When the trout seeks the shallows for the purpose of preying on the minnow, he dashes upon them with repeated charges until he has satisfied his appetite; and his rush is sometimes made with such violence that he risks running himself aground. The minnows, in the mean time, strive in various ways to escape; sometimes, if the shoal be large, throwing themselves into a mass, which moves with a kind of whirling motion that perceptibly raises the surface of the water, and seems to be produced by the efforts of each individual to reach the interior of the crowd. Now I have never seen anything of this kind in which the eel was actor. I have seen him going quietly down-stream among a number of minnows, who made way for him, I allow, — “gave him the wall;” but certainly did not seem to fear him as likely to take the edge off his appetite by lurching on one or two of them: while he for his part moved on, turning neither to the right nor left, and paying no kind of attention to the small gentry around him. At the very time I saw the eel hunting the loach, there were hundreds of minnows and small fry not five feet from him; but he limited his attention to the investigation of what might happen to be concealed by the stones. Moreover, to recur once more to my school-boy days. I was one of a firm numbering two or three partners. My department was eel-catching, as I have said; my partner’s attention was turned to the capture of the pike. For this purpose he set trimmers with live baits: these baits were not disabled from swimming, and although it was out of their power to escape the pike, they did seem able to avoid the eel: for I do not remember one single instance in which an eel was taken on my friend’s hooks. It may be — and I confess I think it was so — that the eel did not attempt to take the live fish. But either way, so far from making any difference in my supposition as to the time at which the eel destroys the young of other fish, it on the contrary serves to confirm it. For if the eel be unable to catch a poor maimed gudgeon, weighed down by a heavy hook and impeded in all its motions by the line attached, how is it to seize on a lively, unhurt, untrammelled fish? If we suppose it able, but unwilling, — though there would be mighty little unwillingness were the bait quite instead of half dead, — what is it which changes its inclination in other cases? I do not assert that the eel will in no case prey upon a live fish; for I know it does. But I believe that he does not seize them *à la nage*: although if he surprises one in such a situation that it cannot escape (for instance, the loach under the stone), or if one swims as it were into his jaws — as he

is said to lie in wait with some such object in view—he will assuredly make a meal of it.

In the warm evenings in the latter part of summer the eel may be seen in great numbers in the very shallow water near the bank, in places where the stream is not strong. As the observer walks gently along, they are continually darting out before him into the deeper water.

In May the “eel-fare” takes place in the Whitadder to a considerable extent. They are two or three days, I am told, in passing: and considering the great rapidity of the current, the address and activity displayed by these minute creatures are very extraordinary. I often see them in the burns or brooks leading into the river. In one of these burns they have to surmount three or four falls from six inches to a foot high. They may generally be seen, and not very far below the surface of the water, in places where the presence of a few fibres or roots, or a tuft of grass &c., permits them to insert their bodies into what may serve as a support. Ten or a dozen may be found in these spots in very close compass. But if any attempt is made to catch them, they extricate themselves with the greatest facility from the grass or fibres, and speedily escape the danger. It was remarkable that though the eels were so numerous in the river I frequented as a boy, I never heard of or saw anything like the eel-fare.

There is a vignette in Mr. Yarrell’s *Birds* (iii. 429), whereby “hangs a tale.” An incident somewhat similar to the one there depicted came to my knowledge as having taken place in the Wye. A fisherman had set his lines for eels and trout; and on taking them up in the morning, he found on one of the hooks, or rather foot-lines terminating in a hook, both an eel and a trout. The eel was not a large one, and had taken the bait and hooked itself: the trout, which was of fair size, had taken the eel: and no doubt began to think he had “caught a tartar” when he found himself held fast by his prey. For the eel in its twistings contrived to get its tail out at the gills of the trout, and continuing its convolutions, fairly “nailed” him; he was unable to release himself, and so became an example and a warning to all trout who should thereafter wish to take advantage of the distress of an eel.

J. C. ATKINSON.

Hutton; March 2, 1843.

Note on the occurrence of the Lesser Forked-beard or Tadpole Fish on the coast of Norfolk. A specimen of the lesser forked-beard (*Raniceps trifurcatus*), a fish which I

believe is new to our Norfolk Fauna, was forwarded to me about the middle of February by a lady resident near Cromer, on this coast. This specimen, which was between four and five inches in length, was caught in a sprat-net; and my correspondent informs me that a larger specimen ("nine or ten inches long") had been taken on a line a short time previously. Both specimens were taken off Cromer. — *J. H. Gurney; Norwich, March, 1843.*

On the Development of the Purpura lapillus. By R. Q. COUCH,
Esq., M.R.C.S.L.

THE *Purpura lapillus* is one of the most common shells to be found on our shores; but it is, however, more abundant in sheltered bays and crevices of the rocks than in more exposed situations. It is never, I believe, found in deep water, or in any situation where it cannot be left dry during a short period in the recess of the tide. It is therefore to be found between tide-marks, and that in great abundance. It does not wander much from the spot in which it was formed; the greatest migration it seems ever to perform, is to some near crevice where it can deposit its ova. The period in which they deposit their egg-cases, extends from January to November; but during the autumn and winter they are by no means so abundantly to be found as during summer; and while deposition is going on, they assemble in companies which fill the crevice.

The ova are enclosed in elegant yellow vasiform capsules. They are horny, and when recently deposited of a milky hue, which afterwards becomes transparent. Superiorly they are hermetically sealed by a large, solid, transparent plug; inferiorly each has a long and slender foot-stalk, which spreads out into a thin incrustation as it comes into contact with the rock, and by this means several become united.

The crevices almost always selected for the deposit of their ova, are those that are dry for several hours during the day; and if they are deposited in a pool, it is near the surface of the water. Those, however, that have been placed in water take a longer time for development, and are more liable to abortion, than those which are alternately submerged and exposed to the air. From this it would seem that exposure to the air has a beneficial influence over their development. And from what I have observed, it seems that the deposition is chiefly effected during the recess of the tide, or at all events they are abundantly deposited at those times, and apparently more than at any other.

It has been supposed that the cases have been first deposited and

the ova placed in them afterwards, and then sealed by the adult animal. This mistake must have arisen from seeing the upper portion of the case embraced by the animal while in the act of deposition; which may very commonly be seen. The ova are formed in the ovaries and descend altogether into the oviduct. In passing through this long and tortuous tube, they get enveloped in an albuminous-looking fluid, and as they still further descend, become finally enclosed in a more solid and horny secretion. This last forms the outside capsules, which are deposited entire, enclosing the ova. The whole process of the descent and formation of the capsules, is precisely similar to the formation of the egg-cases in the rays and sharks.

When the cases are first deposited, they are semi-opaque or milky, and their contents appear to be a thick tenacious fluid, of a yellow colour. This, when subjected to the microscope, proves to be granular; the grains are yellow, round, very small, opaque and surrounded with a tenacious transparent fluid, similar in appearance to the white of an egg: these constitute the ova. Immediately after deposition they appear to be simple granules; but soon, and without much increase in size or alteration in shape, one spot on their surfaces becomes covered with numerous vibratory cilia, which are in constant and rapid activity. As the grains increase in size they become oval, the cilia more distinct, and the spot on which they are situated, as well as occasionally several other spots, become transparent; thus showing that the yellow yolk is enclosed in an investing membrane. As development advances, this investure becomes more and more apparent, especially towards that point where the vibratory cilia are situated. At this point, from the cilia, which are situated without, to the yolk, situated within, several dark lines pass nearly parallel to each other; these afterwards prove to be the walls of a tube, which forms a communication between the albuminous envelope and yolk. This external aperture to the tube varies in size and shape in different specimens, but is most commonly oval, and around its edges the cilia are situated. The office most commonly assigned to cilia is that of respiration; and that probably is the function performed here: but the vibrations are performed in the thick slimy fluid in which the ova lie; and as the embryo advances in development it disappears, so that when the shells are ready to escape from the "cup," not a vestige of it remains. As soon as the cilia appear, the yolk or rather embryo has a gentle, circular, gliding motion, which is probably produced by the action of cilia, but the cause is however rather obscure. The motion is rather irregular; sometimes they glide forward, at others backward:

sometimes to the right, at others to the left, and occasionally in a circular manner, as if moving on a pivot. The form of the young is generally of an oval character, but frequently varies. The part on which the cilia are situated very soon gets lobulated in an irregular manner; and although there are scarcely two alike, yet there is generally one large lobe on each side of the tubular orifice, with one or two smaller ones besides. The tubular opening soon enlarges and alters in shape; the external and transparent envelope becomes more solid and calcareous, forming, in fact, the shell. At this period of development the shells assume a more definite shape, and one more characteristic of the adult form; the surface is sometimes moulded into folds, and irregularly marked with minute triangular prominences. Through the enlarged opening a portion of the internal animal protruded, answering to the foot of the adult. This part very soon assumes the form as well as the function of the foot. At this time it will be found, that the anterior portion of the foot is clothed with vibratory cilia, as are also two thin leaflets situated between the shell and the back of the animal, which are in constant flapping action. After the foot is protruded the shell gradually alters in form, the anterior part of the lip is prolonged forward, and the creature soon learns to travel. About this period the angle on the left labial rim is formed, near its attachments to the spire. This, as the creature advances towards maturity, is advanced anteriorly, and prolonged till it forms the tubular snout of the adult by approximating to the opposite rim. At this period the plug at the superior portion of the cup becomes ruptured, and the young escape into the surrounding water, and seek shelter in the crevices of the rocks. Even in this young state they have the habit of the adult of seeking such situations as will leave them exposed to the air during some portion of the day; if they are kept in confinement, they always seek the edge of the vessel above the water-mark.

All the ova contained in one vase are not equally developed, nor have they all the same form. In some the yolk is nearly as large as the investing shell, while in others it is a mere speck; and it seems wonderful that so small a point should confer life and activity on so large a shell. As they are thus unequally developed, some are excluded or effect their liberation some considerable time before others; it will be found on examination that they escape at irregular intervals of from one to three weeks from each other. The periods, however, vary according to the seasons. During the winter they take nearly six months in arriving at maturity; but during summer and the early part of autumn, they escape from the cases as early as three weeks

after deposition. Sometimes, however, they all advance together, and then it is remarkable to see how closely they are compacted. This is frequently so firmly done, that the young escape in very distorted forms; in some the lateral rims of the aperture are pressed closely together; in others the beak is thrust backwards upon the shell, but is more commonly twisted laterally: these and many other distortions are frequently to be seen.

When the shell has escaped from the "cup" it is perfect in all its parts and general form, except that it is destitute of the spiral cone; this is acquired afterwards, and enlarges with the growth of the animal, without being embraced by the mantle. R. Q. COUCH.

Polperro, February, 1843.

Microscopical Society of London.

March 20, 1844. — J. S. Bowerbank, Esq., in the chair.

Read, a paper by Edwin Quekett, Esq., "On the structure of the Ligament uniting the Valves of Conchiferous Mollusks." After some preliminary observations on the nature of univalve shells, in which he considered the operculum as a step towards the second shell of bivalves, he stated that the usual opinion was that while the strong adductor muscles inserted into the inner part of the valves served to keep the shells closed, the ligament attached to the hinge performed the office of opening them by its elasticity. But upon examining shells of different genera, such variations in the position of the ligament were found as to render this solution of the mode in which it performs its office, in many instances incorrect. Thus in the oyster and cockle the ligament is situated without the hinge, while in the muscle and scallop it is within. Now it is evident that to produce the same effect, a power behind the fulcrum must operate in a contrary manner to one before it. The former can only do it by expansion, after compression produced in shells by the closing of the adductor muscles; while the latter can only effect the same end after having been elongated by the same means. This contrariety of action induced him to examine the structure of this ligament in various shells, and he found, in addition to those differences which may readily be observed without the assistance of the microscope, that while, in many cases, no perceptible structure can be perceived in the ligament placed before the hinge, in the common muscle (*Mytilus edulis*) it appears under a high magnifying power to be composed of a dense tissue without any particular structure, in which appear certain small channels or lacunæ filled with fluid. Hence it would appear that when the ligament is compressed by the adductor muscles closing the valves, the fluid in these lacunæ being incompressible, renders the ligamentous structure more tense, and thereby increases its elasticity. The external ligament, again, has long been known to be composed of two layers of substance possessing different organization, as stated by Dr. Roget in his 'Bridgwater Treatise,' (i. 217). Upon examining these as they exist in the oyster, cockle, &c., by the aid of the microscope, the external layer exhibits no marks of structure, whilst the internal one is seen to be composed of numerous fibres, each about $\frac{1}{300}$ of an inch in diameter, running parallel to each other, and apparently

crossed by others at right angles : but under a very high power these cross fibres are no longer seen, and each fibre appears to be composed of a cylinder, so formed as to present more or less transparent markings at regular distances from each other, giving a transversely striated appearance. These striæ are apparently produced by an analogous method to those on the primary fasciculus of muscle, and there is but little doubt of the contractile nature of this arrangement, inasmuch as it assists in the opening of the shell when the ligament is behind the hinge, which otherwise could never be effected. Mr. Quekett concluded with various observations on the mode of action of these different structures, and on the astonishing power exhibited by the peculiar arrangement of the structure of the external ligament in opening valves of immense weight, as in *Chama Gigas*, whose shells frequently weigh as much as one hundred weight.—*J. W.*

Notice of 'A Systematic Catalogue of British Land and Fresh-water Shells; for labelling Collections, &c.: containing all the Species hitherto discovered in Great Britain and Ireland.' London: Simpkin, Marshall & Co., Stationers' Hall Court. York: John L. Linney. 1844.

WE beg to recommend this useful little catalogue to those who are interested in our native shells: its objects and plan will be best explained by quoting the author's preface.

"A systematic list of British Land and Fresh-water Shells for the purpose of labelling collections, or serving as a medium by which collectors may show their desiderata, has been long needed; and although the following catalogue may be objected to by many, as not containing the Marine Shells, it will, it is hoped, prove useful to those who are engaged in the study of this beautiful branch of our British Conchology.

"The arrangement of the genera and species, as well as the nomenclature, is with some exceptions the same as that adopted in Mr. Gray's edition of 'Turton's Manual.' A short list is added of those shells which have been admitted on insufficient grounds, or which are supposed to be varieties of other species. *Limneus lineatus* of Bean, and *L. acutus* of Jeffreys, have been found about Scarborough, by Mr. Bean, whose indefatigable researches in Natural History are so well known.

"We have heard of one specimen of *Achatina octona* being taken in Ireland, but think its existence as a British species requires further proof.

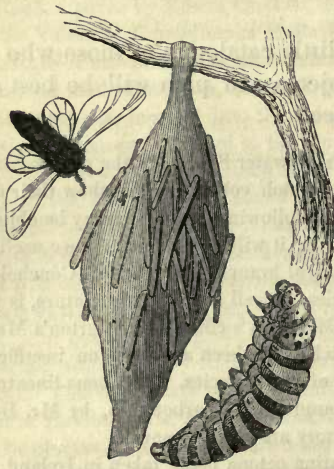
"Some of the numerous varieties of *Anodon Cygneus*, should, it is thought, be more justly regarded as species; and we believe this class would amply repay careful investigation."

Notes on the habits of Thyridopteryx Ephemeraformis, (Stephens).

By P. H. GOSSE, Esq.

THE following notes on the habits of an American Lepidopterous insect may be deemed not uninteresting. On the 6th of September,

1838, at Alabama, U.S., I found upon an apple-tree many singular-looking spindle-shaped cases or cocoons, made of a strong tough silk of a dirty white hue. The extremities were tapered to a point; the length was from one and a half to two inches; the upper end terminated in a silken band fastened tightly round a twig, from which the case was suspended. The surface was thickly studded with pieces of the twigs from one-third to two-thirds of an inch long, attached longitudinally, but somewhat slightly: these were most numerous on the upper part. I made an incision in the silk, and found within a smooth plump caterpillar, dull reddish brown, tapering at the extremities, the head and first three segments horny and polished, white with black spots. I threw the cases into a box, and the next day examined one or two more, and found that some contained pupæ. In a large cocoon there was a dark brown pupa, much elongated, with no vestige of wings in the usual place, the head, legs and antennæ very small, for all these members can be traced in a Lepidopterous pupa as in the imago: in another



Thyridopteryx Ephemeraformis.
Larva, cocoon and male moth; natural size.

was a pupa much smaller, which had wings of middling size, and short thick antennæ. I had reason to think that this cocoon was used by the caterpillar as a shelter or defence, while projecting the three polished segments of its body to eat, in the manner of a *Phryganea*; for on suddenly opening the box I saw one draw his head within the cocoon at the lower end, vanishing just as I looked at him. This induced me, by making a hole near the top of the cocoon, and touching the larva behind, to drive him clean out, as I have done

a *Phryganea*, at the lower end, which is tubular and open. But soon after I found by actual observation that the manners of the larva had the supposed resemblance to those of the *Trichoptera*; for at night I saw that the caterpillar crawled about the leaves, dragging the tent after him as far as it would allow, the first three segments being projected. I could not but admire the circumstance that this resemblance between insects of very different orders was still more complete

in the bits of stick which were stuck about the case so profusely, and of which I could not discover the use. I at first thought they might have been the living twigs to which the web was first fastened as a stay until it attained form, and that they had afterwards been cut off by the caterpillar, to free the case when finished: but if so, there would surely have been but two or three, instead of a dozen or two. Perhaps they were intended to make it more rough-looking and less observable. Those cases which I had cut partly open were soon accurately closed nearly as tight and strong as ever, by an internal coat of silk over the incision.

On the evening of the 5th of October I was surprised at seeing in my box a little moth, which was fluttering his wings so swiftly as to render them almost invisible. On his becoming still, I observed that the wings were almost totally destitute of scales, and consequently transparent: the posterior pair very minute. On the posterior wings there was a very narrow band on the inner margin, which was clothed with black scales, and a few were sparingly scattered in an undefined stripe that ran down the anterior wings. The head, thorax and abdomen, which were somewhat robust, were thickly clothed with black down; the antennæ doubly pectinate, curled and very short. The moth measured half an inch in length and an inch in spread of wing. It flew but a very few inches at a time, but constantly (or nearly so) vibrated its wings. When these organs were not in motion they were deflexed, and the abdomen was turned up. It was a male, and had proceeded from one of the smaller cases, at the mouth of which the pupa-skin was left, protruding about two-thirds of its length. Another pupa had just begun to make its head visible from the mouth of another cocoon. I then opened some of the larger female cocoons, but in most of them the pupæ were filled with a soft satiny dust, of a buff-brown colour. In one cocoon I found the female evolved from the pupa; the exuviæ of which were likewise filled with this downy dust. The perfected female had little of the form of a moth, but appeared like a transparent bag of soft eggs; the anterior parts were dark brown and the limbs were very minute, flabby and almost undistinguishable, looking nearly decomposed. No wings were to be seen, and there was not a vestige of down upon the body, except two or three tufts near the tail, which resembled that left in the pupa-skin. I should have supposed that it was dead, but that at intervals there were certain motions which indicated the possession of vitality. "Take it for all in all," larva, pupa and imago, this was the most singular moth that ever it was my fortune to make acquaintance with. The Oiketi-

cus in Mr. Kirby's collection at the Entomological Society's house, is much like my male, but it is larger and has clothed wings.

P. H. GOSSE.

Kentish Town, February 28, 1844.

Note on the capture of Colias Edusa at Yarmouth. In the month of June, 1839, I took near Yarmouth a faded female; and in the autumn of the same year, about a dozen males of *Colias Edusa*. These are the only times I have met with the insect. On the 14th of last October a single specimen was seen in a turnip-field in the vicinity of this city.—*Henry F. Farr; Lower Close, Norwich, March 22, 1844.*

Note on rearing the Death's-head Hawk-moth. Seeing in 'The Zoologist' that there was a question about the breeding of the death's-head Sphinx (*Acherontia Atropos*, Zool. 398 and 473), I will give you the manner in which I have hardly ever failed. When the pupa has been buried a few days, I take it out, and place it in moist, friable, vegetable mould, about an inch below the surface, and moisten it every two days with a little luke-warm water.—*W. P. Heathcote; Commoners' College, Winchester, February 29, 1844.*

Note on the capture of Male Emperor Moths by means of a Female. I take the liberty of sending you the following account of the capture of male moths by means of an impregnated female, for insertion in your most interesting magazine, 'The Zoologist.' I believe the fact that female insects when unimpregnated have the power of attracting the male, in some unknown manner, is well authenticated; but perhaps it is not so commonly understood, that they will do so even after impregnation. Last year, having secured a fine female of the Emperor moth (*Saturnia Pavonia-minor*) on sugar, and supposing that possibly it might not be impregnated, and consequently that I might by means of it secure some males, of which I was in want, I fastened it in a well secured gauze box, and exposed it in the open air. In an hour's time three males approached and endeavoured to enter the box, all of which I caught almost immediately. Being then satisfied with my captures, I took the female in doors, and shut her under a tumbler while I went in search of some sulphur to destroy her. When I came back, to my great astonishment I found that she had laid between sixty and seventy eggs, which I preserved, not at all thinking they would be productive, as I thought the fact of her having attracted the males sufficiently proved that she was unimpregnated. However, the eggs all hatched. I hope you will insert this in 'The Zoologist,' as perhaps some one may explain it.—*Id.*

Note on the Genus Cerura. The number of British species of the genus *Cerura* appears to be imperfectly known, the comparatively few specimens that have been taken varying so much that Mr. Stephens enumerates nine species, while others think that there are but three or four. The scarcity of specimens is, I think, to be attributed chiefly to the habits of the genus rendering them difficult to be discovered in their preparatory stages. In the larva state they have been seldom found, *C. vinula* excepted; and in the pupa form still more rarely, from the manner in which the cocoons are formed in the bark of the trees, on the leaves of which the larvæ have fed. During the past winter I and some friends have found several pupæ by diligently searching the trunks of various species of poplar, the greater number being on the "white" and "Lombardy." It is very curious to see how well they hide themselves;

some are buried in the smooth bark, the outside of the cot being quite level therewith, and nothing to indicate their presence; others are sunk in fissures and crevices, their coverings being so nearly of the colour of the bark that they are scarcely discernible; and others again are perched on the tops of rugged excrescences of the bark. In any situation they are most difficult to discover, and require truly entomological eyes; but believing that more specimens are likely to be obtained this way than any other, and that the comparison of a number of them collected in different localities, and of the notes that should be made, of food or peculiarity of habit, will be the best means of clearing up the obscurity that now rests on this interesting genus, I wish to call attention thereto while yet the season admits of search. — *J. W. Douglas*; 6, *Grenville Terrace, Coburg Road, Kent Road, March 18, 1844.*

Notes on the British Humble-Bees, (Bombus of authors).

By *FREDERICK SMITH, Esq.,* Curator to the Entomological Society.

In a former paper of mine (Zool. 408), I expressed my intention of endeavouring to point out the number of species of the genera *Psithyrus* of St. Fargeau, and *Bombus* of Latreille, hitherto discovered in Great Britain, as far as my own experience in collecting, and an examination of the best London collections, would enable me to do so. And perhaps I cannot do better, in the first place, than quote a few words from the preface of their great monographer, the Rev. W. Kirby; who observes — “he does not presume to affirm that he has fallen into no mistakes, for in two of his subdivisions of genuine Apes [alluding to the genera *Nomada* and *Bombus*] he fears he has not been so successful, in uniting the sexes, as in the other families; and in general, where the males and females differ very materially, as they occasionally do both in colour and form, he has probably, in several instances, been led to regard them as distinct species.” Since these remarks were written, the observations of entomologists have proved their truth; and indeed it could scarcely be otherwise, when we consider the state of the group previous to the publication of Mr. Kirby’s admirable work. Greatly indeed are we indebted to that illustrious author, for the state of comparative perfection to which he reduced the genus, and placed the results of his labours before us. He has, indeed, left little for succeeding observers to do, excepting, as far as their observations may enable them, to give to some individuals their legitimate partners, to describe the species not then discovered, and to correct such errors as were committed solely for the want of such information as time and subsequent discoveries now enable us to rectify. Numberless indeed are the charges against writers of the present day, of a love of unnecessarily multiplying species; but let it be

always borne in mind, that it is sometimes exceedingly difficult to draw the line of demarcation; and that subsequent discoveries generally give birth to such charges, which must and will continue to be the case. I have been led to make these observations, from a fear that I may be considered as running into the opposite extreme; and that for the sake of novelty, and a love of change, I have destroyed what others have carefully formed; but I will not differ from any author without such proofs as convince me of being right, or from such reasonable deductions as leave no doubt on my own mind of the correctness of my views.

The species of the genus *Bombus* are indeed difficult to be determined, and the difficulty is increased from the colour of the hairs being so liable to change; in addition to which, the same sex is sometimes clothed in a variety of colours, varying from a bright and gaily coloured insect to one totally black; and it requires a considerable intimacy with (if I may use the expression), and an extensive collection of specimens, to enable any one to link the chain of varieties; nor can I by any means flatter myself that I have not fallen into some errors arising from these causes. One very fruitful source of error has been the practice of describing specimens which had been long disclosed, the hairs entirely changed from their original colour, the wings lacerated at their margins, and no mention made of the sex of the insect described. Mr. Kirby has noticed several such instances, and properly rejected such species.

My connexion with the Entomological Society affords me constant opportunity of examining the original specimens from which Mr. Kirby drew up his descriptions for his Monograph, the whole of them being deposited in the Museum of that Society. I have also carefully examined both the Linnean and Banksian collections. These aids, and a close attention to the aculeate Hymenoptera, will I trust enable me to place the genera in somewhat better order than they have hitherto been in.

It is not my intention to describe all the species; indeed that is rendered unnecessary by the admirable descriptions in the 'Monographia Apum Angliæ.' Descriptions are given of all the new species.

Genus.—*APATHUS*, *Newman*.

Psithyrus, *St. Fargeau*. *Bombus*, *p. Latreille*.

The males of the genus *Psithyrus* may be distinguished from those of *Bombus* by the convex posterior tibiæ thickly granulated and coated with hairs: in the genus *Bombus* the posterior tibiæ are con-

cave in the centre, with a few scattered hairs and fringed at the exterior margins. The female Bombi have concave posterior tibiæ, with a corbicula for carrying pollen, and have toothed mandibles; whereas in the Psithyri the tibiæ are convex and the mandibles have a single notch. All the male Psithyri have black hairs on the face.

Sp. 1. APATHUS RUPESTRIS.

Apis rupestris, Fab. Kirby's Mon.

The female seldom varies, but has been taken almost or totally black. The male is subject to great variation in its colouring; its varieties include the *A. albinella*, Kirby, *A. frutetorum*, Panzer, and I think also the *Bremus pomorum* of the same author. Sometimes merely the tip of the abdomen is red, in other specimens two-thirds will be red; sometimes it is indistinctly barred with yellowish hairs, as in *frutetorum*; and a specimen in Mr. Curtis's cabinet correctly represents the *Bremus pomorum*, having a fringe of pale hairs on the collar and scutellum, and a pale band between the black base and red tip of the abdomen.

Sp. 2. APATHUS CAMPESTRIS.

A. campestris, Panzer. Kirby's Mon.

The female seldom varies, but I have seen a specimen taken by Mr. Waterhouse totally black. The male is perhaps the most variable insect in the whole family of bees: the varieties include *A. Rossiellus*, Kirby, *A. Leeanus*, K., *A. Francisanus*, K., and *A. subterraneus*, K.; the four species as enumerated being each a darker variety, the last totally black, with only a few pale hairs at the tip of the abdomen. Mr. Kirby considered this the male of the *subterranea* of Linnæus, but as the authentic specimen is a true *Bombus*, and the specimens, of which there are two in Mr. Kirby's collection, are undoubtedly *Psithyri*, such cannot be the case. Varieties occur intermediate in colouring between those above quoted, so as to leave no shade wanting in the gradual approach to black.

Sp. 3. APATHUS BARBUTELLUS.

A. Barbutellus, Kirby's Mon.

Neither of the sexes of this species appears to be subject to vary. Mr. Kirby considers the male synonymous with Panzer's *A. saltuum*; but his own *A. Latreillellus*, grey from age, much more closely resembles Panzer's figure, or I should have adopted Panzer's name. Still

the description, "anus acutiusculus," agrees best with *Barbutellus*, but not with Panzer's figure.

Sp. 4. APATHUS NEMORUM.

A. nemorum, Fab. *Bremus æstivalis*, Panzer. *A. vestalis*, Kirby.

I found a specimen of this species in the Banksian cabinet, labelled by Fabricius; it is a true *Psithyrus*, and identical with Kirby's insect; it also agrees with the description in the 'Systema Entomologiæ,' the yellow band on the collar being sometimes interrupted and sometimes entirely obliterated. The *B. æstivalis* of Panzer represents it very correctly. The colouring of the male resembles that of the female, with the addition of a few reddish hairs at the extreme tip of the abdomen.

Genus.—BOMBUS, Latr.

Sp. 1. BOMBUS SENILIS, Fabr.

A. muscorum, Kirby's Mon.

This and the following species are extremely difficult to separate in long-disclosed specimens, since the hairs then change colour;—the bright yellow to pale tawny and the black hairs to grey. The characters pointed out by Mr. Kirby however hold good in recent specimens. In *B. senilis* the hairs of the corbicula on the tibia are pale, whereas they are black in the following species; those on the head and face of *B. senilis* are also pale, and the abdomen is proportionably longer: the males, females and neuters have the same distinguishing peculiarities. I have frequently taken the nests of both species; in one of *B. senilis*, which I took in the summer of 1832, I did not find a specimen differing in any of the characteristic peculiarities above stated. Having adopted the name under which Fabricius described the male, it is necessary to give my reasons for so doing. In the Linnean cabinet is the original specimen labelled in the handwriting of the illustrious Swede, "No. 32, muscorum," which number agrees with the tenth edition of the 'Systema Naturæ;' and after a most careful inspection of it, I consider it identical with the *A. floralis* of Kirby; the head has black hairs on the vertex, the abdomen has indistinct dark bands, and the corbicula on the posterior tibia is black. The Linnean specimen is not one changed in colour by age, nor are the wings in the slightest degree lacerated at the margin. The specimens in Mr. Kirby's cabinet ticketed *floralis*, exactly agree with the Linnean insect; whereas those ticketed *muscorum* do not: I strongly

suspect the names, by some accident, were reversed. The nests of this and the following species are not always composed of moss, in fact, most of those which I have discovered have been composed of dried grass: they are by no means uncommon in hay-fields, particularly if these are on hill-sides facing the south-west. The nests so closely resemble those of field-mice, that I have sometimes thought it possible that the bees had driven away the rightful owners, and taken forcible possession, or *vice versa*, as I could never detect to which a nest belonged, without disturbing the inmates.

Sp. 2. BOMBUS MUSCORUM.

A. muscorum, Linn. *A. floralis*, Kirby's Mon.

This is a very variable species in all the sexes. The male varieties include the *A. Sowerbiana* and *A. Curtisella* of Kirby; the former being a light-coloured variety, with indistinct black bands on the abdomen, and the latter having the abdomen nearly black, with a few fulvous hairs at the apex: there are numerous intervening varieties. *A. Beckwithella* and *A. agrorum* are varieties of the female, which runs into the same shades of difference as the male; the *A. agrorum* having the abdomen black with the apex fulvous. *A. Francillonella* and *A. Fosterella* are varieties of its neuter, the latter being of the smallest size, in which the whole pubescence is griseous. I was convinced of these being varieties of the same species, on taking a nest in August, 1842. I captured not only the above varieties, but several intervening ones, but they are all quite distinct from *Bombus senilis*.

Sp. 3. BOMBUS FRAGRANS.

A. fragrans, Kirby's Mon.

I have never observed any variation in the colour of this insect, excepting that it gets paler from age. I once discovered its nest, composed of moss, in a meadow in Yorkshire; it was too early in the season to get all the sexes: the nest contained one female and four or five neuters. Probably the communities are small, as the bee is scarce. It may always be known from the other brown bees by the black band on the thorax between the wings, which character is constant in all the sexes.*

* Mr. J. F. Stephens has figured and described a brown bee under the name of *B. cognatus*, of which there are two specimens in his cabinet. They resemble *B. muscorum*, but the legs are piceous. Mr. Stephens received them from Bristol. I have not enumerated them, as I do not know the particulars of their capture or their specific differences, their general appearance is different to the rest of the brown bees.

Sp. 4. BOMBUS SYLVARUM.

A. sylvarum, Linn. Kirby's Mon.

Of this beautiful species there is a specimen in the Linnean cabinet. All the sexes are very similar in colour; and if captured in the autumn, when the insects are recently disclosed, it is certainly one of the most beautiful of all the species. It builds a moss nest in meadows.

Sp. 5. BOMBUS ERICETORUM.

A. ericetorum, Panzer.

The only specimen which I have seen is in the cabinet of Mr. Curtis. Panzer's figure is coloured too brown, as he describes it "hirsuta flava;" Mr. Curtis's insect exactly answers to Panzer's description. I add a description of Mr. Curtis's specimen. Black, clothed with yellow hairs, the face with white hairs: the thorax posteriorly and the base of the scutellum, dusky: a line of ferruginous hairs at the base of the second segment of the abdomen, the fourth has a blackish band, and the fifth and sixth are white: the legs are clothed with black hairs. This insect was taken in Scotland; it is either a female or a large neuter.

Sp. 6. BOMBUS LUCORUM.

A. lucorum, Linn. Kirby's Mon.

The male of this species, named by Linneus, is in the Linnean cabinet: the female is not described in Kirby; I have frequently observed that which I consider to be such, in company with the male, and in fact they resemble each other in general form very closely; it somewhat resembles *terrestris*, but the yellow bands are of a different shade, more inclined to ochraceous. The bands are similarly disposed both on this insect and *terrestris*, but the pubescence is shorter and smoother, and the insect is also shorter and broader in proportion; the tip of the abdomen is white. The *Bombus virginalis* of Kirby appears to me to be the neuter of this bee. I am unacquainted with its mode of nidification.

Sp. 7. BOMBUS HORTORUM.

A. hortorum, Linn. Kirby's Mon.

Of this bee there is a specimen in the Linnean cabinet; it is a female. This species somewhat resembles the *Tunstallana* of Kirby, but the latter I have never seen with the bright yellow band, always

present in hortorum on the first abdominal segment. All the sexes are similarly coloured; the male in this species has a black face.

Sp. 8. BOMBUS SCRIMSHIRANUS.

A. Scrimshirana, Kirby's Mon.

The female of this species resembles the same sex of hortorum, but it is smaller, and the head is much rounder: the corbicula is pale fulvous, whereas that of hortorum is black; the neuter is similarly coloured. I consider the *A. Jonella* of Kirby to be its male: it resembles the male of hortorum, but differs in having the head nearly round and the face clothed with yellow hairs. This species is not common: I only possess two males, a female and two neuters.

Sp. 9. BOMBUS SOROENSIS.

A. Soroensis, Fab. *A. Tunstallana*, Kirby's Mon. Var.

Mr. Kirby suspected these varieties constituted but one species, but he possessed no sufficient grounds for placing them together. All doubt is now removed, Mr. Pickering having taken *A. Latreillellus* (*Kirby*) in copulâ with *A. Soroensis*; and I have taken the same male more than once similarly connected with *Tunstallana*. The female varies from having a yellow band on the collar, a patch of the same colour on the scutellum, and a white tip to the abdomen, by gradual shades of difference, to an insect totally black. I possess all the links of variety. The black variety so exactly corresponds with the original specimen of *A. subterranea* in the Linnean cabinet, that I confess my inability to detect the slightest difference; also in the Museum of the Entomological Society is a specimen named "subterranea" by Gyllenhall, and sent (together with a number of *Bombi*) by that author to Mr. Kirby: this exactly corresponds with the Linnean specimen. I have never seen a male in any collection; nor has one, I believe, been described by any author: that so described by Mr. Kirby I have shown is a *Psithyrus*. I am therefore inclined to think subterraneus identical with a black variety of *Soroensis*. The only black British species (*B. Harrisellus*) wants the pale hairs at the tip of the abdomen, and its pubescence is not so coarse as that of subterraneus, the abdomen is also of a different form.

Sp. 10. BOMBUS TERRESTRIS.

A. terrestris, Linn. Kirby's Mon.

There is a specimen of the female of this bee in the Linnean cabi-

net, with the authentic label attached. The species varies, but not very commonly. Sometimes the yellow collar nearly or quite disappears, and the tip of the abdomen is sometimes whitish; it therefore approaches *B. Soroensis* in its varieties, but may be always known by the differently shaped head, which is much rounder and broader than in *B. Soroensis*. The male is figured in Panzer under the name of *Bremus collaris*: it is similar to the female in colour, as is also the neuter; the latter varies considerably in size, from $4\frac{1}{2}$ to 7 lines. It builds its nest underground, also under stones and rubbish.

Sp. 11. BOMBUS PRATORUM.

A. subinterruptus, Kirby's Mon.

A long series of varieties, containing specimens quite as apparently distinct as those separated by Mr. Kirby, convince me that the following constitute but one species. *Apis Donovanella*, Kirby, female, *A. arbustorum*, Fabr., fem., of which there is a specimen in the Banksian cabinet. The *A. pratorum* of Kirby and of Linnæus appears on comparison with the authentic specimen in the Linnean museum to be the neuter. The male is the *A. Burrellana* and *A. Cullumana* of Kirby; the latter variety is rare, out of all the males I ever captured I have only met with one specimen; there are two in the Kirbyan cabinet: it differs from the generality of males in the same manner as the *A. Donovanella* does from the rest of the females, in the yellow bands being pale tawny instead of the usual bright yellow, and the anal red band is wider.

Sp. 12. BOMBUS COLLINUS, new species.

This species was taken first by Mr. A. Griesbach, near Westow, Yorkshire, and subsequently by Mr. W. H. L. Walcott, in the neighbourhood of Bristol; Mr. Walcott has also received it from Brighton, captured on the Downs. I am indebted to this gentleman for a specimen, which is a male; the female is at present unknown. The male resembles in general appearance the male of *subinterruptus*, the *Apis Burrellana* of Kirby; but it has a black face, and a white tip to the abdomen.

Bombus collinus, male. — Head and thorax black, the latter with a yellow band on the collar, which unites with hairs of the same colour that clothe the thorax beneath. The abdomen has a yellow band at the base, which occupies two segments; the third has a black band, the fourth a narrow line of fulvous hairs, and the remaining segments are clothed with white hairs. (Size, $5\frac{1}{2}$ lines).

Sp. 13. BOMBUS MONTANUS, new species.

This bee has hitherto been considered the *Bremus regelationis* of Panzer, but from which it is abundantly distinct, Panzer's insect, being, I consider, beyond doubt, the male of *B. lapidarius*. The figure and description both correctly point out that insect; the figure, which from its general form, and the yellow face described, must represent a male, cannot be the male of *montanus*: it is nearly twice the size, and the yellow face decides that it cannot be the female; besides, Panzer's insect is described as having the legs clothed with rufous pubescence, which is not the case in the present species, but is the characteristic of the male of *lapidarius*. The *Apis lapponica* of Fabricius is nearly allied to *montanus*, but I have examined specimens of the former sent by Gyllenhal to Mr. Kirby, as well as numerous continental specimens, and on comparison they are quite distinct. I have not been able to learn that the present species has been previously described; I have therefore given it a name founded on the habitat where it was first discovered by Mr. Newman some years ago, namely, Black Mountain, Pen-y-Cadir Vawr, Brecon Beacon, and other elevated situations in Herefordshire, Brecknockshire and Monmouthshire. Mr. Newman informs me that it frequents the common whortle-berry, settling for a moment to extract honey from its bells, and then flying off with great rapidity. It has been taken subsequently by Mr. Davis on the hills near Halifax, where all the sexes were captured.

Female.—Head black, with a few pale hairs on the vertex. Thorax black, with a yellow band on the collar, and a few hairs of the same colour upon the scutellum. Legs black. Abdomen red, with a narrow indistinct black band at the base. (Size, 8 lines).

The Neuter is similarly coloured, about 5 lines in length.

The Male is about 6 lines long. Head black, with a yellow face. The thorax black, with a yellow band on the collar, a patch of yellow hairs placed laterally on the scutellum, and the thorax clothed with yellow hairs beneath. The legs are black, with a few rufous hairs on the posterior tibia. The abdomen as in the female, but with a thinly scattered yellow pubescence beneath.

Sp. 14. BOMBUS LAPIDARIUS.

A. lapidarius, Linn. Kirby's Mon.

There is a specimen of this bee in the Linnean cabinet. I think it is less subject to variation of colouring than any other species of the genus. The male, as I have previously shown, is figured in Panzer

under the name of *Bremus regelationis*. The yellow face will easily separate this male from the same sex of the next species, *B. Raiellus*; it is also a larger insect. I have taken the sexes of *lapidarius* in copulâ. It constructs its nest underground, in heaps of stones or rubbish. I once found one in a turf-heap on a common; but the insect was so persevering and formidable in its attacks, that I could not get near enough to examine the contents of the nest. They attack much in the same persevering manner as wasps, and follow to some distance, buzzing and wheeling round the head of the disturber of their peaceful community.

Sp. 15. *BOMBUS RAIELLUS*.

A. Raiellus, Kirby's Mon.

The female and neuter of this species are similarly coloured to the same sexes of *lapidarius*, but the corbicula on their posterior tibia is fulvous, whilst in the former species it is black, it is also considerably smaller. The male is variable in colour, but its black face separates it from the male of *lapidarius*. The *A. Derhamella* of Kirby is one of its varieties: its collar and scutellum are more or less fuscous, as are also the two first segments of the abdomen; the third is occupied by a black band, and the remainder are of a tawny red. Specimens thus coloured are such as have been long disclosed, in recently developed individuals the insect is blacker, and the red brighter. This species is common, and especially so in the north of England: it constructs its nest of dried grass, moss, &c. In Yorkshire I have found six or eight nests in a small hay-field; its societies are not numerous.

Sp. 16. *BOMBUS HARRISELLUS*.

A. Harrisellus, Kirby's Mon.

This is the only black species of the genus: all the sexes are of the same colour, but the male has some pale hairs intermixed at the tip of the abdomen. I had some suspicion that this might be the *subterranea* of Linnæus, but the pubescence of Linnæus' insect is coarser, and *Harrisellus* wants the pale tip to the abdomen in the female.

This species is not common. It is taken occasionally in the neighbourhood of London: I have met with the female at Barnes, Surrey; and at Plumstead-wood, Kent, the males are frequently met with in autumn: still the other sexes are rare. Mr. E. Doubleday informs me that it is not so uncommon in the neighbourhood of Epping.

FREDERICK SMITH.

Additions to 'A Fauna of Moray.' By the Rev. G. GORDON.

QUADRUPEDS.

A SPECIMEN of the shrew named *Sorex tetragonurus* (Zool. 423), having been sent to the Rev. L. Jenyns, he finds it to be the *S. hibernicus*, 'Ann. and Mag. Nat. Hist.' vii. 263.

Mr. Jenyns, having also examined several specimens of *Arvicolæ* from Cawdor (Zool. 425), is satisfied that they are all identical with the *A. riparia* of Yarrell; and that some slight differences of colour and measurement occurring among them, do not warrant the idea of such individuals being distinct.

BIRDS.

Spotted crake (*Crex Porzana*). Killed in the Loch of Spynie in the summer of 1843, by Alex. Robertson, Esq., Woodside.

Common pochard, *Fuligula ferina*. Killed in February, 1844, in the Loch of Spynie, by L. Innes, gamekeeper to Strowan; who also, in the same place, shot the scaup pochard, (Zool. 514).

A pair of golden-eye garrots (Id.) were shot by J. B. Dunbar, Esq. in the Lossie, near Walkmill, during the severe weather in February, 1844. A beautiful specimen of the little grebe (Id. 515) was also obtained in the Lossie in the month of March; and a couple of redwings (Id. 506) at Grant-lodge.

REPTILES.

Common lizard, *Lacerta agilis*. A specimen from Dr. Innes, taken on the Culbin sands in 1843, is now in the Elgin Museum.

Blind worm, *Anguis fragilis*.

Common viper, *Vipera communis*. Both these are occasionally seen in the moors and less frequented parts of the hills.

Frog, *Rana temporaria*.

Toad, *Bufo vulgaris*.

Common eft, "Ask," *Triton punctatus*. Both the land and water varieties are found, the former more commonly. G. GORDON.

Birnie, by Elgin, April 6, 1844.

Additions to the Birds of Shetland, (Zool. 459). By THOMAS EDMONSTON, JUN., Esq.

THE two following species of birds have been observed since the date of my list of the Shetland birds.

Mountain finch, *Fringilla montifringilla*. A mature individual was caught under a stone one severe snowy day in November, near Baltasound. The bird is still alive and in the possession of my uncle; it continues very wild in the cage.

Grey plover, *Squatarola cinerea*. I killed a male of this species on the 20th of December: it was associated with a flock of turnstones, ringed plovers and various tringas. So wild was it, that it was only after a full day's chase that I succeeded in getting a shot at it as it was crossing a small creek, and procured it. T. EDMONSTON, JUN.

Baltasound, January 29, 1844.

Nomenclature of British Birds.

It has occurred to me that an opportunity now offers both for removing the difficulty you complain of (and justly), and at the same time making out a list or system of "vulgar" nomenclature (if I may so use the word), which would be very generally appreciated by a large class of naturalists. You have contributors from every part of the kingdom, many of whom must be intimately conversant with all the common names applied to any bird &c. in their district. Now if some one would undertake "thankfully to receive" communications from all quarters, as to the local names in question; and would take the trouble carefully to compile thence every appellation he could get, taking as his guide, or rather as the foundation of his work, first the scientific name from some acknowledged authority, as Selby; and secondly, the English name for each species adopted by the same or another authority, as Yarrell: and not neglecting the information given as to provincial names by Montagu, Bewick, Selby and others; I think a useful and valuable, if not amusing, catalogue might be made out.—*Rev. J. C. Atkinson; in a letter to E. Newman.*

Your complaint of the inconvenience arising from the diversified nomenclature of British birds, induces me to suggest, that if a complete list of the species which have been hitherto found in this country, were published in 'The Zoologist,' your ornithological correspondents, by referring to this for the names of the birds of which they write, instead of using those given them by different authors, or the numerous provincial names which belong to most of the commoner species, would avoid much confusion and difficulty. The names made use of in this list should be, as far as possible, those which are most familiar to every one, always, of course, avoiding those which have arisen from any superstitious notion, and may lead to error. And the same remark will hold good with respect to the Latin names. It may be objected to this, that there is no room in the already well filled pages of 'The Zoologist' for such a list as that which I propose; but if your correspondents would make use of it, the space would not, I think, be lost, and such a catalogue would always be useful for reference. I shall perhaps be excused for observing here, that by the omission of the Latin names of many of the common species, much space might be saved in the pages of 'The Zoologist.' It appears to me that in a work of this sort, these Latin names are seldom necessary, except to distinguish birds which are very rare, or whose changes of plumage, being imperfectly understood, make them liable to be confounded with nearly allied species.—*William R. Fisher; Great Yarmouth, March 2, 1844.*

Nomenclature of British Birds. I have received numerous letters on this subject, in addition to those which appear in the preceding page, and advocating the claims of one or other of our British authors: the publication of these would, from the diversity of opinions expressed, further demonstrate the necessity for a new nomenclature. Two of my correspondents agree in recommending Mr. Yarrell's nomenclature: the remainder are solitary advocates each of his favourite authority. I incline to think 'The Zoologist,' combining as it does the ornithological talent of the kingdom, in a manner never attained by any other work, periodical or otherwise, should have a nomenclature of its own. Taking this view of the case, and fearing my own incapacity for the task, I addressed the Rev. J. C. Atkinson on the subject, earnestly soliciting his assistance, and he has most generously undertaken to serve me in this emergency. Mr. Atkinson's obliging reply is printed below: and I beg of my readers to lend him every assistance, and trust I need scarcely enforce the necessity there is for the exercise of great care in transmitting information respecting provincial nomenclature.—
Edward Newman; Hanover St., Peckham, May 2, 1844.

Dear Sir.—In compliance with the wish you have expressed in your note of the 29th of April, I beg to intimate my willingness to undertake the compilation of a system of British ornithological nomenclature, to be adopted as the nomenclature of 'The Zoologist.' My letter to you, an extract from which you have published (Zool. 552), gives a general idea of the system I would wish to adopt; and it is obvious that the completeness of the list must mainly depend upon the amount of assistance rendered by well-wishers from all quarters of the kingdom. I therefore earnestly request the favor of communications as to the local names of birds, from any or every reader of—as well as subscriber to—'The Zoologist,' and indeed from any person whatever who is able to communicate—though it be not more than—one name. And I should esteem it an additional favour if my correspondents would, in addition to the common English name of the bird, the synonymes or local names of which they send me, give me also the Latin name and the authority for such Latin name. I need not, of course, refer to the necessity of accuracy, as that must be self-evident to every one. With the cordial co-operation of the many readers of 'The Zoologist,' I have no doubt that the most complete system of nomenclature ever published may be produced. The necessity for some such system is obvious, and I believe its appearance would be hailed with pleasure by many a lover of Natural History, who finds himself sorely puzzled by the new names applied to old friends in parts of the country distant from his own residence.—I am, Yours &c., *J. C. Atkinson; Hutton, near Berwick-on-Tweed, May 4, 1844.*

Notes on the appearance and capture of some of our rarer British Birds in the County of Derby. By J. J. BRIGGS, Esq.

(Continued from p. 180).*

IN my former communication on our rarer Derbyshire birds, I mentioned two individuals of the osprey (*Falco haliaëtus*) as having been killed off Melbourne pool; but I have lately been informed by Mr. Bowman, Lord Melbourne's keeper, that he has known five shot off

* It appears that I was in error in making the paper at p. 311 a continuation of the prior communication at p. 178.—*Ed.*

that water. The largest of these haunted the pool for some time, and although frequently sought after, long evaded pursuit. His plan in capturing his prey was to rise above the waves until a fish struck his eye, and then descend upon it with great dexterity. The number of fishes he captured in this manner was almost incredible. At last he was seen one evening to descend upon the waves and bear off in his talons a bream apparently 3 lbs. in weight. He alighted on the top of an old gnarled oak not far distant, and commenced feeding greedily, when a shot from Mr. Bowman's gun felled him to the ground. He had regularly used this tree as a feeding-station, and underneath its branches lay scattered as many heads, tails, bones and fins of fishes as would have filled a bushel. Many whole fishes, and others half-eaten, were there; and it appears that if, by any accident, one was dropped to the ground, the bird never took further notice of it, but sailed off for another.

Peregrine Falcon, (*Falco peregrinus*). On November 25, 1841, a beautiful female specimen of this noble bird was taken on Melbourne common. It had been seen in the neighbourhood several days previously, hawking after crows, and once in pursuit of a ringdove, and was observed to be remarkably bold and rapid in its flight. It appears that on the day she was taken, a bird of the hawk tribe was seen soaring aloft at a great elevation, when she suddenly darted on her prey in flight, and both descended together. Some persons in a wood adjoining, soon afterwards hearing the cries of various kinds of birds, jays, magpies &c., were induced from their excessive agitation to investigate the cause, when to their astonishment they beheld the combatants, a hawk and a crow. Such was the severity of the falcon's strike, that she could not extricate her talons, which circumstance led to her capture. She appeared to be very much exhausted, but was in beautiful plumage; and it was believed that she had been both flown and hooded, and had escaped from the hands of some falconer, as she would perch on the finger, and was astonishingly gentle in the handling. The cries of the birds were heard by Mr. Bowman upwards of a quarter of a mile off. In the winter of 1842, a gentleman presented me with this noble bird. It fed greedily on flesh of most kinds, and birds, preferring the latter however freshly killed and with the blood still warm. It would readily devour a blackbird, misel or song thrush, at a meal, or two or three smaller birds, as sparrows, larks or buntings, and required, to keep her in good condition and fine plumage, at least three such meals a day. When a bird was

given to it, it was seized eagerly with its talons, torn piecemeal, and bones, flesh, feathers and entrails swallowed without any distinction. The head appeared to be a very choice morsel. The indigestible parts were afterwards reproduced from the stomach in pellets or castings, after the manner of the shrikes and owls. If fed with small birds, it would readily consume fifteen hundred individuals in a year. So long as fettered and confined it was remarkably docile and gentle, but the moment it was unloosed, it raised its head, fluttered its wing, uttered a shrieking noise, and seemed as if longing to wing its native element. It was evident from its habits and manners that it had escaped from some falconer or hawking establishment, as when released from the hand and flown at a bird, after having struck its prey, it waited to be taken up again, and when approached, did not make any effort to escape. On one occasion, being flown at a flock of skylarks, it gradually rose into the air by a series of circular gyrations, until it had attained a considerable altitude above them, when, descending suddenly upon them, they were dispersed in all directions. Having singled out one for pursuit, she again rose above him, but the lark evaded her grasp in a very dexterous manner. She followed her victim for some time, when having struck it fatally, both the pursued and the pursuer descended to the ground and were taken up by the hand. I note this fact, inasmuch as the large size of the falcon seemed entirely to incapacitate her from taking so small a bird, and more particularly as her quarry seemed to consist of larger and nobler game. Some time afterwards she was unloosed at a crow, but the moment she had arrived at her proper altitude, another bird of the hawk tribe hove in sight, and the three birds engaged in a conflict which ended in my captive escaping. She measured across the back, with the wings expanded, thirty-six inches. The beak was of a bluish horn colour, top part of the head and neck black, a black spot beneath the eye, the back ash-colour, the breast reddish white, with dark brown bars or streaks, legs yellow, toes black.

In the year 1840, I saw a fine male specimen of the peregrine falcon which had been shot near Barrow-upon-Trent, but this, and the one whose history has just been detailed, are the only two captures of this bird that ever came to my knowledge, and this fine bird may be considered very rare in the county of Derby.

The Hobby, (*Falco subbuteo*). Occasionally captured in the traps of the neighbouring gamekeepers. In 1839 a pair (male and female) were killed near this parish. Although preferring rather open and

well cultivated districts like ours, it rarely breeds here, and yet the secluded thickets and tall luxuriant copses with which it is occasionally spotted, might seem peculiarly adapted for the purposes of nidification. Skylarks, woodlarks, pipits and buntings, are its favourite food, and if once pursued by him almost invariably become his victims. Whether the hobby is here a bird of passage or not, I have never been able to determine, as he is by no means plentiful, although this neighbourhood is peculiarly fertile in Raptores. I have met with him during the course of some years, in the months of April, May, August and October; and in 1840, I noticed an individual in pursuit of a skylark on the 28th of December. If he does migrate, he goes about October and appears early in April. This little falcon, owing to its pretty plumage and quick flight, seems to have been peculiarly formed for the purposes of falconry, and was much esteemed by our ancient nobility for its achievements in that once favourite amusement. Glover, our county historian, acquaints us that "the late ingenious and lamented Rev. Bache Thornhill of Stanton, who was unfortunately killed in the 1827, whilst out shooting, by the accidental discharge of his friend's gun, practised with much success the art of falconry in this county."

J. J. BRIGGS.

King's Newton, Melbourne, April, 1844.

Rhymes relating to Birds. By ROBERT DICK DUNCAN, Esq.

THE following rhymes are perhaps a part of the curiosities of literature which should have no place here: but as all popular rhymes may be regarded as evincing the nature and the amount of the knowledge possessed by our predecessors in a far bygone age, or by the common people at the present day, they may not be altogether out of place in a periodical like 'The Zoologist.' The verses, with the exception of the first ones, are such as are still sung by the boys of the Lothians, as they go hand-in-hand a bird-nesting through the woods and o'er the moors.

There is scarcely a prejudice more general in this part of the country, not only amongst the young and uneducated, but also amongst those whose experience and education might have taught them otherwise, than the supposition that the cuckoo is a bird of prey—working mischief among the lesser birds whenever it finds opportunity. The following lines would lead us to infer that the same idea is prevalent in England.

“ The cuckoo’s a fine bird,
 She sings as she flies ;
 She brings us good tidings,
 She tells us no lies.
 She sucks little birds’ eggs
 To make her voice clear ;
 And when she sings ‘ cuckoo ’
 The summer is near.”

Probably the circumstance that the eggs and little ones of the foster parent of a young cuckoo are ejected from their own home, and are sometimes found lying around a nest containing one of these creatures, has given rise to the idea that the cuckoo preys on little birds and little birds’ eggs.

The following rhymes upon the habits of the cuckoo are generally known.

“ In April,
 The cuckoo shows his bill :
 In May,
 He singeth all day :
 In June,
 He alters his tune :
 In July,
 He prepares to fly :
 Come August,
 Go he must.”

It has long been a matter of dispute whether or not the swallows migrate from this country to other lands during the severity of winter. The general belief now is that most of them do ; but that a few, which, by some cause or other, have been detained behind their congeners, remain with us in a torpid state. The verse which follows tells us plainly what was the opinion of our forefathers on this subject.

“ The bat, the bee, the butterflie,
 The cuckoo and the swallow ;
 The cornraik and the wheatie-bird,
 They a’ sleep in the hallow.”

The last word of the third line varies in different parts of the country. In England, for instance, the line runs thus : —

“ The cornraik and the nightingale.”

The redbreast, in ancient times, was regarded by the people of Britain as a sacred bird, — a creature under the peculiar protection of heaven. And even to this day, boys are afraid to destroy the nest of the robin, thinking that if they do so, some evil will assuredly befall

them. In this immunity enjoyed by the redbreast the wren partially shares, for it has ever been a popular idea that the wren is the robin's wife. Hence the old rhyme : —

“ Malisons, malisons mair than ten,
That herry the Ladie o' Heeven's hen ;
The robin and the wren
Are God's bird and hen.”

Owing to the universal acquaintance of the people of Scotland with the beautiful story of the ‘Babes in the Wood,’ the feeling of sanctity with which the redbreast was wont to be regarded, has gradually given place to a kindred emotion — that of love. The entire confidence with which this bird makes man his friend during the wild days of winter, and the idea, as Isaac Walton expresses it, that the “honest robin loves mankind both alive and dead,” impressed upon the minds of our youth by the tale already referred to, has awakened a feeling of affection towards it in the human breast. Accordingly the Robinet is a universal favourite: for who could find it in his heart to hurt the pretty creature which cheers our homes by his sweet winter song, and which, our fathers told us, took compassion on the poor little babes who were persecuted by their cruel relative.

I know not why the lark and the linnet should share, more than others, in the privileges of the redbreast. But such seems to be the case, for we often hear sung : —

“ The laverock and the lintie ;
The robin and the wren ;
If ye herry their nests,
Ye'll ne'er thrive again.”

In a preceding paragraph it was stated that the redbreast and the wren are understood by the common people to be husband and wife. This is evident from the following ridiculous verse : —

“ The robin redbreast and the wren
Coost out about the supper pan ;
And or the robin gat a spune,
Kitty had the supper dune.”

A prejudice, the very opposite to that spoken of above, is prevalent respecting the gold-ring or yellow-hammer. The idea that it is in league with the devil is very general in Scotland. Boys here almost invariably stone the poor creature when they see it; and should a yellow bunting's nest with young in it fall in their way, woe be to the

luckless birds ! I have only heard part of the rhyme which speaks of this prejudice. It is as follows : —

“ Half a paddock, half a taid,
Half a drap o’ deil’s blude,
On a May morning.”

The nests of the stone-chat and lapwing are seldom destroyed by nesting boys. The cries of these birds, when their nests are approached, prevent the destruction. The former is supposed to say :

“ Stane chack !
Deil tak !
They wha herry my nest
Will never rest,
Will meet the pest !
Deil break their back
Wha my eggs wad tak, tak !”

This terrifies the bird-nesters. The cry of the lapwing, on the other hand, is an appeal to their compassion, and it is generally successful.

“ Peese-weep, peese-weep,
Herry my nest and gar me greet.”

The following is a rhyme well known amongst the Lammermoor peasants. It is very characteristic. Two birds of the crow tribe, sitting together, thus confabulate in harsh tones : —

“ A hoggie (sheep) dead, a hoggie dead !”
“ O, where ? O, where ? O, where ?”
“ Doon i’ the park, doon i’ the park, doon i’ the park !”
“ Is’t fat ? Is’t fat ? Is’t fat ?”
“ Come try, come try, come try !”

Sometimes the rhyme varies a little ; thus : —

“ Sekyto says there’s a hog dead !”
“ Where ? Where ?”
“ Up the burn, up the burn !” — &c.

The verses about the magpie are familiar to everybody. Even our sagest philosophers have adverted to them. In England, if a magpie be seen flying alone, it is thought a sign of ill luck ; two forebode something fortunate ; three, a funeral ; four, a wedding. Here quite a different tale is told. One rhyme runs thus : —

“ Ane ’s joy ;
Two ’s grief ;
Three ’s a wedding ;
Four ’s a death.”

It is not easy to imagine how these ideas became associated with the appearance of certain numbers of magpies. Perhaps it may be as follows. "Ane's joy:" during the season of nesting, when we see a solitary magpie, we may presume that its nest is built and is still uninjured, and that its mate is seated there in all the bliss of maternal anxiety. With that family, then, all is well. "Two's grief:" suppose the nest of the happy pair destroyed by some evil-worker, the poor birds would be seen together, lamenting to each other their ruined prospects. "Three's a wedding:" in the pairing season, how often do we see three birds together. As amongst men, two individuals are often found seeking the hand of some fair lady, so amongst the birds, two suitors frequently present themselves to some amiable and dashing belle, and she is called on to say which she prefers. After her choice is made, the wedding takes place. "Four's a death:" when the young of the magpie have left the nest, and are seen hopping about to the number of four or more, well may the housekeeper or hen-wife beware lest there be a death in her poultry-yard. Perhaps the origin of the last line—"Four's a death," may be traced to the circumstance of magpies holding assize-courts, similar to those said to be held by sparrows, crows, storks, &c. Speaking of these kinds of assemblies, Pliny says, "There is in the open and champaign country of Asia Pithonas-Comes a place, where the storks assemble together, and being met keep up a jangling one with another: but, in the end, look which of them lagged behind and came tardy,—him they tear in pieces, and then depart." We can scarcely avoid believing that there is some truth in the preceding extract, for credible authors of a modern age affirm that they have witnessed similar assemblies and proceedings in the case of crows. At these meetings, it is said, "there is a regular trial of a delinquent, who, upon being found guilty, receives a severe drubbing from the whole court, and is even sometimes killed outright." Now, probably, magpies sometimes thus meet, try, chastise and put to death!

Perhaps a few of the readers of 'The Zoologist,' will consider some of the preceding notes as out of place; but others, I am sure, will regard them with a more favourable eye. Amazing commentaries have been written on the rhymes of the people on various subjects: why not, then, a few words upon those which speak of the studies of the naturalist.

ROBERT DICK DUNCAN.

Vale of Almond, Mid Calder, Edinburghshire,
April 15, 1844.

On the application of Ornithology to Agriculture. It is a well-known fact that cultivation and the habitations of man are attractive to many wild animals, whether from a sense of security afforded by his presence, or from the motive of partaking of the fruits of his labours. The latter is probably the most general inducement, as most of the animals which affect his society contrive to come in for a share of the produce, either of his field or his garden. In this country, where wild quadrupeds are now comparatively rare, it is the feathered tribes which are chiefly injurious to the agriculturist, and a knowledge of *their* habits and food must therefore principally interest him. A humane and intelligent farmer will wish to inform himself of the species he should encourage and protect, and of those he should persecute and drive from his fields. This information Ornithology supplies, and it is undoubtedly one of its most useful departments. Ornithology acquaints us with the different habits and food of the various birds which frequent our cultivated fields, hedgerows and plantations, and thus enables us to judge of their usefulness or hurtfulness. In estimating the damage done to the farmer by any particular species, we should also in justice take into account the good done by it in the destruction of insects, whose ravages might have devastated whole fields, or of noxious weeds, which might have choked or rendered useless the growing crops. Exactly to ascertain the good and evil, and to find on which side the balance stands, is by no means an easy task. A series of observations, at all seasons, in different situations, and extending over many years, would be requisite to enable us to form a correct opinion on the subject, and decidedly to set down any species as "injurious" or "useful." Take for example the ringdove, which is generally reckoned one of the most injurious birds the farmer has to deal with. I once shot a bird of this species, in the crop of which were upwards of *eight hundred* distinct joints of the pod of the wild radish, a very noxious weed, each containing a seed. The ringdove is also known to eat the leaves of the same plant, the roots of *Potentilla anserina*, and the seeds of various other weeds, as *Cerastium viscosum*, chickweed, *Ranunculi*, ivy-leaved speedwell, &c. The *quæstio vexata* of the usefulness or hurtfulness of the rook to the farmer, is another instance of our want of precise information as to the habits and food of birds. It is, however, sufficient for all *practical* purposes, that we should be aware of the *general* character of each species, without descending to minute particulars, which might perhaps cause confusion and error, without a corresponding degree of accuracy in our knowledge. This general acquaintance with the subject is now perhaps pretty well attained, but it is always interesting to accumulate new facts, and I would call upon the supporters of 'The Zoologist' to record in its pages such facts tending to elucidate the habits of the birds more especially connected with Agriculture, as may from time to time fall under their observation.—*Archibald Jerdon ; Bonjedward.*

Note on the dispersion of Seeds by the agency of Birds. Mr. Briggs having in the February No. (Zool. 442), introduced the subject of the dissemination of trees and plants by birds, I beg to contribute a few observations thereon, not in the spirit of controversy, but with an anxious desire to elicit the truth. Macgillivray, in the 2nd vol. of his 'British Birds,' pp. 104 and 125, altogether discredits the notion that plants are ever disseminated by means of birds; and contends that it is impossible for seeds to escape the action of the stomach, at least in the berry- and seed-eating species. As I have paid some attention to the subject, I may perhaps be allowed to state my opinions, although differing both from Mr. Briggs and Mr. Macgillivray. It appears to me that in general seeds devoured by birds are comminuted and destroyed in their passage through the stomach; indeed, were they not so, they could not yield nourish-

ment and sustenance to the bird. The powerful digestive organs of most of the berry- and seed-eating tribes seem alone sufficient to warrant this conclusion, and experience generally corroborates it. In those species, however, which live partly on berries and partly on soft insect food, like the thrushes, I am inclined to think that in some instances seeds pass through unhurt, particularly those which are of a hard texture, and which are enclosed in a pulp, as the berries of the elder and mountain-ash, and perhaps those of currants and gooseberries &c. In the course of my own observations, I have found seeds of the elder entire in the intestines of thrushes and blackbirds, and I have also found haw-stones in those of the latter bird. It is not at all surprising that the haw should be able to resist the action of the blackbird's stomach, as it is of so very hard a nature, and I should be inclined to say that in general it does so. I am also of opinion that the seeds of the holly, which are somewhat similar to those of the haw, generally escape the grinding power of the gizzard. In some fruit-eating tribes, as the Ampelidæ, which have a wide and short intestinal canal, seeds of all kind may and probably do pass through uninjured; and in omnivorous birds, as the crows, some seeds may casually and accidentally escape, but in the truly granivorous tribes, everything is reduced to a paste. I am therefore inclined to come to the conclusion, that the dissemination of the plants by birds is the exception and not the rule. These observations will, I trust, induce some one more qualified than I am, to come forward with his experience on the subject, and discuss the matter fully. The pages of 'The Zoologist' afford a good field for friendly debate on this and such-like controverted points on Natural History.—*Id.*

Note on the Honey-buzzard rearing its young in this country. I have great pleasure in recording in the pages of 'The Zoologist,' an instance of the honey-buzzard (*Pernis apivorus*) having reared its young in this country. I find by my memorandums that five honey-buzzards were procured in this district in 1841. Of these five, two were picked up dead on the sea-shore; a third was shot at Blydon, on the 24th of September, and the other two were brought to Mr. James Pape, game-dealer, Collingwood St., on the 26th of August; these two last mentioned are males, and of a uniform dark brown, and had evidently not left the nest many days; they could not possibly have flown more than a few yards, and were exactly in the state of plumage in which we find young rooks when shot from the nest-edge in spring. They now form part of the valuable collection of our talented townsman, Mr. John Hancock. I have since ascertained that these two birds were shot on the estate of John Atkinson, Esq., of Newbiggin, about two miles from Hexham, by Edward Dewison, then in Mr. Atkinson's employ as coachman: he shot them off the tree in which the nest was built. The old birds were frequently seen, but were so shy that he could not procure them.—*Thomas John Bold; 24, Cloth-market, Newcastle-upon-Tyne.*

Note on the Nest of the Long-horned Owl occurring in Trees. Observing in the last number (Zool. 492), an enquiry from a correspondent as to whether "an owl's nest had ever been placed upon the branch of a tree:" I have thrown together a few notes on the nidification and habits of the long-horned owl (*Strix otus*), which have come under my own and my brother's observation, and which may perhaps tend to remove Mr. Greenwood's doubts on this question: the long-horned owl being the only British one which does I believe *invariably* rear its young in the position referred to. This handsome species is rather generally distributed through the fir-woods within six or seven miles around York, taking possession, about the middle or end of March, of the deserted nest of the crow, ringdove (and perhaps that of the squirrel), in a Scotch or

spruce fir-tree, on which, after flattening and sometimes lining with a few feathers, are deposited its two or three beautifully white eggs. Out of six or seven instances, we have never met with more than three eggs or young ones, and in most cases only two. In some cases it must lay more freely, as Mr. Yarrell, in his beautiful work on British birds, p. 118, states "the eggs to be *four or five* in number." It is curious to observe how flat they invariably make their nests, so much so, that in even a slight wind it is difficult to conceive how the eggs retain their position, when the parent bird leaves them. This species does not seem to confine its flight entirely to the darker hours, nor its taste very strictly to the mouse tribe; as we have met them in the woods sailing quietly along (as if hawking) on a bright sunny day, and invariably found in or around the nest, feathers and other remains of the winged race; in one case a freshly killed chaffinch, in another, the wing of a snipe, and several smaller birds,—and in a pellet the indigestible pad of a young hare or rabbit. A nest which I examined this day (April 11th) contained three eggs, which were laid on what appeared to have been the drey of the squirrel, in a tall spruce fir. This nest was lined with a few feathers, and only discovered on the 31st of March, and had then the same number of eggs. I hope to ascertain when the young ones are hatched, and whether, as is I believe generally the case with this tribe, the parent bird had commenced incubation when the first egg was laid. I should feel much obliged if any of the numerous contributors to 'The Zoologist' could inform us whether this is a general law with the owls, and also the number of days occupied in incubation, by this or any of the same tribe.—*James H. Tuke; Lawrence St., York, April 12, 1844.*

Note on Owls building in Trees. On looking over the last number of 'The Zoologist,' I find an inquiry by Mr. Alfred Greenwood (Zool. 492) respecting a former communication of mine (Id. 383). In reply I may state, that although I have not yet climbed to an owl's nest myself, individuals who have done so have frequently seen them, in this neighbourhood, in a situation similar to that in which Mr. Walker found the nest of the heron.—*R. Dick Duncan.*

Notes on the Passerine Owl. One principal charm of the country is the pleasing effect produced upon the mind by the various rural sounds, amongst which there is one so remarkable, and yet so agreeable, that I recommend attention to the little animal which produces it for the sake of increasing the enjoyment of those who like retirement. This singular and plaintive note is heard during the evening, and early part of the night, throughout the spring and summer, commencing about sun-set, and proceeds from the *Strix Passerina*, a British bird, now, I believe, very rarely found, and which, with the exception of *Strix Scops*, is the smallest of our native owls. It closely resembles the *Strix Tengmalmi*, being nearly the same size as that species, and chiefly differing from it in the legs not being much clothed, the feathers in *S. Tengmalmi* covering the legs as entirely as in *S. nyctea* and other large species. There is another point of interest too about these little birds, in the remarkable jump which is peculiar to this species. All who are fond of Natural History must be familiar with the delightful writings of Mr. Waterton; and in a paper of his which I read some time ago (I think in one of the Magazines of the late lamented and excellent Mr. Loudon), he has well described this strange movement, but I do not recollect that he mentions the pleasing note of this species, which is equally characteristic and singular. A pair of these birds were in the pheasantry here for some years and none of the feathered tribe can better reward the attention of those who take any interest in such objects.—*John Thomas Brooks; Flitwick House, March 30, 1844.*

Anecdote of the Common Wren. I am at any time glad to have it in my power to record, for the benefit of my brother naturalists, any fact that appears not to have been noticed by others. As the following little incident, pertaining to the habits of one of our most familiar birds, is not mentioned by Selby or Yarrell, I may reasonably presume that it has not been noticed by these distinguished naturalists. Walking the other day in Leven's park, my attention was arrested by the singular movements of a common wren; and being so situated that I had an excellent opportunity of minutely watching its operations, I distinctly observed it to walk over head into the water by the shallow margin of a brook, as if in search of insect food. This action it repeated several times in quick succession, and then, as if it had secured the object of its search, darted off into a neighbouring bush. I will *not* be so bold as to advance what some have advanced respecting the *dipper*—that it actually walked at the bottom of the water, for indeed its movements were too rapid to admit of any such subaqueous promenade; but that it was *really submerged*, and that for three or four times, I take upon myself unhesitatingly to repeat: as, from the position I occupied with respect to the bird, and at only a few yards distance from it, I could not possibly be mistaken. As I cannot suppose this habit is peculiar to the wrens of my neighbourhood, I am in hopes that others of your correspondents may have an opportunity of verifying my assertions. Apropos of these interesting little creatures. I find it stated by Mr. Yarrell in his excellent work on British Ornithology, that “Sir W. Jardine and Mr. Selby, both mention the circumstance of several of these diminutive birds passing the night together, in the same aperture.” I beg to state in confirmation of this, that several winters ago, I was tempted to examine a small hole in the side of a moss-covered hermitage, which I had reason to believe was frequented by a colony of wrens: and going thither one evening, when there was a deep snow on the ground, I placed a small hand net over the hole, and actually secured ten or a dozen that had repaired thither for a comfortable night's lodging. Although the little captives were soon afterwards set at liberty, I am not aware that their rest was again disturbed, or that any search was afterwards made for them in the snug little hiding-place they had made for themselves.—*S. H. Haslam; Greenside Cottage, Milnthorpe, April 15, 1844.*

Note on the Hoopoe nestling in Surrey. A short time since, while staying in the neighbourhood of Dorking, I was informed by a friend who resides there, that in the summer of 1841, he had some strange eggs brought to him, which had been found in the hollow of a tree in an orchard, and which proved to be the eggs of that very pretty and rare straggler the hoopoe (*Upupa Epops*). The old birds were not shot, but they have never since been observed to visit the spot from whence their eggs were taken. But few instances have, I believe, been known, of hoopoes breeding in this country. Although a year does not pass without a specimen or two visiting Kent, yet I have never been able to hear of a well authenticated instance of their nidification in this county. One cause of their so rarely breeding in England, may probably arise from the fact of their being such peculiar-looking birds as to attract the observation of those who would not otherwise notice them; and they are consequently generally shot or driven away. White mentions a pair which visited his garden, where, to use his own words, “They used to march about in a stately manner, feeding in the walks many times in the day, and seemed disposed to breed in my outlet, *but were frightened and persecuted by idle boys, who would never let them be at rest.*” The hoopoe, which is an African bird, from whence it migrates in the summer into Europe, is by no means

uncommon in the warmer parts of France. Those that visit our island, are probably driven here by contrary winds.—*J. Pemberton Bartlett; Kingston Rectory, Kent.*

Note on the Swallow's course over the Atlantic. On a voyage to New South Wales in 1842, whilst passing the Cape de Verds, their noble peaks being often distinctly seen breaking through the clouds, we observed several swallows about the ship, at times resting, by clinging to the shrouds. And although these interesting wanderers were evidently exhausted by fatigue, and probably by hunger also; they never made towards the land; but continued with us until we were 130 miles to the southward of Fogo. On the 9th of October, in lat. 11° 13' N., long. 23° 27' W., one of our companions became so weak that his flight could no longer be maintained: every attention was paid to the weary traveller, but all in vain: after a few hours he expired in my cabin. The fact of these birds not diverging from their course to land within twelve or fifteen miles, is the point to which I would direct attention, in order to ascertain, if possible, the country to which they were migrating. The ship's course was then inclining towards the African coast; the Windward islands were 2000 miles to the westward, and quite out of our track; we therefore concluded the birds were proceeding to the former, as, by continuing the line of direction, they would reach Cape Palmas, at the entrance of the Gulf of Guinea, by a flight of 1025 miles. They had, most probably, departed from America, crossing the Atlantic on a S.E. course, from Halifax to Cape Palmas, the distance being 3800 geographical miles; a very long journey, without one resting place, for the little emigrants, whose progress would be much impeded by the N.E. trade, from crossing the Tropic until their arrival on the sultry shore of Africa.—*Henry F. Cliffe; Elm Cottage, Brixton Hill.*

Note on the early arrival of the Swallow or Martin. The circumstance of my having seen either a martin or swallow on the 27th of last month, may be worth recording. I was riding past Snaresbrook-pond when I saw it first, and again on my return a few minutes afterwards, so that I could not be mistaken. Mr. Barclay, the banker, was with me, besides several ladies, who all saw it.—*Samuel Gurney, jun.; 65, Lombard St., April 15, 1844.*

Note on the late occurrence of the Swallow at Goole in December. On the 10th of last December was shot at Goole, in the West Riding of the county of York, a beautiful specimen of the common swallow, an adult bird, and not a young bird of the season, in full plumage and good condition. This bird was sent to me, and I had the pleasure of showing it to many of my ornithological friends.—*R. J. Bell, Derby.*

Note on the Missel Thrush. The courage and strength of this bird are highly spoken of by naturalists, who assert that that it *drives* off larger birds from the vicinity of its nest. That it *attempts* to do so I readily admit, but positively deny that it is invariably or generally successful, since I have repeatedly had the very best opportunity of observing the contrary. In the large trees, usually in a fir, at the front of my native place, a pair of missel thrushes built nearly every year, and it very rarely happened that the nest was not robbed of either eggs or young, perhaps more than once, by crows or magpies, though close to the house; and I have seen a crow sitting in the nest, deliberately devouring its prey, although the thrushes were screaming as near as they dared venture. Nor was I ever able to protect the poor birds, as I would gladly have done, by shooting their enemy.—*Arthur Hussey; Rottingdeane, March 23, 1844.*

Note on the sudden change of Colour in the Plumage of Birds produced by Fright. May not the following facts partly account for the frequency of white varieties of birds and other creatures? In the 'Edinburgh Geographical Journal,' Mr. Young states

that a cat having frightened a blackbird, the poor songster was found apparently lifeless in its cage, and quite wet with perspiration, [perspiration?]. Its black feathers soon fell off, and were succeeded by a perfectly white plumage. Sir Robert Heron has related in his journal, that at Mr. Kendal's of Barnsley, a fox pounced upon a black Poland cock, whose screams attracted the servants to his rescue, but not until he was desperately wounded and had lost half his feathers. In time, the remainder of his feathers fell off, and were replaced by an entirely white plumage.—*James H. Fennell; London.*

Anecdote of a Robin's Nest being built in a Watering-pot. Early in the spring of 1839, before the usual time for birds' pairing, the gardener discovered that a pair of robins had built a nest in an old watering-pot, which had been suspended to the bough of an apple-tree, hanging over the path leading to the tool-house. The hen bird was then actually sitting. The gardener was ordered to conceal the fact, lest the bird should be disturbed by the children going to look at the nest. Unfortunately, one fine sunny morning, little Philip, who had been sowing seeds in his garden, thinking it was necessary to water them, spied the watering-pot, and getting a long stick, succeeded in knocking it down. The nest of course was destroyed: the eggs had fallen out; and it was found on examination that the process of incubation was nearly completed. You may suppose how great was our mortification, and little Phil's distress in having been the innocent cause of this disappointment to our favourite little birds.*

Note on the early incubation of the Robin. The following instance of early incubation may perhaps be interesting to the readers of 'The Zoologist.' A robin's nest, containing several eggs, was taken near York a few days ago: there being snow on the ground at the time, and the temperature ranging from 30° to 13° Fahr. — *William Murray Tuke; York, February 9, 1844.*

Correction of a supposed error in a previous communication, the name of Richard's Pipit apparently occurring instead of that of the Alpine Accentor. I am inclined to think that there is some error in Mr. Jordan's note in the last month's Zoologist (Zool. 494), relative to the capture of Richard's pipit (*Anthus Ricardi*) at Teignmouth, and that the bird alluded to is a much rarer one as British. My reasons for this conclusion are, that the attention of your correspondent, Mr. Alfred Greenwood, and myself, was attracted in February last to a case of birds containing two blackstarts (*Phænicura Tithys*) and an alpine accentor (*Accentor alpinus*), exhibited in the window of Mr. Drew, an ornithologist residing in these towns. We were subsequently informed that these birds had been killed at Teignmouth, and forwarded to Mr. Drew for preservation. Since the appearance of Mr. Jordan's communication, I have seen Drew, and ascertained that the birds were received from that gentleman, who doubtless will be pleased to find himself the possessor of so rare a bird as the alpine accentor. — *W. S. Hore; Stoke Devonport, April 8, 1844.*

Notes on the Habits of the Wagtail. My acquaintance with your delightful work commenced so recently as Saturday last. The completed volume was placed in my hands by a Reverend relative, not unknown to the ornithological world, an honourable notice of him appearing in the Introduction to 'British Birds' (ed. 1832) by Bewick, whom he personally knew; two agreeable circumstances that connect me by remote and proximate links with your publication. But to my task! I had been some little time in correspondence with my relative on the strange and interesting habit of the

* Addressed to and communicated by the Rev. J. Atkinson.

wagtail, so frequently referred to, little imagining it had been the theme of a published disquisition, when I had the pleasure of seeing the subject diligently investigated and the enquiry scientifically pursued in 'The Zoologist.' Ample as are the communications, allow me to throw my opinion into the mass, by a narration that shall bear the burthen of its own argument. In the month of April, 1842, my attention was frequently attracted at day-break by the violent fluttering of a small bird at my window; apparently some little creature in distress. On raising the blind, I discovered it to be a pied wagtail (*Motacilla alba*, Linn.), and I was moved as much by pity as curiosity to lower the sash for its admittance. For some time he declined my invitation; but as our acquaintance increased from day to day, I was tempted to anticipate his visit, and draw up the blind at dawn, which to my surprise served as a signal for its return. In a short time I found that if the bed-room blind continued down and the blind of the dressing-room were raised, the former was relinquished and the latter tried. After a while I lowered the top sashes of both rooms, and opened the door between them, when the elegant little fellow, emboldened by protection, alighted on the nearest sash, swiftly ran along it, and with what appeared to be the pride of confidence, made the room reverberate with his warble, of whose sweetness and variety I had formed no just appreciation. The growth of our familiarity was rapid. He now perched on the corner of the portico and chirped unintermittingly till I came to him, recognized my imitated chirp, perched on the sash the moment my hand was removed, hopped upon the looking-glass or ledge of the dressing-table, thence passed to the other room, pattered with his rapid pace around the bed, and flew out indiscriminately at either window. Having adopted the idea of placing a looking-glass in such an oblique position that as he walked on the floor he might see himself, it was truly amusing to behold his vanity and grotesque gesticulations; but an imagined rival soon brought forth his pug-nacious propensities, and a fictitious combat closed the scene. He often recognized me as I walked in front of the house; sometimes descended to the window of the parlour in which my family sat, and drew their notice by his wonted intimation; and although I never found him in my dressing-room, as if he watched the occasion, he always appeared as soon as I entered it. Now comes the interesting climax! For several weeks, while I shaved, he sat chirping on my looking-glass, reining his neck, waving his tail, preening his half-raised wing, and eying askance the reflexion of his glossy gorget at his feet. On the nearer approach of my finger, he sidled along the frame with—to use a paradoxical expression—a confident timidity, to avoid the touch. During these proceedings his mate would occasionally consort with him on the portico, or sill of the window; but her visits were short and infrequent. In the beginning of June the bird disappeared, and after an interval of several weeks, returned; but whether worried by the servants, whom his freedom with the furniture annoyed, or from decreased encouragement in me, he then took his final departure. During our interviews I gave him a few crumbs of bread, which, although he did not appear anxious about, he did not wholly reject. Last year, at the same season, a pair of male pied wagtails came to my bed-room window, which I again opened, and, as if shy of each other, sat alternately on the top ledge; but from some unknown cause, possibly my want of attention, this was the extent of our intercourse. It is a good rule of moral evidence, that the strength of the testimony should be in proportion to the improbability of the fact. Although I hope it is not requisite, I will add that the fidelity of my representation can be corroborated, not only by my household but by strangers, whose presence was complimented by the immediate entrance of my plumed guest. It will

probably be inferred from my statement, without any comment of mine, that I do not attribute these pleasing peculiarities to any of the causes assumed by your intelligent correspondents. The violent action of the bird striking the glass, not only with his bill, but with his breast and feet, convinces me he was not in pursuit of flies; nor do I remember observing any in the window. He was not allured nor deluded by his reflexion from the glass, for his visits became more regular when the blind which caused, or at least strengthened, the reflexion, was removed. He was not a widowed or a solitary bird, for I repeatedly saw him attended by his mate. What then was the extraordinary impulse to these familiar and fantastic freaks? I think I have read, and, if my recollection serves me, in Goldsmith's 'Animated Nature,' that these anomalies of instinct not unfrequently occur during incubation; and I well remember having heard, when a boy, a laughable and well authenticated story of a similar propensity in an old gander, during the incubation of his mate, to the society of his owner, a worthy old humourist of my neighbourhood. I see no reason why these influences, whatever they may be (possibly a desire to court the protection of man at a season when the sensibilities are most alive), should not prevail amongst the less as well as amongst the larger orders of the feathered creation; and I confess, that calmly reviewing the singular circumstances I have just related, I find it difficult to trace them to any other source.—*James Cornish; Black Hall, February 26, 1844.*

Note on a singular habit of the Grey Wagtail. An interesting discussion has taken place in 'The Zoologist,' respecting the habit of the *Motacilla Boarula* resorting to windows, (Zool. 136, 230, 358). To me the communication at page 358, seems to contain something like the solution of the mystery. In confirmation of what is there stated, may be cited the popular belief in Berwickshire, that it is illegal to place a looking-glass in a dove-cote (and here the Hon. Daines Barrington might have been gratified in his researches into the imaginary beliefs in statutes that never existed), seeing the pigeon is so conceited of its person, that in a short time the whole cotes of the neighbourhood will be emptied, to the benefit of the one that contains the enticing lure. This, though ridiculous enough, has doubtless some grains of truth mixed up with its absurdity. I recollect, some years ago, an individual of the domestic pigeon, frequenting the window of an upper apartment of a house in the country, where I was accustomed to pass much of my time, and occasionally pecking at the window in the same manner as the wagtail is said to have done, as if it wished something inside. I have no doubt that it saw the reflexion of its own image; for before mirrors became plentiful, it was a well known resource of the peasantry on the borders, when they wished to arrange their head-attire, *to go to the outside of the window and look in.* Does not some writer mention goldfinches as being fond of a mirror? — *James Hardy; El-lison Terrace, Gateshead, Newcastle, April 26, 1844.*

Correction of a supposed error in a previous communication as to the Reed Bunting's not having a black head in winter. In the March number (Zool. 450) Mr. Greenwood states that "the reed bunting is not to be obtained with a black head in winter." Being intimately acquainted with the reed bunting, from its so constantly coming under my notice, and its being so great a pet of mine, I should feel myself doing this bird an injustice, were I to let this opportunity pass without vindicating its cause. Surely then this statement cannot be! The many times this bird has come under my observation, the male bird has never yet been seen by me denuded of its elegant black cap. It was only last Sunday that I saw four of these birds; of the four, two were males, but both had their heads decked in black, though it was not of so beautiful a velvety

jet as during the breeding season. Mr. Greenwood must have taken for males either the females, or the young of the preceding spring, both which have the crown of the head reddish brown; however, this remains for him to solve. If there is a change takes place with him, as he has stated there is, it seems to me extremely odd; for it is a most undoubted fact, that no such change ever takes place in the plumage of the male reed buntings here, beyond what I have before stated. I should be sorry to see this pretty bird robbed of its most distinguished ornament without first a proper investigation into the matter. The reed bunting is very generally dispersed—indeed I might say common—about here; in any hedge by a brook or ditch, or amidst the reedy dyke a pair of these birds may be found: in winter, as many as six (males and females) may be seen congregated together, although two is the most general number to be seen at once. The male bird, when in song, mounts the topmost spray of some bush, and pours forth its unvaried but pleasing song to its mate, often for more than an hour together. Though these birds frequent reeds at all seasons of the year, I have never seen them while perched on those plants pick the seeds from them. They destroy great quantities of insects in the hedge-rows and amongst reeds: when more solid food is needed, they take to the fields, where they feed promiscuously upon grain and small seeds—but chiefly the smaller seeds are had recourse to—thereby rendering a great service to the agriculturist. I have remarked that these birds are always in pairs; one instance only occurs to me when this general rule was broken through, and that was when there were two female birds and one male, so that it is not improbable they remain paired for life. Mr. Yarrell, in his account of this bird, gives good reasons for adopting for it the name of the “Black-headed Bunting” instead of that of “Reed Bunting,” which name I can highly recommend to be used in the nomenclature of our birds by writers in ‘The Zoologist.’—*Vivian Walmsley; Westwood House, March 6, 1844.*

Note on the occurrence of the Snow Bunting at Derby. In the beginning of last March a specimen of the snow bunting was shot here: it is now in my possession.—*R. J. Bell; Mickleover House, near Derby.*

Notes on the Habits of the Hawfinch. Having for some years paid attention to the Ornithology of this district, I beg to offer a few observations on the habits and nidification of the hawfinch, which our position on the borders of Epping-forest has given me unusual facilities of making, and which I have thought may prove interesting to some of your readers. This comparatively rare species came first under my notice about the winter of 1825, when a fine cock bird fell dead on the gravel walk before the gardener, from what cause was not ascertained; but it was not until 1837 that I was aware of their being resident and rather numerous in the neighbourhood. During the winter and early part of that year, four or five of these birds were pretty constant visitors in my father's garden, and others were occasionally observed flying over. On the 17th of May we discovered a nest situated in an apple-tree in a retired part of the garden, about ten feet from the ground, and the old birds, though very shy, might be occasionally observed about. The hen sat very closely on four eggs, after I had secured a fifth for my collection, and on the 3rd of June hatched only one young bird, which left the nest on the 18th, but was not seen afterwards. In external appearance this nest much resembled that of the bulfinch, though considerably larger, being composed of an abundance of twigs and small dead sticks, loosely put together, and lined with garden-bass and fibrous roots. The eggs, which are now well known to most collectors, are of an olive green ground, marked and blotched with dark brown. Being

anxious to ascertain whether this nest was only an incidental one, or whether the bird constantly bred in the neighbourhood, I started one evening (on the 24th of March) to search in a spot which I knew to be a favourite resort of the hawfinches, situated on the borders of the forest, abounding in a growth of lofty timber interspersed with fine old hawthorn and yew trees. I was speedily rewarded by the discovery of two nests, one containing three the other one or two eggs, both similarly situated about twenty feet from the ground, amongst the forked boughs of the old hawthorns: we also observed the commencement of another nest in a neighbouring tree very similarly placed and all within a few yards of each other. These nests, one of which I have still in my possession, were composed of precisely the same materials as that above described, and for their size are very shallow. During the autumn we pretty much lost sight of our interesting visitors, except their being occasionally observed feeding in company with whitethroats and some other birds on the ripe berries of the Mespilus, a fine specimen of which tree stood near the house: but during the following winter, that of 1837-8, which was remarkably severe, a numerous colony frequented our garden, as many as twenty to thirty being generally seen in the morning feeding on the berries of a favourite holly. On the least alarm they quickly dispersed to the topmost boughs of the neighbouring lofty trees, where they remained, if not further molested, till the danger had passed, and then returned to their meal. There is a considerable difference in the brightness of the plumage of different specimens, the old birds being richer in colour throughout, the males especially, the young males apparently partaking of the plumage of the females, whose chief distinguishing mark is the patch of colour beneath the chin being brown instead of glossy black, as in the males. The peculiar characteristics of this handsome bird are the curiously notched form of the quill feathers of the wing and their thick powerful beak, formed for breaking hard kernels and fruit-stones. The muscle by which this is effected is wonderfully developed, being turned backward over the skull, which is ridged over the eye to receive it, almost to the root of the beak. Their bite is of course severe, and I have frequently noticed the ground beneath the tree on which they have been feeding, covered with twigs and leaves cut off by their powerful beaks as if with scissors. When kept in confinement the hawfinch is shy, and does not easily become reconciled to its situation. One young bird which we caught about seven months ago (its wing having been injured), is still healthy, but from feeding ravenously on hemp-seed has lost much of its brightness of plumage, and, like the bulfinch appears inclined to turn black. In the winter season, and especially during severe weather, these birds are frequently seen in the neighbourhood of the forest in large flocks of from fifty to a hundred or more feeding on the seeds of the hornbeam, to which they appear to be particularly partial; and as spring advances, they disperse into retired spots to breed. I am inclined to think that their shy habits, together with their being a very local species, has led to their having remained so long comparatively unobserved; and I much doubt their numbers being increased by a winter migration from other countries, their apparent numbers at that season being probably only the result of their congregating together and becoming more bold in their approach to our gardens and orchards. — *J. Gurney Barclay; Walthamstow, Essex, March 16, 1844.*

Notes on the habits of the Chaffinch in East Lothian. There are few men who, having been brought up in the country, do not cherish some fond recollections of the chaffinch, his merry song, the beauty of his plumage, his vivacity, his loud warning notes of danger to other little birds and the elegance of his lichen-cruste nest. Of a fami-

liar yet not an intrusive disposition, he builds in the trees around the dwellings of men, and in the hedge-rows of cultivated fields, no less than in lonely woods and copses ; when wintry storms and the progress of the plough have cleared the stubbles of his food, he hies with all his fellows to the well-stocked stack-yard, where the pinchings of hunger are never felt. The writings of Gilbert White, many years ago induced me to look out for the migration of the females of this species, but his remarks are inapplicable to East Lothian. During the absence of the swallow from our cold clime, the chaffinch is the faithful guardian of all the little birds which haunt the onstead. No sooner is the prowling hawk perceived, than the alarm-note is sounded, the sparrows decamp to the hedge or thickest bushes, followed by yellow buntings and green linnets, whilst the chaffinches fly up to the topmost sprays of the tallest trees, and give vent to their fears in loud choral bursts of sound ; when the plunderer make his fell stoop, they dash downwards to places of greater security ; but no sooner is he past, than they again mount to the signal-tree. The roaming habits of the swallow give him a decided advantage over the chaffinch ; and though the numbers of the latter are much reduced, owing to the number of colonists which have departed for the woods, still those which remain are true to their post and duties. Summer heats and love-songs have exerted no injurious influence upon their call-notes, but with so few voices the chief interest is gone ; some hundreds of voices ringing out loud and clear in a calm winter day, impart a sense of life and animation to the quiet valley, when the woodland songsters are silent, and more pleasing by far than the notes of the pheasant or the partridge, the cawings of the carrion crow or the rook, or even the wild melancholy whistle of the golden plover. When the frightened thrush chatters at the stranger approaching too near her nest, or the wren, which tells of perils in the hedge, gives notice of prowling cat or weasel, chaffinches flock from all quarters to mob the intruder ; and when the grove is up in arms against the luckless owl or vagrant cuckoo, — there are louder voices amongst the rabble crowd, but none so insolent in their bearing as the gay chaffinch, than whom there is no bird more watchful of his own safety, especially when feeding in large flocks, for they fly off at the least noise. Whilst noting that onsteads are their head quarters in midwinter and early spring, until the oats are sown, let it be also understood, that many frequent the plantations bordering on public roads, as well as such neighbouring woods as are well sheltered. The wooded banks of the Whittingham water are a chosen resort, the glen through which it flows is sheltered from almost every wind ; soon after the commencement of the year, the noontide sun rises sufficiently high in the heavens to impart a genial warmth to its northern bank : there the renovated forms of the pilewort, the primrose and the violet rise to view, and birds are heard to stir the woods in song, much sooner than in any other locality : but long before the appearance of these wild flowers, and even before the “ fair maids of February,” the merry roundelays of the chaffinch are heard during soft and sunny noons about the end of January. He is the first of all our native birds in these parts to announce the coming of spring with all her varied charms, and welcome, doubly welcome, is his prophetic song after the long dreary months of winter, for well I know that the gentle song thrush will soon return from England, and the skylark from the sea coast, that the vast congregations of the ringdove will gradually disperse, that our song-birds will one by one resume their vernal notes, and the whole land will re-echo with song. Destitute though the song of the leader of the chorus may be of any pretension to melody, still in its own homely style it breathes a portion of that spirit of pure cheerfulness which marks the skylark’s song, and which probably

constitutes the chief attraction of the latter. He is a most consistent leader of the woodland choir throughout the whole season, till his voice is hushed for a time about the beginning of July. No bird is so musical; bad weather affects his vocal powers less than any other bird; he is our chief songster during the latter snow-storms, and during the equinoctial gales he warbles in some quiet corner. It is true that his voice is almost lost in the rich burst of melody with which our summer birds celebrate their loves; but some weeks after their arrival, and during sultry weather, when the twilight shade of the woods is more grateful than the greenest field, we note his song for its loneliness. At first his voice is only heard about the middle of the day; with the advancing season his songs are increased, but at no period is he frequently heard amongst our earliest or latest songsters. In resuming his song for the season, his first attempts generally consist of broken snatches uttered in a very low key, as if the muscles of the larynx were unable to perform their part for want of practice, but sooner or later the bird regains his full powers. Their first essays this season are an exception to the general rule. In February they also resume two characteristic notes; one resembles "wheet wheet," which is mellow and pleasant to the ear: not so the other, which is harsh and grating, and may perhaps be written "*churr-uee*," the object of which I have not yet ascertained. The arrival of the pairing-season is announced by the animosity of the males, and their frequent aerial combats and skirmishes amongst the trees; the former attract most attention, for the opponents mount perpendicularly to the height of twelve or fourteen feet, pecking fiercely at each other, and uttering loud and angry cries. Perhaps the victor pursues the vanquished for a hundred yards or so, and the song of triumph is frequently poured forth on the wing, and this habit is by no means so uncommon as occasional observers are inclined to believe, especially when the male is flitting about his mate or the nest. I have heard the song repeated three or four times during a short flight, and have seen several birds which evidently took much delight in so doing. When once a mate is wooed and won, the male follows her in an ecstasy of delight, singing in a low inward key, and calling "peep, peep." About the end of April the first nest is built, and is usually composed of the following materials: moss, lichens, grass and pieces of thread, and lined with feathers, wool and hair; and out of these simple materials a most beautiful fabric is constructed: it is placed in a variety of trees and bushes, the hawthorn hedge is a great favourite, and two wall pear trees in our garden are almost annually tenanted. One of the oldest circumstances that I can recollect about birds is, that a pair of chaffinches annually built their nest in an old pear-tree, till it was cut down five years ago, and also that the nest was usually placed upon a branch overhanging a walk, so low that the whole was often struck by the heads of passengers. When built in wall fruit-trees the following method is pursued; a quantity of materials is deposited between the branch and the wall, the end of which is laid upon the branch, and this serves for a foundation. Sometimes it is placed amongst the spurs, and at other times it is simply shaded by a few leaves, and when finished, the lining only intervenes between the sitting bird and the wall: a few days are occupied in building the nest, then four or five eggs are deposited, one each day. The female, like most small birds, sits eleven or twelve days, and in as many more the young are fledged. When engaged in constructing their nest, especially when it is in a wood, both birds, by their cries and gestures, seek to entice an intruder from the neighbourhood, by flitting about his path, and after he has removed to a distance, they again return to the place; this same species of guile is practised by the male while his mate is sitting. The young follow their parents for some days, and

are very garrulous for food. It is during the period when occupied in supplying the wants of his family, that the active habits of the bird are displayed to the greatest advantage, and all his bodily energies are called into play. I know of no place where he may be observed to better purpose than on the banks of our principal stream, the amenities of which, even in mid-winter, I have already mentioned; but it would be a more difficult task to do justice to its merits when the hanging woods and thickets are clothed in the leafy glories of summer, and the stream, though a false taste has been displayed in many parts of its course, in sloping its banks and removing the larger stones, still maintains the character of its tributary the Garvald, that is, "the rough rivulet," and its winding course and murmuring voice add much to the pleasantness of the prospect. During the months of May and June great numbers of Ephemeriðæ or allied species sport over the water and throughout the whole glen, furnishing a rich repast to all insectivorous birds. The side of the Cairn hill, which descends to the stream, is clothed with a beechen grove, and being situated in a sunny corner, insects are very abundant there, and looking up the wooded slopes the whole air seems to be alive with fly-catching chaffinches, and their merry song and cheerful cries lend additional animation to the scene. Where the elm flings her spreading boughs across the stream, watchful birds sitting in ambush await the gaudy fly, and when cold winds chill the insects' limbs, the long grass and wild flowers by the water-side are carefully searched by the keen-eyed hunters. Nor is this aerial habit of uncommon occurrence, for no sooner does the sun exert a life-giving influence on the insect world in spring, than this bird may be seen in the air. Most heartily do I wish that gardeners and all haters of the chaffinch would lay aside the gun for a season, and sticking a few pinion feathers of any fowl at right angles into a piece of cork, attached by a piece of string to a stake, and committing the guardianship of their beds of small seeds, primroses and polyanthus, to this simple scare-crow, would commence observing the habits of the object of their enmity. It will be observed that nothing but insects and larvæ are carried to the nest, to procure which the rows of pease, the hedge-row and plantation, and the fruit-trees are all searched; the leaf-rolling caterpillar is wrenched from his cell: sometimes the bird is obliged to support himself in doing so upon fluttering wings, and at other times, when these means fail, the leaf itself is torn off and borne to the ground or to some neighbouring perch. The chaffinches which breed near the onstead haunt the cattle-yards all the summer, and are joined by their broods. Their depredations on farm produce and services in destroying the weeds of Agriculture, are detailed at some length (Zool. 298), where some few points in their history have been purposely omitted. His personal appearance, like his nest, is always the picture of neatness. He may often be seen washing in the pond, even in midwinter, when ice covers the pools, and then he resorts to an old wall pear-tree, growing in a sunny corner, where he flutters and preens his plumage till it is once more dry and comfortable. I have dwelt upon his first vernal song, and the pure spirit of delight and pleasant anticipation which it never fails to inspire; but what shall I say of his autumnal song, now that the love which then warmed his heart has been poured away upon his mate, and the lichen-spangled home of his family? We have occasionally days in autumn which breathe of spring; but how comes he to sing in snow-storms in October in the cold uplands of Lanarkshire? Several friends—"out-door naturalists"—residing in the counties of West Lothian, Roxburgh and Leicester, assure me that they never heard his voice during autumn; Mr. Waterton is *positive*, and Gilbert White is silent on this subject. Say then, ye learned in Ornithology, how comes it that the chaffinch

annually resumes his song in autumn in this neighbourhood, and to what influence ye would ascribe this curious habit? The chaffinch then annually resumes his song in the last week of July, or else early in August, continues to sing at intervals generally, but sometimes also for successive days, he may sometimes be heard in bad weather, and at other times, when the sky is bright and the air warm, he is most unaccountably silent. The young males join in the merriment of the season, but their performances, deficient alike in compass and execution, are easily recognized; that of the old males is generally at first "faint warbled" as in spring, but they soon attain their former standard of excellence. These songs are chiefly heard in August and September, a few in October, and still more rarely in the two following months.—*Archibald Hepburn; Whittingham, March 16, 1844.*

Note on a singular Noise by a Sparrow. I was very glad to read in the March No. (Zool. 452), a confirmation by Mr. Bartlett, of my observation as to a curious noise made by a cock sparrow. Our impressions, however, differ as to the organ whence the noise proceeded; but my idea as to its being produced by the tail can hardly, I conceive, be erroneous, since I was immediately under the birds, which were only a few yards above my head, and the tree not being in leaf, there was nothing to render my view indistinct.—*Arthur Hussey; Rottingdean, March 23, 1844.*

Observation on a previous communication on the Greater Tit. In the last number I noticed a paper on the greater tit going to yew-trees and "tapping" on the branches (Zool. 449). I am surprised the writer did not discover what the birds went for—not for insects—but for the seed of the yew, of which they are very fond. I see them constantly fetching the seeds from the yew-tree near our garden, holding one on a convenient branch, and rapping it till they break the shell.—*H. Doubleday; Epping, 22nd March, 1844.*

Anecdote of Rooks. During a long-continued fall of snow a few years since, the rooks at the residence of a gentleman near Oxford being much distressed for food, a quantity of oats were strewn for their relief on the swept line of a foot-path near the rookery. For two days, however, the pangs of famine were unable to overcome the habitual caution of the sable republicans, who suspected meditated treachery under this fair seeming. At length, in the grey of the third morning, before guns or gunners were afoot, a forlorn hope of two or three was seen to descend, and warily to approach the provender; and a sufficient time having elapsed to assure the remainder of safety, the whole flock descended at once to the repast. Since that time the foot-path has been held by a kind of tacit convention to be *tabooed* during the winter as a feeding-ground, and is frequented by the rooks without fear or precaution.—*F. Holme, C. C. Oxford; April 23, 1844.*

Anecdote of a Partridge. I once witnessed a singular circumstance. Walking in the fields I disturbed some partridges, one of which, after flying twenty or thirty yards, suddenly dropped, in consequence, as I discovered on catching it, of a compound fracture of the large bone of one of the wings. When the bird was picked, a shot-hole was visible in the skin, and the shot (No. 6) was afterwards found in the flesh. I should conjecture, that in consequence of the gun being fired too far off, the force of the shot was spent, or a very inferior one, the single grain of shot lodged in the bone without power to penetrate it, no fracture occurring till produced by sudden violent exertion. Long before the above event fell under my own notice, a similar one had been related to me by a gentleman to whom it happened. When shooting in cover on a wet day, his dog put up a cock pheasant, at which he aimed, but his (flint) gun missed fire, wa-

ter having penetrated the pan ; but at the very moment, the bird dropped from its wing breaking, as my friend discovered when his dog had caught it. Had the gun gone off, the pheasant would most probably have been killed outright, as the gentleman was an excellent shot ; but in such a case any one would naturally believe that he had hit his game, although he had actually missed it entirely.—*Arthur Hussey ; Rottingdean.*

Anecdote of Young Partridges. A very late nest of partridges was brought to me by a labourer last autumn, having been cut out in reaping ; the person who manages the chicken managed to rear eleven of the birds. As they were very small in September, I did not turn them out, but thought I would keep them till the shooting got a little slack, and they would be stronger and better able to take care of themselves. At the end of October they were carried in a close shut-up hamper, and turned out in a field of Swede turnips about a mile as the crow flies, but by the way they were taken, a mile and a half from their former home. In less than a week the person feeding the chicken, when calling them, was astonished to see seven of the partridges out of the eleven turned out at a short distance off, and afraid to come too near. They were rough in their plumage and in bad keep, and evidently the same birds, as they allowed her to walk up to them, and ate the barley she threw for them. She has seen and fed them ever since, till within the last month or five weeks, when no doubt they began to pair and wandered off. These birds had been separated from the hen that reared them a long time, so that she could not have assisted in recalling them, even had they wandered towards home by chance, which was not likely, as they must have crossed a railroad, a public road and a river, and in any other direction they could have wandered without crossing anything to frighten them.—*J. W. J. Spicer ; Esher Place, Surrey, May 14, 1844.*

Correction of a previous error in describing the colour of the Heron's Egg. In stating the colour of the eggs of the heron found in Calder wood by Mr. Walker (Zool. 384), I find that the single word *blue* has been inadvertently written by me, instead of *pale blue green*, or some phrase to that effect.—*R. Dick Duncan.*

Note on the occurrence of the Night Heron in Cornwall. A splendid male night heron (*Nycticorax europæus*) in full plumage, was shot on the 28th of last month in the fish-pond of my friend the Rev. J. C. Crowley, at St. John's, in the county of Cornwall. This bird, thanks to the liberality of the above gentleman, is now in my collection, and agrees, with one exception only, with Yarrell's description. The discrepancy is in the colour of the legs, which when fresh were *yellow* and not *green*. The number of the elongated occipital plumes does not exceed three.—*W. S. Hore ; Stoke Devonport, April 8, 1844.*

Note on the Water Rail. Mr. Yarrell, in his 'History of British Birds,' speaks doubtfully as to the water rail remaining in this country during the winter. The bird is so very retiring in its habits, skulking in the ditches, and if disturbed creeping into the very thickest part of hedges or bushes, that it seldom comes under observation ; never under common observation. From my own experience formerly as a sportsman, I should pronounce it as much at home in England as the water hen, though certainly far less numerous. When in pursuit, during hard frosts, of woodcocks and snipes in the springs and open ditches, I generally, if not always, found one or more water rails if hedges or other cover were contiguous to the water ; from which situations it was difficult, if not impossible, to compel the bird to take wing. I have memorandums of having killed the water rail in December, January and February, besides the distinct recollection of its having been seen (sometimes obtained by others) on other occa-

sions in those months, though how often, or at what precise period, it is impossible to say from memory after the lapse of many years. During a long continuance of severe weather, the water rail will suffer greatly, and doubtless perish; but the same happens to the water hen: therefore this circumstance proves nothing as to the unfitness of the former to endure the winter of our climate. Some years ago, my informant believed in the spring, but could not recollect the precise period, a water rail was discovered in a very exhausted condition in a garden of this village, so that the bird was probably on its passage, in what direction it is impossible to say, though it must apparently have been to this country.—*Arthur Hussey; Rottingdean, Sussex.*

Note on the Food of the Snipe tribe. The food of woodcocks and snipes is still, I believe, considered doubtful. From the experience of many years I can assert that during severe weather these boring birds always resort to springy spots, particularly to the vents from strong springs, which remain moist notwithstanding the sharpest frost, though they are not usually driven to these places until the ground is covered with snow. From a ditch of this kind I once killed a snipe, which, when I picked it up, still retained a small worm in its beak. If the frost lasted long, the birds would disappear even from such situations; and I have known both woodcocks and snipes to quit the country entirely (as far as I could judge) previous to a long winter, though not either the longest or the most severe I remember to have experienced. White, in his 'Natural History of Selborne' (Letter 33), remarking on the fact that "long-billed birds grow fatter in moderate frosts," says, this "appears to him to arise altogether from the gentle check, which the cold throws upon insensible perspiration." From similar circumstances, which he proceeds to mention, this cause most probably has some influence; but I would suggest whether a co-operating cause may not be, that the birds have not so much difficulty, as in open weather, in finding their food, which they procure in the warm ditches, without the necessity of rambling to a distance? I can speak from my own knowledge of the common members of the *Scolopax* tribe, as also fieldfares &c., being in excellent condition in the early part of a frost, but if it lasts long they become very lean. When snipes and woodcocks are fresh killed the tip of the upper mandible is moist and smooth, but when that part has become dry, it appears rough: does that indicate, or is it connected with, great sensibility in that member, enabling the bird to discern its food on probing the ground with its long beak? — *Id.*

Note on the occurrence of the Red-crested Whistling Duck in Norfolk. On the 12th of January last a specimen of the red-crested whistling duck (*Fuligula rufina*) was shot on Horsea-mere, in Norfolk. Mr. Rising, of that place, in whose possession the bird now is, informs me that it was killed rather early in the morning, and that it was quite alone and extremely tame. This specimen was a male bird, in the fullest adult plumage, and when newly killed was as beautiful a bird as I have often seen. The beak was of a most splendid vermilion red color,—the nail of the beak being also red, but paler than the rest. The colouring of the beak began to fade soon after the bird was mounted, as also did another beauty, which was apparent when the bird was first killed, and which consisted of a wonderfully elegant tinge of rose-color which pervaded the whole of the white parts of the plumage, especially the two large patches on the back above the shoulders. The colouring of the other parts of the bird (which appears to be of a more permanent character) agrees very well with the usual descriptions of this species in the adult male plumage.—*J. H. Gurney; Norwich.*

Note on the occurrence of the Red-throated Diver and Red-necked Grebe near Derby. A specimen of each of these rare birds was lately shot on the Derwent, near Derby:

the red-throated diver was in winter plumage: both of them are now in my collection. I have also purchased a female of the pink-footed goose, shot at Patrington, in Holderness, on the 14th of February, 1844. — *Robert John Bell; Micklever House, near Derby, April, 1844.*

Note on the Black-headed Gull. I beg to make a few remarks upon Mr. Jerdon's statements respecting the habits of the black-headed gull (Zool. 245), which I think are correct and good. The black-headed gulls from March to July are my daily companions, and therefore I have many opportunities of observing their habits. These birds are the frequent attendants on the ploughman throughout the whole of this district, and as they pick up worms and grubs, and seem to have no relish for vegetable productions, they are great favourites with the farmers. But their unfailling support is met with on our marshes and extensive flat sands, where, on the retiring tide, they find an abundant supply of Crustacea and small fishes. Here indeed many of them are engaged during the whole day, for a considerable portion of the year, in couring for food, as described by Mr. Jerdon. At one time "skimming the surface of the water," at another hovering over their prey like a kestrel over a mouse, and then, like the tern, dashing into the water and emerging again instantly, either swallow the prize or carry it away to their expecting young. But the passage in Mr. Jerdon's notes more interesting to me than any other, is where he says (at p. 246) "a peculiarity in its habits which I have not seen noticed is, that it is very crepuscular." This peculiarity I myself have noticed for many years, and I can certify that it is not an accidental, but an almost invariable practice with the black-headed gull to indulge in evening or even twilight excursions in search of food. The great object of this bird's pursuit here in the evening, is a large moth, which, as twilight approaches, may be seen floating over uncut meadows and tufts of grass in pasture lands, where the moth conceals itself during the day. When these moths begin to arise in the evening from the rank herbage in front of my house, I calculate on the immediate appearance of a number of black-headed gulls, and am seldom disappointed. It is indeed a most amusing and interesting sight to witness the elegant evolutions of these beautiful birds when in pursuit of these large moths. Oftentimes brushing the surface of the ground with their downy breasts, and generally capturing with facility the moth as it hovers at an elevation of from one to two feet above the earth. Occasionally, however, the bird misses its aim, and the moth, by the rapid motion of the gull, is struck to the ground. The bird, however, nothing daunted, immediately, as Mr. Jerdon remarks, "rounds to," hovers for a few seconds over the retreat of its fallen prey, and if it perceives its victim imbedded in the grass, pounces upon it, or if disappointed, flies off in search of another prize. I also beg to add, that I have repeatedly been witness to the black-headed gulls quitting their extensive breeding grounds on our mosses in the evening of a hot day in the month of June, and going forth in search of food which they evidently expected would be met with towards the close of the day. The following statement may serve to corroborate this fact. On the 15th of June, 1843, I was visiting a friend who lives about eight or nine miles from the principal seat of the breeding-ground of these birds. I left my friend's house about half-past 8, P.M., and had only gone a short distance, when I was delighted to see my neighbours, the black-headed gulls, coming as it were to meet me, in merry parties. In companies of about five, eight and twelve, I first noticed them sallying forth in almost a direct line, as if on their way to some distant feeding ground, and which I have little doubt was the case. As evening advanced, I met in succession new flocks, and then had ocular proof of the

object of their pursuit. In parties of about the numbers above specified, I noticed them hovering over the rich meadows and pasture lands adjoining the river Wyre, and also occasionally quartering the fields in search of the moths, as carefully and assiduously as the best-trained pointers would do when in search of game. I beg, however, to add, that I by no means affirm that these moths are the only objects of pursuit to the black-headed gulls in the evening; still, in this district, I hesitate not a moment to say that they are their chief prey, as twilight approaches, for I have repeatedly shot these birds at a late hour, when in pursuit of these moths, and have found their pouches crammed with them; and so convinced am I of their predilection for this food, that in my diary I have given this gull the name of the "Moth-catcher."—*J. D. Banister; Pilling, Lancashire, January 11, 1844.*

Note on Instinct in wild Web-footed Birds. There is a striking peculiarity in some of the web-footed birds, which, as I have never seen particularly recorded, I beg leave to send for insertion in your valuable journal; I allude to a habit, whilst in search of food, of dancing or trampling rapidly on the sands when the water covers their surface, and more particularly at the edge of the ebbing or flowing wave, where myriads of little marine insects are seen sporting and leaping, as if exulting in happiness at the return of the element in which they exist, and whose approach they seem thus instinctively to welcome. For immediately on the water overflowing their holes, they appear to receive it with delight, and then sink to the bottom of their homes. Now the above-mentioned action of the bird is evidently for the purpose of raising this species of their food to the surface of the water, by thus sucking them from the sand or mud in which they lie imbedded. Let me also remark, that whilst employed in this singular mode of taking its prey, the *Piscator* always appears to be most vigilant, for no sooner does any kind of food present itself on the surface of the bubbling waters, than at once it is detected by its watchful eye, and secured as its prey. To this I may likewise add that the bird not merely tramples and loosens the sands, but has the art also with its broad webbed feet to force the water to boil up briskly around it, so that, by this means, much latent food is dislodged, thus amply repaying the fisher for his trouble, assiduity and perseverance. It is also worthy of notice, that in this act of trampling rapidly on the sands, the bird, as it moves its body, generally makes a semicircle, seldom however, as far as my observation goes, forming an entire one. And does it not thus act that it may more easily observe the approach of an enemy?—as from whatever quarter danger presents itself, the bird is alert, and can escape the threatened attack. Various kinds of wild ducks may frequently be seen at a distance on our extensive sands labouring in this manner for their daily food, as also the "wild sea mew." I have noticed a shieldrake, not more than a week old, which was hatched and reared by a hen, practising this habit. In this last-recorded instance there was therefore an effort for a livelihood prior to any parental instruction, for the hen, the foster parent, would not, neither indeed could she, after this manner teach her young brood. I have also noticed the same in the young of the black-headed and black-backed gulls, which had been separated from their parents before they could possibly have an opportunity of observing their seniors labouring thus for subsistence. This act then of trampling rapidly on the sands or mud when just covered with water, by such young inexperienced birds, must be instinct, and seems exactly to agree with Dr. Paley's definition of that faculty, that it is prior to experience and independent of instruction.

— "Equidem credo quia sit divinitus illis

Ingenium."—*Virg. Georg. lib. i. lin. 415.* — *Id. May 9, 1844.*

Note on the Cape Pigeon. Few persons can have taken a long voyage to the southward, without admiring and being interested in these beautiful birds. Their elegant speckled breast and most graceful form, as they float or rather dance over the huge waves, must have attracted the attention of even the most indifferent observer; but the passenger across that wide and dreary expanse from New Zealand to Cape Horn, regards them as companions or associates, for they never fail to afford him both interest and amusement, either circling around in flight, or pirouetting on the water, then chattering in their gentle squabbles over a dainty bit. The wildest storm only brings them closer to the ship, and even before its commencement, they gather into one large flock, which is to the seaman what a rapid fall of the mercury is to the navigator, an indication of an approaching gale. Usually they form little interesting groups varying from five to twenty in number, closely watching every particle that may be thrown overboard; and often, when just arranged round some sheep's offal, have I, with boiling indignation, seen that great monopoliser, the albatross, at one pounce deprive our favourites of their humble meal; but in other places, far distant from the Southern Ocean, the weak have to give place to the strong, and not unfrequently the dinner likewise. Assuming this evil to be irremediable, I proceed to enquire how far the same group will follow a vessel. It is impossible to mark, by difference in spots or colour, any particular individual of a flock, so regular and uniform has Nature been in adorning them; indeed, there can be no ground for jealousy in regard to beauty, for all have been alike favoured. On my passage home from Australia last year, our friends visited us before we reached New Zealand, though we had not a full attendance until the 9th of August, the ship then passing the "Three Kings," at the northern extremity of that colony, and continued till the 20th of October, on which day, in lat. $24^{\circ} 15'$ S. long. $23^{\circ} 42'$ W., we saw the first ship after our departure from Sydney. The pigeons availed themselves of this favourable opportunity of returning to the southward, for on the morrow we had not one remaining. During this interval the vessel had sailed 7900 miles, a distance nearly equal to one third of the earth's circumference. Although the proof of this being but one flock is imperfect, yet the fact of one of the birds being caught and marked with a ribbon, at least 1000 miles before we rounded Cape Horn, and being seen occasionally with his pennant, as it "fluttered in the breeze," during the remainder of their journey over 3800 miles, justifies the conclusion that we had been followed by one party the whole way. Two causes may be assigned for this unusual circumstance; first, that there was no attraction by other ships, and secondly, the birds were never disturbed by the cruel practice of shooting at them for mere amusement.—*Henry F. Cliffe; Elm Cottage, Brixton Hill.*

Note on the Food of the Tadpole of the common Frog. On examining my journal for the past year, I see that on the 29th of last April I noticed the tadpole of the common frog feeding on the common white slug. This is a fact altogether new to me, and if you think it worthy of public notice, have the kindness to insert it in 'The Zoologist.' I should be pleased if some of your correspondents would make an experiment of this kind (which I intend doing this spring), and report progress in 'The Zoologist.' *F. A. Chennell; Stoke Guildford, February 3, 1844.*

Note on the spawning of Trout. The following fact relating to the spawning of trout in the river Rye, in the North Riding of Yorkshire, which was communicated to me by a friend, who is a keen fisherman, and fond of observing the habits of fishes, may prove interesting to some of the readers of 'The Zoologist.' On the 9th of last March he was fishing in the Rye, near Helmesley, but met with little sport, killing only eleven trout and some grayling. On examining the fish, five of the trout proved to be full of spawn, the grains being about the size of a pin's head, and of course not far from the time of expulsion. Now I always believed that trout spawned in November and December. It has, I believe, been proved that salmon in different rivers spawn at different times, and that these extend over a period of six months. May not the same occur in the trout, which is so nearly related to the salmon? If so, this would be an instance of a late and not an early spawning. Whether the trout in this river all spawn in the spring, or whether they continue spawning from November till the middle of March, I cannot yet say; but my friend intends to ascertain the fact this next autumn, and if he succeeds in obtaining any useful information, I will not fail to record it in the pages of 'The Zoologist.' I may also mention that when fishing again in the Rye on the 29th of March, he found that all the trout had done spawning. I hope some of the readers of 'The Zoologist' will ascertain in their different localities the extremes of time in which the trout spawns, and if these are recorded, we may then hope to be able to render certain, what is now involved in considerable obscurity.—*Beverley R. Morris, A.B., M.D.; York, May 2, 1844.*

Note on the capture of a Sturgeon near Great Yarmouth. A fine sturgeon was taken this morning in Breydon, in a net, by a man who was fishing for smelts. When I saw it, it was nearly packed up, to be sent to London, and I consequently could obtain none of the dimensions but the length, which was six feet. — *Wm. R. Fisher; Great Yarmouth, April 19, 1844.*

Microscopical Society of London.

April 17, 1844. — J. S. Bowerbank, Esq., F.R.S., &c., in the chair.

Read, a paper by J. Quekett, Esq., "On some Phenomena connected with the Movement of the Cilia in the common Muscle, (*Mytilus edulis*)." After some observations on the nature of ciliary movement, and on the various opinions of former observers respecting it, Mr. Quekett stated that in the common muscle the cilia occur in the branchiæ, or gills, which are four in number, two on each side, situated between the lobes of the mantle. Each layer consists of rays of vessels running parallel to each other like the teeth of a comb, and the cilia are situated on the margin of each ray. The observations in the paper relate more particularly to the motion of the cilia on the sides of the inner layer of the gill-ray. If one of these rays be placed with the inner and consequently the concave side of the cilia uppermost, each column will be found to present, besides the usual curved motion in a vertical plane, another slight but yet important movement on itself, in a direction nearly at right angles to the preceding, which motion is precisely analogous to the movement of the quills in the wings of birds, or to use a more familiar example, the feathering of the oar in rowing. In order to observe this movement in the most satisfactory manner, the motion of the cilia should have nearly stopped, then if we examine that part of the cilia attached to the gill which may be termed the root, with a power of at least 400, this peculiar mo-

tion will be easily perceived. Mr. Quekett considers that the propulsion in one direction of the fluid acted on by the movement of the cilia, is chiefly effected by this peculiar arrangement.—*J. W.*

Enquiry respecting Pontia Brassicæ and Chariclea. Could any of your readers point out some real and permanent distinction between *Pontia Brassicæ* and *Chariclea*. I caught several specimens last month, which appear to agree with Stephens' description of *P. Chariclea*, some of *P. Brassicæ*, and others intermediate between them. The chief points of distinction given by Stephens, are the colour of the apical spot on the anterior wings, the integrity of its inner edge, the deeper colour of the under surface of the posterior wings, and the smaller size of *P. Chariclea*, most of which characters appear to vary more or less in nearly every specimen. If therefore these distinctions are not permanent, is there sufficient to constitute it a separate species? And may not it and the intermediate varieties be considered as belonging to *P. Brassicæ*, the variations being caused by the early appearance and other circumstances?—*G. S. Gibson*; *Saffron Walden, May 3, 1844.*

Note on Nonagria crassicornis. I have been making a few observations on the manner in which the eggs of *Nonagria crassicornis* are deposited, which I send for 'The Zoologist,' thinking they may prove interesting to entomologists. I took a female at Hammersmith on the 23rd of September; she deposited thirteen eggs on a piece of chip projecting into the box, three of them hatched on the 4th of April, five on the 6th, four on the 7th, and the last one on the 8th. The larvæ, on being placed on the young reeds, soon made their way to the roots and disappeared under the earth. They were about a quarter of an inch in length, of a fawn colour, rather darker on the back, the head of a light brown colour, and a scutellation on the first segment of the same colour. The body tapers from the head to the tail, and has several short hairs on the segments. Also on October 23 I took a pair of the same species *in copulâ*. I then procured a quantity of reeds, which I planted in a box, and placed it in a large cage along with the female moth, where she lived until the 4th of December. When the eggs of the first moth hatched, I cut down the reeds and carefully examined them, to ascertain if any eggs were deposited among them, as on several occasions the moth appeared to be depositing her eggs. After a strict search I discovered upwards of two hundred and fifty eggs, all upon the upper side of the leaves, at the edge, and nearer the point of the leaf than the stem of the reed. They are deposited in single rows upon the leaves, (in one instance I found thirty-five eggs in one row), and as the edges of the leaves curl over in drying, the eggs are as it were concealed in a tube, and are not to be found without some trouble. They all hatched between the 10th and the 15th. The fact of the eggs being deposited on the leaves, and remaining in that state all the winter, will, I think, in a great measure account for the scarcity of the species, as in case the reeds are cut down or destroyed before the time for the eggs to hatch, the whole brood must inevitably perish, and thus the species may become extinct in a locality.—*Henry Longley*; 1, *Eaton Place, North Row, Park St., Grosvenor Square, April 16, 1844.*

Note on the capture of Anticlea berberata at Epping. I captured a beautiful female specimen of *Anticlea berberata* in our own field, on the 2nd of this month. I believe this is the first time this rare moth has been taken near London.—*Henry Doubleday, Epping, May 6, 1844.*

Anecdote of Flies being found dead on the Blossoms of Hemlock. I noticed two days ago that the flowers of the common hemlock (*Conium maculatum*), which grew in a meadow near here, were covered with dead flies, but should have taken no further notice of it, as I frequently see dead flies sticking to the leaves of plants or lying about on pathways, had it not struck me that their attitudes were too natural for them to be dead, and on examining them, I found that they must have died suddenly, as they were in the very attitudes and performing the customary operations of their natures, as if struck suddenly by the wand of an enchanter, and turned into stone. Is this plant poisonous to insect life, and so instantaneously?—or what could be the reason of it? Several had their wings extended, as if they had just settled on or had been hovering over the blossom at the time. And one fly was in the act of killing another, nearly as large as himself, the yellow fly that comes, I believe, from dung, or at all events congregates about it a good deal. He had hold of his victim by the head and throat with his mouth, and his feet were so firmly fixed on the blossom, that they had both dried there, and looked exactly like a stuffed hawk in a case, picking at the bird in its talons. I brought home the flower on which they were, and showed them to several people, but the flies were so dry that in handling their legs broke off, and they became disunited, so that I was unable to preserve them. This may not be strange to you or others, but I had never noticed it before; but strange or not, I can vouch for the truth of it.—*J. W. J. Spicer; Esher Place, Surrey*

Notes on the Dirt-Daubers, North American Insects belonging to the Wasp Tribe. By P. H. GOSSE, Esq.

ONE of the many things that struck my attention on first going into the Southern United States, was, in most of the farm houses, lumps of yellowish mud stuck on to the walls and rafters, and particularly the large projecting chimneys. Some of these were of irregular shape, nearly as large as one's fist, and others were cylindrical, as thick as one's thumb, and three or four inches long. The little boys (and boys in the back-woods know a good deal about Natural History) informed me that these were the nests of the dirt-daubers; and on taking down one of the shapeless lumps, which had been fixed right over my bed, and carefully opening it, I found within, many long-oval cells lined with a thin coat of brittle shelly substance. These were arranged side by side, in two rows: each contained the slough of a perfected insect. In a much smaller nest I found but one cell, and no exuvia, but six spiders, all dried. The long thimble-like nests were divided into cells, in a single series, by transverse partitions of mud. The children soon showed me the insects to which the nests belonged, although, as the season was spring, they were not then building. They were several species of the genus *Pelopæus*, and I thought it a good name enough, — *πέλας*, near, *ὀπαῖον*, the chimney.

By and bye, in the summer, I cultivated an acquaintance with these funny little architects, and had opportunities of watching the whole

process of building; and thus of setting at rest, to my own satisfaction, the disputed point of ownership to these nests, which some entomologists have attributed to Eumenes, supposing the Pelopæus to be parasitical. The following observations will show that sometimes, at least, the latter builds. I transcribe now from my journal.

June 30. — I watched with much interest the proceedings of a dauber, in building her mud cells: it is a pretty species, Pelopæus flavipes. She has chosen the ceiling of a cupboard in my sitting-room, where, previously to my observing her, she had made one cell, and half another parallel to it; the former was closed, the latter had got its contents of spiders, and only wanted closing. Such was the *statu quo*. I had not seen the dauber go in for some time, so that when she did go in, I watched her from her recommencement. She came empty, and having for some moments peeped in, and examined the contents to see that all was right, she suddenly flew out at the door (which as well as the window was almost constantly open), and returned in about a minute with a lump of soft wet mud in her jaws, about twice as large as her head. Where she got it in so short a time I don't know; it was perfectly kneaded, and free from all lumps, or grit, and was worked, when laid on, as freely as butter. I suspect that it was formed of dry dust, on which she had poured a drop of fluid from her mouth. She laid the substance on the open end of the unfinished cell, and spread it about with her jaws very expeditiously and skilfully, till the orifice was quite closed up. She then flew off, and returned with a similar load, which she applied upon the last to make it thicker. When she was gone the third time, to observe her behaviour, I thrust the head of a pin through the newly laid mortar, opening a hole into the cell. On her return, she at once perceived the hole, and deposited her lump upon it, spreading it about as before. I played her the same trick several times, at all of which her proceedings were the same, save that at length she seemed to become very angry, and endeavoured to catch the house-flies that were flying and crawling near. I have no doubt that she suspected them of having a hand in it. At all events, she jumped at them very snappishly whenever they came near, and sometimes even with the load in her mouth, but I did not see that she caught one. Once too, a large Ichneumon was lurking about, at whom she fiercely flew, and I think they had a short struggle. At times she would linger at a little distance after depositing her load, apparently hoping to catch the insidious house-breaker, "in the manner," as lawyers say.

At length I broke off a large piece from the side and bottom, ex-

posing the spiders to view; this, however, she speedily built up as before, at two or three loads, adding to the standing part all round the hole, and not at one side only. After this I did not put her industry to the task any more, but suffered her to finish her work, which she did by adding another layer or two to the end. I, however, made a hole in the first cell, which was quite hard and dry, to see if she would observe it, which she did at once, and clapped her load of mortar on it. I noticed, that while working, though the wings were closed incumbently, she kept up a shrill buzz, like that of a bee when held in the fingers: her antennæ, which were usually carried nearly straight, were, during the plastering, curled up, and continually vibrating, and moving on the surface of the work, evidently trying it by touch, which I could not see without rejecting the theory that calls the antennæ "ears." In seeking her materials, she was gone never more, often less, than a minute, and always brought a similar lump in appearance, which was invariably carried in the jaws, without any aid from the feet.

July 1.—The dauber built another cell to-day, on the other side of the first, which is now therefore in the middle. I again pestered her, by sticking a small tin tack in the newly laid mud, just where she would have to deposit the next load. When she came she appeared quite "bothered;" she ran backward and forward, and round and round, over the cells for some time, with the mud in her jaws, as if at a loss what to do in so novel an exigency. It was a different case from the former; a hole could be stopped up, but here was an intruding substance just where she wanted to deposit; should she lay it on, the incumbrance would be more firmly imbedded, should she place it elsewhere, it would be wasted, not being needed, or perhaps be positively injurious; should she attempt to remove the evil, her mouth was occupied, and she was unwilling to lose her burden. At length, however, as the least of the evils, she seized the tack with her jaws and drew it out, dropping her mud in the effort. When away the next time, I bundled up a worsted thread, and pressed it on the soft work, which presented a still more serious obstacle, as she could seize only a small part of it, which would yield without coming away; however, by taking hold of several parts successively, and tugging at them a long time, and by walking round and round with it in her mouth, she at length got it out. These instances of sagacity and perseverance greatly pleased me. After laying on a load, she always cleans her antennæ with her fore feet, and her feet with her jaws: on arriving, she never alights at the nest, but always on the inside of the cupboard-front, and crawls along the ceiling to it.

10-7

August 6.— I pulled down the nest of the yellow-footed dauber, to which other cells had been added in succession after the last record. On examining them now, I find three perfected insects have made their exit, one has died in making its way out, two are in pupa, one black and near perfection, the other white and nearly turned, and two are in larva, one large, the other very small, making eight originally in the nest. Many of the spiders remained uneaten, most of them were handsomely studded with scarlet spots on a black ground. It was in looking at these pupæ, that I first was aware how a difficulty of no ordinary magnitude is got over. How do insects, whose abdomen is peduncled, draw it out of the pupa-skin, seeing the peduncle is so slender? I should have guessed that the skin would be ruptured, but it is not so. These daubers have a very long and slender peduncle, but the skin of the pupa, close in every other part, is as wide around the peduncle as around the abdomen, stretching across from the thorax to the summit of the abdomen, like a loose garment. What a beautiful example of Divine foresight in creation!

July 14.—In a corner of a closet stood a little phial, about an inch and a half high, which had held ink, but it had dried up. Looking at it this morning, I was surprised to find it closed with a white dry substance like pipeclay; and on breaking this was still more surprised to find the clew of the mystery. It held no less than eighteen spiders, of a few of which, however, the abdomen was wanting. The case was clear. A dauber, to save herself the labour of building a cell, had found and made use of this substitute: a very curious instance of insect laziness.

July 21.—I perceive that the dauber has returned to the phial, and having, no doubt, observed that it had been handled, has taken out every one of the spiders, which she has strewn around, and having filled the bottle with newly caught spiders, has again sealed it up with mud. I think we may infer from this, that the parent exercises a measure of watchful guardianship over her young, sealed as they are from her sight and direct interference.

Aug. 18.— About this time the other species of Pelopæus began to be busy fabricating their more artful thimble-shaped nests. It is difficult to convey by words an idea of their mode of working; their general proceedings were as before, as respects bringing the mud &c. The commencement of a cell was by laying down the load, and working it into an oval ridge, one extremity of which was to be the apex

of the thimble-cell. The next load was laid on the ridge, but so as to be higher at the apex than at any other part, and made slightly concave; when the tip was made, the work proceeded regularly by additions to the edges, which were smoothly laid on, and always in the same slanting direction that had been given at first by raising one end of the incipient oval; so that an unfinished cell in any stage of progress appears like a cylinder cut off by a diagonal section. This is not casual, but invariable, as the ridges remaining plainly mark the precise limits of every separate load. When a little more in length is finished than suffices for a single cell, the work ceases awhile, an egg is laid in the bottom (though this end is generally uppermost) and spiders are brought in. This species usually, not always, selects a very beautiful species of Tetragnatha, bright green with white spots; and it is worth remarking, that spiders are carried both with the jaws and feet; one of the fore legs of the spider being grasped in the mouth, while its body is held under the body of the fly, and sustained by the anterior and middle legs and feet, the posterior pair being extended behind as usual during flight. I have given a figure of this species with a spider, and with its nest, which was carefully copied from the life, in my 'Introduction to Zoology,' ii. 347. When the first cell is stocked, it is closed up by a transverse partition of mud, and the thimble goes on increasing in length as before; when finished, one will contain three or even four cells; and then a new one is commenced adjoining and parallel with it. In both this and the other species, I believe the inclosed grub eats only the abdomens of the spiders (which are so stung as to be helpless but not dead), as the cephalo-thorax and legs of each generally may be found afterwards in the cell.

With the name of this latter species I am not acquainted, nor can I find it in the national collection, common as it is in the States. It differs from the former, and perhaps from Pelopæus generally, in having the abdomen not obviously peduncled, but gradually thickening, club-like, to the hinder part: that segment which Mr. Newman has called the *podeon*,* is furnished with a curious hooked spur on its ventral surface, pointing backwards, by which the species may very readily be distinguished. The colour is black, highly polished.

P. H. GOSSE.

Kentish Town, May 13, 1844.

* 'Familiar Introduction,' p. 144.

Descriptions of the British Wasp-Bees, (Nomada of authors).

By FREDERICK SMITH, Esq., Curator to the Entomological Society.

OF all the genera of British bees this I apprehend will be universally admitted to contain the most beautiful species: their gay coloring renders them favorites with the Hymenopterist, whilst the yet incomplete history of their economy leaves open an unexplored path to many highly interesting discoveries. Mr. Kirby says "their history, economy and mode of nidification remains a secret;" and, in 1832, Mr. Curtis repeats that nothing is known of their economy.* In 1840 Mr. Westwood remarks, "Of their precise habits, however, we are without decisive information. It has been considered by most entomologists that they are parasitic upon other bees; and Mr. Shuckard conjectures that they infest not only the nests of several species of *Andrena*, but also those of *Eucera*." In the month of June, 1840, I discovered an extensive colony of the long-horned bee, (*Eucera longicornis*); I found the *Nomada Schæfferella* in great abundance issuing from and entering the burrows of *Eucera*. It has been stated that parasitic bees either introduce their eggs with much artifice into the provisioned nests of other bees, or that some species, by their close resemblance, enter unobserved by the rightful owners. An attentive observation of the colony above mentioned disproves the first position; here no artifice was used, — the bees and the parasites hovered about the nests in the most amicable manner; occasionally a bee would enter its burrow, then perhaps a *Nomada* would follow, and after a few moments again reappear; at other times the *Nomada* would enter first; upon the *Eucera* finding the intruder in its nest, no anger was exhibited, but she quietly issued from her burrow and waited her turn. The same observations were made on a colony of *Anthophora*, upon which *Melecta* is parasitic.

Amongst the solitary bees I know of no instance in which the parasite bears any resemblance to its more industrious provider: in

* [In 1834 I included the genus *Nomada* in my natural order *Apathites*, thus described. "The larva is hatched from an egg deposited in the nests of other bees at the time when their own eggs are laid: when it hatches, being stronger and larger than the rightful possessor of the cell, it consumes the food of its companion, and starves it to death; and in those instances in which fresh supplies of food are daily provided, it continues to receive and appropriate them as its own; * * * imago * * * enters the nests of other bees with perfect familiarity, and seems to be quite unsuspected of intrusion."—'Entomological Magazine,' ii. 404. See also 'Familiar Introduction,' p. 237.—*E. N.*]

social communities, on the contrary, we find instances of the closest resemblance, as in *Bombus* and *Apathus*.

Early in April, 1841, I visited the spot where I had found *Eucera*, for the purpose of digging up a quantity of the cocoons; these I found at the depth of about eight inches, in a stiff clayey soil. At this time the *Eucera* had, in some instances, just changed to the pupa state, — whilst the *Nomadæ* which I found in some of the cocoons were perfect in colouring, and towards the end of the month quite active, as I found upon liberating some of them: in one instance I saw two *Nomadæ* come out of the same cell, which might also have been the case in other instances where I did not observe them escape. My observations lead me to the conclusion that the eggs of *Nomada* are hatched first, and that the food is all devoured previous to the larva of the *Eucera* being hatched. I admit the possibility of the *Nomada* watching the precise moment when a sufficient quantity of provision is stored up, and depositing her egg before the bee, and then closing up the burrow, but I never saw an instance of a *Nomada* remaining at the mouth of the burrow for such a purpose; there is also a possibility of the parasite removing or destroying the egg of the bee: this is a point in the economy of parasites which I hope by diligent observation yet to clear up. The different species of *Nomada* by no means confine themselves each to the nests of one particular species of bee, wherein to deposit their eggs; thus the *Nomada Sheppardana* infests the nests of *Colletes* and *Andrena*,—*N. ruficornis* the nests of *Andrena fulva*, and of *Andrena tibialis*: future observation will, I have no doubt, prove that the parasitic bees merely confine themselves to such species as provide a suitable supply of food for the young of the parasite.

This is an extensive genus of bees. Mr. Kirby has enumerated thirty-one species, but it will be seen that in two instances only has he combined the sexes under the same name: when this is carried out as far as observation and subsequent discoveries will enable us, we shall find the total number greatly reduced. Mr. Shuckard has discovered several species not previously known to be British; I have discovered the *Nomada Roberjeotiana* of Panzer, as well as an entirely new species described under the name of *N. baccata* (Zool. 409); and Mr. Newman has discovered another, first described in the present paper. The species of this genus — like those of *Vespa*, *Cerceris*, *Crabro*, &c., and other banded and maculated insects—are subject to great variety in the markings, a circumstance which has led to an unnecessary multiplication of species: in more than one instance I

shall be able to point out ranges of variety which will include two or more separated as distinct species. Independent of the difficulties arising from variety in colouring, the difference in size is also very perplexing, and nothing but an extensive series of captures can furnish the links of the chain. I shall arrange the species as I find them in Kirby's Monograph, placing the new ones at the end.

Genus.—NOMADA, *Fab.*

Sp. 1. NOMADA GOODENIANA.

Apis Goodeniana, Kirby's Mon.

Female, (length $4\frac{1}{2}$ to 5 lines). Black; head, with the antennæ red, and generally a black stain on the scape behind; the mandibles and margins of the labrum and clypeus are also red, the former dark at their tips, a yellow line running from the base of the mandibles along the inner orbit of the eyes, as high as the base of the antennæ: the thorax is black, the collar laterally, sometimes entirely; the tubercles, tegulæ, two spots on the scutellum, a narrow line beneath, and two round spots below, on the metathorax, yellow: all the coxæ are black; the anterior and intermediate tibix are black at their base beneath, and the posterior beneath and behind: the abdomen is black, with a yellow band on each segment, that on the first generally interrupted, and the second more or less attenuated in the middle; beneath, the second, third and fourth segments have an attenuated band, and the fifth a waved one.

Male, ($3\frac{1}{2}$ to 4 lines). In general appearance very similar to the female: the scape of the antennæ is black behind, yellow in front, five or six of the basal joints have also a dark stain behind; the labrum and mandibles are yellow, darkish at their tips; the clypeus and inner orbits of the eyes yellow as high as the base of the antennæ: the thorax black, the tubercles, a patch beneath, the collar laterally, the tegulæ, and two spots on the scutellum, yellow: the anterior and intermediate coxæ more or less yellow in front: the legs and abdomen as in the female.

This species is not subject to very great variety in colouring or size. I shall point out, in those instances in which species somewhat resemble each other, one or two characters whereby to separate them. The males of *Goodeniana* may be known from those of *Marshamella* by the anterior and intermediate coxæ being more or less yellow in front, and by the yellow patch below the tubercles; the females may be separated by the yellow line on the face close to the eyes.

This species is very abundant, and appears in April and May.

Sp. 2. NOMADA RUFIVENTRIS.

Apis rufiventris, Kirby's Mon.

Female, (length 4 to $5\frac{1}{4}$ lines). Head black; nose,* and a line encircling the eyes, rufous; mandibles rufous, tips piceous; antennæ rufous, with a black stain on the scape behind: thorax black; the tegulæ, and a spot below the tubercle, rufous; the tubercles and two spots on the scutellum, yellow: legs rufous; the posterior coxæ, and a stain behind on the posterior femora, black: abdomen, the first segment rufous, black at the extreme base and apical margin, the second, third and fourth yellow, within the basal and apical margins more or less black; a rufous stain in the centre of the second and third segments, sometimes obsolete, the fifth segment entirely yellow, beneath rufous; the apical margins of the segments indistinctly piceous. In rare instances the yellow spots on the scutellum are nearly obsolete.

The male is the *Apis Lathburiana* of Kirby, (4 to $4\frac{1}{2}$ lines). Head black; the nose, mandibles, and scape in front yellow, a dark stain on four or five of the basal segments behind: the thorax has the tegulæ, two indistinct spots on the scutellum, the tubercles, and a round spot beneath them, yellow: the coxæ black, the anterior pair yellow in front; the intermediate femora have a slight stain beneath, the posterior pair black, rufous in front, the four anterior legs otherwise yellow, variegated with slight rufous stains, the posterior pair rufous, yellow at the extreme base of the tibiæ: the abdomen has the first segment as in the female, the rest yellow, with dark piceous bands on their apical margins; beneath, the first segment rufous; the base and apical margin black; the second and third are dark piceous at the base and apex, with yellow bands between; the fourth has the basal half yellow, the apical rufous; the fifth yellow, with a rufous stain in the centre. In rare instances there are two bright yellow spots on the scutellum, but they are usually very indistinct.

This is a very beautiful and local species. Hampstead Heath is the only locality in which I have taken it. It appears about the middle of April; yet, notwithstanding the most diligent search, two or three seasons sometimes occur without meeting with it.

Sp. 3. NOMADA MARSHAMELLA.

Apis Marshamella, Kirby's Mon.

Female, (length 4 to 5 lines). Black: head, the labrum and margin

* When I use the term *nose*, I include the labrum and clypeus.

of the clypeus, mandibles and antennæ, ferruginous : thorax, collar, tubercles, and two spots on the scutellum, yellow : the tegulæ ferruginous ; the legs ferruginous ; the coxæ black, their extreme apex ferruginous ; the four anterior femora black at their base beneath, the posterior pair black, ferruginous at their apex : abdomen black, the first segment with a narrow abbreviated and interrupted yellow fascia, sometimes reduced to two minute yellow dots, at other times obsolete ; the second and third with an interrupted fascia, the fourth with an entire fascia, and the fifth entirely yellow ; beneath, the second segment has two oblique yellow lines, the third and fourth with a yellow fascia : in small specimens the oblique lines, and one or both the yellow fasciæ, are obsolete.

Male, (3 to 5 lines). Black : the labrum, margin of the clypeus and mandibles yellow, the latter fuscous at the tips ; the scape of the antennæ yellow in front, sometimes only a yellow line, or only the extreme apex rufous, black behind ; three or four following segments generally slightly stained above, sometimes entirely rufous : the thorax has the tubercles, collar on both sides, the tegulæ more or less, and two spots on the scutellum, yellow ; none of these characters are constant, one or more, or all, are sometimes obsolete : legs rufous ; all the coxæ black ; the anterior and intermediate femora black beneath, the posterior have a rufous line above, and also rufous at the apex : abdomen, first segment has a narrow interrupted yellow fascia, the five following have yellow fasciæ, the first and second interrupted ; the first segment is sometimes immaculate ; all the segments beneath, the first excepted, have yellow fasciæ, the first frequently interrupted more or less ; in small specimens one or more of the fasciæ disappear. The *Apis alternata* of Kirby is a variety of this male, in which the two spots on the scutellum are obsolete

This species seems to be abundant everywhere : it appears in April. I have observed it entering the burrows of *Andrena nigro-ænea* and of *Eucera longicornis*.

Sp. 4. *NOMADA CORNIGERA*.

Apis cornigera, Kirby's Mon.

Female, (length 4 to 5¼ lines). Head black ; mandibles, labrum and antennæ rufous, a bifurcate rufous patch on the clypeus, a minute tooth on the lip : the thorax has the collar, tubercles, tegulæ, and two spots on the scutellum, yellow ; an indistinct rufous spot beneath the tegulæ : legs ferruginous ; coxæ black, rufous at their apex ; the anterior and intermediate femora have a black dot beneath

at their bases, the posterior are black beneath and behind at their base : abdomen, the first segment has a rufous band, with two yellow spots upon it, the second and third have acutely interrupted yellow bands, the yellow spots being wedge-shaped, more or less margined with rufous, the fourth has an entire fascia, and the fifth is entirely yellow.

Var. 1, (length 4 lines). The tooth on the lip obsolete, and also the two yellow spots on the rufous fascia on the first abdominal segment. This variety is the *Apis subcornuta* of Kirby.

Var 2, (length 4 lines). The rufous fascia on the first abdominal segment reduced to two minute rufous spots ; the two yellow spots on the scutellum obsolete, the horn on the lip nearly so : the abdomen beneath is piceous. This is the *Apis Capreæ* of Kirby.

Var. 3, (length $4\frac{1}{2}$ to $5\frac{1}{2}$ lines). This variety has the ferruginous fascia on the first abdominal segment sometimes slightly interrupted, sometimes entire, but without the yellow spots ; Kirby says, without the horn on the lip, but in his own cabinet the specimen has it obsoletely present ; the horn is a character which varies greatly. This variety constitutes the *Apis lineola*, Kirby, and *Nomada lineola*, Panzer.

Var. 4. With the two yellow spots on the first abdominal segment united.

Male, (length 4 to $5\frac{1}{2}$ lines). Black : head, mandibles yellow, tips fuscous ; nose and scape of the antennæ yellow in front, the remaining joints rufous, with five or six of the basal ones stained, piceous behind : the thorax has the tubercles, collar laterally, tegulæ, and sometimes two spots on the scutellum, yellow : legs rufous ; coxæ black ; the anterior and intermediate femora black at the base beneath, the posterior black, with a rufous line above, and also at their apex ; all the tibiæ are variegated with yellow : the abdomen has six yellow bands, the first, second, and in rare instances the third, is interrupted ; the segments beneath have yellow bands. This is the *Apis sex-cincta* of Kirby.

The female of this species is perhaps the most subject to variety in its marking of any species in the genus : besides those enumerated, intermediate ones occur : a good selection of specimens alone proves the range of variety. The male varies chiefly in the presence or absence of the two yellow spots on the scutellum : it somewhat resembles the same sex of *Marshamella*, but may be known by having the femora more or less variegated with yellow, and by having more or less of the number of joints of the antennæ stained behind with black. It appears in April and May.

Sp. 5. NOMADA FUCATA, *Panzer*.*Apis fucata*, Kirby.

Female, (length 4 to $4\frac{1}{2}$ lines). Black : head, a bifurcate patch on the clypeus, the labrum and mandibles rufous, the latter black at their tips ; antennæ totally rufous : thorax, collar, tubercles, tegulæ, and a spot on the scutellum, yellow : legs rufous ; the coxæ, and the four posterior femora at their extreme base, black : abdomen, first segment rufous, the extreme base and two lateral round dots black, the apical margin of this and the three following segments piceous ; the second segment has a yellow fascia, interrupted by a rufous angular patch in the centre ; the yellow fasciæ on the remaining segments are entire ; beneath, the first and second have a rufous, and the third and fourth a yellow fascia ; the margins piceous.

Male, (4 to $4\frac{1}{2}$ lines). Black : head, a yellow bifurcate patch on the clypeus ; the labrum, mandibles, and front of the scape of the antennæ, yellow, the latter has a dark stain behind ; the seventh, eighth and ninth joints generally stained behind : the thorax has the collar, tubercles, tegulæ, and a square spot on the scutellum, yellow : legs, coxæ black, anterior pair yellow in front ; the extreme base of all the femora beneath black ; all the tibiæ and tarsi yellow, variegated with rufous : the abdomen above as in the female ; the second segment has the angular rufous patch in the centre smaller, in rare instances obsolete ; two yellow spots in rare instances on the first segment ; beneath all the segments have yellow fasciæ, the margins rufo-piceous. This is the *Apis varia*, *Kirby*, and *Nomada varia*, *Panzer*.

It appears in July, and is very local. I have found it at Darent, entering the burrows of *Colletes succincta*.

Sp. 6. NOMADA SEXFASCIATA, *Jurine*.*Apis Schæfferella*, Kirby's Mon.

Female, (length 6 lines). Black : head, the labrum and mandibles yellow, stained with rufous ; the face has an angular, lateral, yellow patch, reaching from the base of the mandibles as high as the base of the antennæ, which are rufous, with the scape black behind : thorax, the tubercles and tegulæ yellow, frequently stained with ferruginous ; two yellow spots on the scutellum : legs rufous ; coxæ black, extreme base behind stained with piceous ; all the tibiæ and tarsi variegated with yellow : abdomen with five yellow fasciæ, the three first interrupted ; beneath, the third, fourth and fifth segments have yellow fasciæ.

Male, (6 lines). Head, face as in the female, but the mandibles, &c., not stained; the scape of the antennæ sometimes yellow in front, sometimes totally black; six or seven of the basal segments black behind, the remainder rufous: the tegulæ pale yellow: scutellum with two yellow spots, sometimes obsolete: abdomen with six yellow fasciæ, the first, second and third widely interrupted, so as to form six oblong maculæ; beneath, the third, fourth and fifth segments have a yellow fascia, the margins piceous; the sixth is yellow, with a bidentate black stain at the basal margin. This sex is the *Nomada sexfasciata*, *Jurine*, and the *Apis connexa*, *Kirby*.

It is a rare species. I have, however, taken it abundantly parasitic upon *Eucera longicornis*, at Highgate; excepting there I never captured but a single specimen,—a female, at Darent wood.

Sp. 7. *NOMADA JACOBÆÆ*, *Panzer*.

Apis Jacobææ, *Kirby's Mon.*

Female, (length $4\frac{1}{2}$ to 5 lines). Black: mandibles, labrum and clypeus yellow, the yellow patch angulated in the centre and on each side towards the eye; a short tooth on the lip; tips of the mandibles rufous: antennæ black, the scape and a few of the basal joints beneath rufous: thorax, collar, tubercles, a triangular spot beneath them, the tegulæ, and two projecting spots on the scutellum, yellow, with two spots of the same colour beneath on the metathorax: legs rufous, variegated with yellow; anterior coxæ black, the intermediate in front, and the posterior in front and on the outer side, yellow: abdomen black, the first segment with a slightly interrupted yellow fascia, the second with lateral acute maculæ, the third with a widely interrupted narrow fascia, fourth and fifth with entire fasciæ; beneath, the third, fourth and fifth with yellow fasciæ more or less abbreviated.

Male, (3 to $4\frac{1}{4}$ lines). Black: the clypeus has an angulated patch in the centre; the labrum and mandibles yellow, the latter rufous at their tips, the scape yellow in front, and the following eight or nine joints piceo-rufous; the face with silvery hairs; a minute tooth on the lip: thorax, collar, tubercles, a round spot beneath them, the tegulæ, and two spots on the scutellum, yellow; the anterior and intermediate coxæ black, the posterior with a yellow spot in front; the extreme base beneath of the anterior and intermediate femora black, the posterior pair entirely so, excepting above and at the apex; tibiæ and tarsi rufous, variegated with yellow: abdomen black, a subinterrupted fascia on the first segment, the second with an acute macula, the third and sometimes the fourth with interrupted fasciæ, the

rest entire ; beneath, the second segment has frequently a yellow spot in the centre, the following with yellow fasciæ more or less entire.

The male of this species is figured in Panzer ; the female is the *Apis flavo-picta* of Kirby. This insect appears in the autumn about August, and is not uncommon in some localities on the flowers of the ragwort.

Sp. 8. *NOMADA SOLIDAGINIS*, Panzer.

Apis Solidaginis, Kirby's Mon.

Female, (length $2\frac{1}{2}$ to 4 lines). Black : head, a tridentate patch on the clypeus ; the labrum and mandibles yellow, the latter rufous at their tips ; the scape and second and third joints of the antennæ rufous, three or four following rufous beneath : thorax, the collar, tubercles, a lunate spot below them, the tegulæ, and a transverse spot on the scutellum, yellow : the legs rufous, a stain behind on the posterior femora : abdomen, the first segment immaculate, second and third with lateral acute maculæ, the fourth with a narrow fascia, and the fifth entirely yellow ; beneath, the second, third and fourth, have fasciæ more or less interrupted.

Var. 1. Head, thorax, and legs as above : abdomen pale or dark rufous, similarly maculated as above ; beneath, the third, fourth and fifth segments are more or less black at their base in the centre.

Var. 2, ($3\frac{1}{4}$ lines). Coloured as in var. 1 : the nose and mandibles darker, reddish-yellow ; the first segment has indistinct maculæ, and the fasciæ on the abdomen are more interrupted.

Male, (3 to $4\frac{1}{2}$ lines). Black : face clothed with silvery hair ; a tridentate shape on the clypeus ; the labrum and mandibles yellow, the latter rufous at their tips ; the scape in front yellow, and the second joint rufous in front : thorax, the collar, tubercles, a lunate patch beneath them, the tegulæ, and two united spots on the scutellum, yellow ; the anterior coxæ yellow in front, the intermediate rufo-piceous, with a minute, lateral, yellow spot, and a round yellow spot before them, the posterior yellow in front ; all the femora black at the base ; the tibiæ and tarsi yellow, splashed with rufous : abdomen, first segment immaculate, third and fourth with acute maculæ, the rest with entire yellow fasciæ ; beneath, the second and following segments with yellow fasciæ, first and second sometimes interrupted.

Of the varieties of the female the first is the *Apis picta*, and the second the *Apis rufo-picta* of Kirby.

This is perhaps the most abundant species in the genus. In July and August they may be taken by hundreds, on the flowers of the

wild thyme and on the ragwort. I have taken some hundreds of specimens, but never found a male with the abdomen rufous; but the females may be found greatly varying in size and colour, ranging from jet black to pale rufous, with every shade of tint between. I feel quite satisfied that the *picta* and *rufo-picta* of Kirby are only varieties of *Solidaginis*. Panzer has figured the male.

Sp. 9. *NOMADA OCHROSTOMA*.

Apis ochrostoma, Kirby's Mon.

Male, (3 to 4½ lines). Black: face clothed with silvery hair; clypeus, labrum and mandibles yellow, the latter rufous at the tips; the scape of the antennæ rufous on the inner sides, the remaining joints rufous, with four or five basal joints stained behind: thorax, the collar, tubercles, a spot below them, the tegulæ, and a transverse patch on the scutellum, rufous; legs rufous; the coxæ black, except the extreme apex; the trochanters black, with their apex rufous; anterior and intermediate femora black at their base beneath; the posterior black beneath: abdomen rufous, first segment black at the base, the second with an ovate acute macula, the third, fourth and fifth generally with interrupted narrow fasciæ, the fifth slightly interrupted, the sixth entire; beneath rufous, the sixth segment with a yellow spot, sometimes variegated indistinctly with yellow.

Var. 1, (4 lines). The clypeus rufous; the maxillæ variegated with yellow; the scape quite black; five abdominal fasciæ interrupted, the sixth entire; other varieties occur in the latter particular.

I consider this variety to be the *Apis Hillana* of Kirby, having specimens exactly agreeing with the description; unfortunately there is no specimen in the Kirbyan cabinet: the specimen from which the description was drawn up was in the cabinet of Mr. Hill. I consider *Nomada vidua* to be the female of *N. ochrostoma*. I take them in company at Colney Hatch wood: it is also found on Hampstead Heath, but is scarce.

Sp. 10. *NOMADA RUFICORNIS*.

Apis ruficornis, Linn. Kirby's Mon.

Female, (3¼ to 5¼ lines). Black: labrum and maxillæ rufous, piceous at their tips, a spot on the face, below the base of the antennæ, the clypeus, a line encircling the eyes, and another encircling the stemmata, rufous; antennæ rufous: thorax, the collar, tubercles, a large patch on the breast, the tegulæ, four lines between them, the scutellum, and two spots below on the metathorax, rufous; the apical margins of the wings dark, a pale lunule towards their tips; the

coxæ in front, and the trochanters at their apex, rufous; all the femora black at their base beneath; tibiæ and tarsi rufous; abdomen rufous, first segment black at the base, all the margins rufo-piceous, the second segment with a large, and the third a small, acute yellow macula, the fourth with an entire fascia, and the fifth with a square yellow patch; beneath rufous, margins of segments dark piceous.

This is the description of the typical specimen in the Linnean cabinet; it is a dark-coloured specimen altogether. To attempt to describe all the shades of variety into which this Protean species runs, would fill a dozen pages at least; I shall, therefore, content myself with pointing out some extreme cases between which every shade of variation occurs. Head; the rufous ring enclosing the stemmata by degrees entirely disappears, as well as the line encircling the eyes, until the faintest trace remains; in extreme cases the scape of the antennæ will be nearly black, where that color predominates generally: thorax; by imperceptible degrees the four parallel rufous lines disappear, as well as the rufous colouring on the coxæ, and the patch on the breast: the wings also vary in being less deeply coloured, particularly the apical margins: the abdomen varies in the interrupted bands, in rare cases all are entire, or one, two, three or four interrupted, sometimes the second almost entirely disappears.

Colour.—The general rufous colouring varies from dark rufous to pale bright red; the latter generally occurs in specimens of the largest size.

Male. The front of the scape, clypeus, labrum and mandibles, yellow, the latter rufous at their tips; antennæ rufous, stained behind; clypeus clothed with silvery hair: thorax, tubercles, tegulæ, and two spots on the scutellum, rufous; legs rufous; coxæ black, rufous at their apex; the trochanters black behind; anterior and intermediate femora beneath at their base black, the posterior black, with a rufous line above and at their apex: abdomen rufous, first segment black at the base, all the margins rufo-piceous, second segment with slightly interrupted acute maculæ, the third subinterrupted, the rest entire; beneath rufous, margins piceous, three or more of the segments with entire yellow fasciæ, their margins piceous.

This sex varies in the same proportion as the female; in small specimens the scape is black, with the faintest yellow line at the apex: the two rufous spots on the scutellum is a very important character; in small specimens all the fasciæ are interrupted, whilst in the largest they are all entire; every shade of variation occurs between.

Panzer has figured the female and male, the latter under the name of *Nomada flava*: the *Apis leucophthalma* of Kirby is also one of the

varieties of the male, as appears upon comparison with his original specimen.

Sp. 11. NOMADA FABRICIANA.

Apis Fabriciella, Kirby's Mon.

Female, (length $3\frac{1}{2}$ to $4\frac{1}{2}$ lines). Black: head, antennæ rufous; scape black, as well as one or two following joints, four or five black towards the apex, the apical joint rufous; maxillæ rufous at their extreme base and apex; a silvery pubescence on the face and cheeks: thorax, tegulæ rufous; all the coxæ and femora black, the anterior in front and above rufous, as are also the intermediate and posterior at their extreme apex; tibiæ and tarsi rufous, more or less stained, black above, as is also the first joint of the posterior tarsi: abdomen ferruginous, black at the base, the second segment has lateral rotundate maculæ, the third a minute obscure yellow streak on each side, margins slightly piceous.

Var. 1. The spots on the third segment obliterated, sometimes those also on the second.

Var. 2. Tubercles rufous.

Male, ($3\frac{1}{2}$ to $4\frac{1}{4}$ lines). Black: head and thorax clothed with silvery pubescence; head black; the antennæ beneath obscure rufopiceous: thorax black; coxæ and femora black; anterior femora in front at their apex rufous; the tibiæ and tarsi black above, rufous beneath: abdomen rufous, black at the base, the second segment with lateral rotundate maculæ, the third with the same, but smaller; beneath, generally rufous, immaculate, but sometimes a little variegated with yellow on the third and fourth segments.

The male is the *Apis quadrinotata* of Kirby. There is a specimen of the female in the Banksian cabinet. This bee is not uncommon in the neighbourhood of London: it appears about the middle of May.

Sp. 12. NOMADA FLAVO-GUTTATA.

Apis flavo-guttata, Kirby's Mon.

Female, ($2\frac{1}{2}$ to 3 lines). Head black; mandibles, labrum, clypeus, and the inner orbits of the eyes, as high as the base of the antennæ, rufous; scape black, remaining joints rufous, slightly stained above: thorax, collar, tubercles, a round spot under the wing, a large macula on the breast, tegulæ and scutellum rufous; the coxæ and trochanters black, rufous at their apex; the anterior and intermediate femora black at their base, the posterior black, rufous at their apex; the tibiæ and tarsi rufous, sometimes slightly stained behind: abdomen rufous,

black at the base, the segments with minute lateral maculæ, the second smallest, those on the fifth approximating and largest; beneath rufous, segments above and below piceous at their margins.

Var. I have described a large highly colored specimen; in smaller ones the maculæ on the abdomen become more or less obliterated.

Male, ($2\frac{1}{2}$ lines). Black: head and thorax with scattered silvery hairs; maxillæ and apex of the clypeus yellow; antennæ rufous; scape black, and slightly stained above; the tegulæ and tubercles rufous; the coxæ and trochanters black, rufous at their apex; the femora black, rufous at their extreme apex, as well as the anterior pair in front; tibiæ and tarsi rufous, all stained above, the posterior pair annulated with black: abdomen rufous, black at the base, the second and third with lateral yellow maculæ; beneath the margins of the segments laterally are fringed with silvery hairs, above and below the margins are piceous.

Mr. Kirby has described the male: the other sex was not known to him. I once met with both sexes of this bee in some numbers, frequenting the burrows of *Colletes fodiens*.

Sp. 13. *NOMADA FURVA*, Panzer.

Apis Sheppardana, Kirby's Mon.

Female, (2 to $2\frac{1}{4}$ lines). Maxillæ, labrum, clypeus, and a line encircling the eyes, rufous; scape of the antennæ rufous in front, the remaining segments piceo-rufous, except the apical one, which is bright rufous; thorax, the collar, tubercles, tegulæ, a large patch below the base of the wings, two spots on the scutellum, and an oblong patch beneath them, rufous; margins of the wings dark, a lunule towards the apical margin: the legs are rufous, variegated with black markings: abdomen rufo-piceous, the first and second segments with a more or less distinct rufous fascia; apical segment rufous, rufo-piceous beneath; the margins of the segments with a fringe of silvery hairs.

Var. The rufous fascia not distinguishable in some dark specimens, and the rufous line encircling the eyes is sometimes interrupted; sometimes there are indistinct yellow maculæ on the second and third segments of the abdomen.

Male, (2 to $2\frac{1}{4}$ lines). Head black; nose reddish-yellow; a minute yellow spot at the vertex of the eyes; scape of the antennæ black, the remaining joints black above and rufous beneath: thorax black; the tubercles and tegulæ rufous; the breast and basal joints of the legs covered with silvery pubescence: legs black, the anterior pair in

front and all the joints reddish-yellow : abdomen black, the first segment rufo-piceous at the apex, with two lateral minute yellow spots, the second with lateral oblong maculæ, the third and fourth with lateral pairs of yellow spots, the remaining segments with lateral single maculæ ; margins of the segments beneath rufo-piceous, and fringed with silvery hairs.

Kirby described two varieties of the female, under the names of *Apis rufo-cincta* and *A. Sheppardana*. The male is the *Nomada furva* of Panzer, and the *Nomada Dalii* of Curtis. The species is abundant, but from its colour and minute size escapes detection. I have found it in numbers frequenting the burrows of *Andrena fulvago*, and Mr. Newport I believe extracted specimens from the cocoons of *Colletes*.

Sp. 14. *NOMADA FERRUGINATA*.

Apis ferruginata, Linn. Kirby's Mon.

Female, (4 lines). Black : head, mandibles rufous, piceous at their tips ; antennæ rufous, scape black, the rest slightly stained above ; a minute tooth on the labrum : thorax, the collar laterally, tubercles, tegulæ, and two spots on the scutellum rufous : legs rufous ; the coxæ, except their apical margins, black ; anterior and intermediate femora black beneath at their base, the posterior black beneath, except their extreme apex ; the tibiæ with a black stain in front towards their apex, the first and second pairs minutely stained ; the first joint of the posterior tarsi black : a silvery pubescence on the metathorax : abdomen rufous, the base black, a black spot at the lateral margins of the second and third segments at their base, the fourth and fifth with a black fascia, the latter interrupted ; beneath rufous, with a black spot in the centre at the base of each segment.

Male, (4 lines). Similarly coloured to the female, but has a silvery pubescence on the face, on the legs and breast, and on the margins of the abdominal segments ; the scutellum is black ; the lip has a minute horn or tooth.

Kirby described the male of this species. I consider it to be the *Nomada germanica* of Panzer.

Sp. 15. *NOMADA XANTHOSTICTA*.

Apis xanthosticta, Kirby's Mon.

Female, (length $3\frac{1}{2}$ lines). Maxillæ and labrum ferruginous ; antennæ ferruginous ; scape black : thorax, tubercles yellow, tegulæ rufous, two obscure ferruginous spots on the scutellum : legs piceous ;

anterior tibiæ in front and the tarsi ferruginous : abdomen rufous, the first segment black at the base, the second with lateral, round, yellow maculæ, beneath rufous.

There is no specimen of this species in the Kirbyan cabinet.

The species which follow are new to the British list.

Sp. 16. *NOMADA LATERALIS*, Panzer.

Female, ($5\frac{1}{2}$ lines). Head black ; mandibles, labrum, clypeus, and a line encircling the eyes, rufous ; antennæ rufous, the scape stained above : thorax, the collar, tubercles, a large patch on the breast, the tegulæ, four lines between them, the scutellum, two minute spots below, and two oblique lines at the lateral margins of the metathorax, rufous : legs rufous ; anterior and intermediate coxæ black at their extreme base, the posterior pair black at their base within ; the trochanters and base of the femora black beneath : abdomen rufous, black at the base, the second and third segments with lateral, large, yellow maculæ, acute within, the fourth with a subinterrupted abbreviated yellow fascia, and the fifth with a square yellow patch ; beneath rufous, sometimes with dark stains in the centre of two or three segments.

Male, (4 to $5\frac{1}{2}$ lines). Head black ; mandibles, labrum, clypeus, and inner orbits of the eyes, as high as the base of the antennæ, yellow, the yellow patch on the clypeus being tridentate : antennæ rufous, the scape yellow in front, slightly stained behind, as well as four or five of the basal segments : thorax, the tegulæ and tubercles rufous, a yellow spot below on the breast ; the coxæ black ; all the femora black beneath, except at their apex ; all the tibiæ with a dark stain behind : abdomen as in the female, but with *three* pairs of maculæ, the interrupted fascia, and the square patch ; beneath, a central, abbreviated yellow fascia on three or four segments, the margins piceous in the centre : the face, cheeks, underside of the thorax, coxæ and femora, covered with silvery pubescence.

I believe this beautiful species was introduced to the British Fauna by Mr. Shuckard, who found it on Hampstead Heath, where I have also captured it. It frequents the burrows of *Andrena albicrus* ; is confined to a small patch on the Heath, above the round pond to the south ; and appears in June.

Sp. 17. *NOMADA SIGNATA*, *Jurine*.

Female, ($4\frac{1}{2}$ to $5\frac{1}{2}$ lines). Head black; mandibles, labrum, clypeus, a minute spot in the centre just below the base of the antennæ, a line encircling the eyes, and the antennæ, rufous: thorax black; the collar, tubercles, a minute spot under the wings, a large patch on the breast, a spot before the intermediate coxæ, the tegulæ, four lines between them, and the scutellum, rufous; below the scutellum, on the metathorax, are two curved patches, and a patch outside of each, yellow: legs rufous; base of all the femora black beneath: abdomen yellow, the first segment with black margins and a central rufous fascia, the latter bearing two yellow spots, which are sometimes united, the margins of all the other segments rufo-piceous, forming narrow dark fasciæ; beneath rufous, the second, third and fourth segments with abbreviated yellow fasciæ, the margins dark rufo-piceous in the centre.

Male, ($4\frac{1}{2}$ to $5\frac{1}{2}$ lines). Head black; mandibles, labrum and margin of the clypeus yellow; the antennæ rufous beneath, rufo-piceous above: thorax, the tegulæ and two spots on the scutellum rufous; the tubercles yellow, sometimes stained rufous; a small triangular spot on the breast; the coxæ black, their apex rufous; anterior and intermediate femora black at their base beneath, the posterior black beneath, except their extreme apex; tibiæ and tarsi rufous: abdomen as in the female, excepting the first segment, which is black at the base, forming a central dentate patch; the apical margin black, with a rufous fascia between, which has two black spots upon it; otherwise as in the female.

This extremely beautiful insect was, I believe, introduced to our Fauna by Mr. Shuckard, captured by him on Hampstead Heath, where I have frequently taken it, also at Highgate; but I never met with it in any other locality. It appears about the middle of April.

Sp. 18. *NOMADA VIDUA*.

Female, (4 to 5 lines). Head rufous; a black oval patch enclosing the stemmata, joined to another similar patch, the lower margin of which extends to the base of the antennæ, below which is a black forked patch, enclosing a round rufous spot; the head black behind, with a broad rufous line behind the eyes; antennæ rufous, the scape slightly stained behind: thorax black; the collar, tubercles, a large patch on the breast united to a circular patch in front of each intermediate coxa, the tegulæ, four lines between them, the scutellum, two minute spots immediately beneath, and two minute ones wider apart,

below, on the metathorax, rufous; all the coxæ rufous at their apex; all the femora black beneath at the base, the posterior pair nearly so to the apex; all the tibiæ and tarsi rufous, the posterior tibiæ slightly stained within: abdomen rufous, first segment black at the base, the margin piceous, more broadly so at the lateral extremities, forming angular patches; the margin of the second segment is similar, but rufous in the centre; the third and fourth margins piceous; a large macula on the second segment, acute within, a smaller one on the third, an interrupted fascia on the fourth, and a square patch on the fifth, pale yellow; beneath rufous, the margins piceous in the centre.

This insect I consider to be the female of *ochrostoma*, but hardly feel justified in placing them together. I have taken them in company, at the side of Colney Hatch wood, skimming about a bare patch, in which an undescribed species of *Andrena* burrows. It is a variable insect. I have described a highly coloured specimen agreeing with the majority, but smaller ones occur in which the rufous colouring on the face and thorax is very indistinct, leaving faint traces of the patches described. There is a specimen of this insect in Kirby's cabinet, numbered 114. This bee is also found on Hampstead Heath. It appears about the middle of June.

Sp. 19. *NOMADA ROBERJEOTIANA*, *Panzer*.

Female, (3 lines). Head black; margin of the clypeus, labrum and mandibles rufous, the latter piceous at their tips; antennæ rufous, slightly stained behind: thorax black; collar, tubercles, tegulæ and scutellum rufous, also a rufous transverse line immediately beneath; all the coxæ and trochanters black, rufous at their extreme apex; the anterior femora slightly stained behind at their extreme base, the intermediate pair black beneath except at the apex, posterior pair black except the extreme apex; the tibiæ and tarsi rufous, variegated with yellow: abdomen rufous, the first segment black at the base, with an angular black patch at the extreme lateral margins, the second segment has lateral, oblong, oval, cream-coloured maculæ, the third and fourth segments are nigro-piceous, the third slightly rufous at the centre of the basal margin, with lateral, oblong, cream-coloured maculæ, the fifth segment has a large square patch of the same colour; beneath rufous, piceous towards the apex.

Male, (3 lines). Head black; nose yellow; antennæ rufous, scape yellow in front: thorax black; collar, tubercles, tegulæ and scutellum yellow: legs reddish-yellow, the posterior femora black at their base: abdomen, first segment rufous, black at the extreme base, the

second segment with a rufous angular patch in the centre at the base, remaining segments rufo-piceous, the second segment with lateral cream-coloured maculæ, acute within, the third and fourth with acutely interrupted fasciæ, the fifth with an entire fascia, and the sixth entirely cream-coloured.

The description of the male is from Panzer: I believe that sex has not yet been captured in Britain, and that no one but myself has met with this species. In July, 1836, I captured two females, and the year following I took one in August at Blackwater, Hampshire, since which I have not met with it. It is a small pretty species, but I have not been fortunate enough to find its "Metropolis."

Sp. 20. *NOMADA BACCATA*, *Smith*.

Female, (length $3\frac{1}{4}$ lines). Head rufous; a short black line at the base of the antennæ below, and a black patch above, reaching half way towards the anterior stemma; another black patch encloses the stemmata; the tip of the mandibles black; antennæ totally rufous: thorax rufous, with three black lines extending from the collar to the scutellum, which is enclosed by a black line running down the centre of the metathorax to its base; a black patch extends from the base of the wings to the intermediate coxæ, enclosing a minute rufous tubercle, also a minute black spot at the base of each wing; all the coxæ have a black stain above; extreme base of the femora black; all the tibiæ and tarsi entirely rufous; the wings have a dark cloud at their tips, enclosing a distinct pale lunule: abdomen rufous; the base of the first segment is maculated with black, somewhat in the form of the letter M; the second segment has lateral, wedge-shaped, cream-coloured spots, the third has two smaller spots, the fourth a narrow line across, slightly interrupted in the centre, the fifth has a large transverse patch, also cream-coloured; beneath, the abdomen is immaculate.

Male, ($2\frac{3}{4}$ lines). Head black; clypeus yellow covered with a silvery pubescence: the whole head is covered with long, scattered, silvery hairs; the antennæ have the scape white in front, black behind, the remaining segments are rufous, stained behind: thorax black, with scattered silvery hairs above, more densely clothed beneath, as well as the coxæ and base of the femora; two obscure rufous spots on the scutellum, the tegulæ and tubercles also rufous; the wings hyaline, clouded at the tips, enclosing an obscure lunule, the nervures piceous; anterior and intermediate coxæ with a black ring, the posterior pair black; the anterior and intermediate femora with a

minute black spot beneath, the posterior pair black, all the femora and tarsi rufous : abdomen rufous, black at the base, with two waved cream-coloured lines on the first segment placed laterally, the second has two wedge-shaped white spots, the third two smaller, the rest are very obscurely maculated laterally : the abdomen is immaculate beneath. This is an autumnal species ; it appears in August. I have captured it at Weybridge, Surrey, and also at Hawley, Hants.*

Sp. 21. *NOMADA INQUILINA*, *Smith*.

Length $4\frac{1}{2}$ to 5 lines. Female. Head black, margin of the clypeus, the labrum, mandibles and a spot at the apex of the eyes, rufous ; antennæ beneath, the apex of the joints above, and the extreme base and apex of the scape, rufous, the third joint sometimes entirely so ; a minute tooth on the labrum : thorax black ; the tegulæ, tubercles, and two spots (generally united) on the scutellum, rufous : all the coxæ and femora black, rufous at their extreme apex ; all the tibiæ rufous, the anterior pair with a black spot behind : abdomen, the first segment black, with a transverse rufous fascia, the second has large lateral yellow maculæ, acute within, sometimes united, or but subinterrupted, the third and fourth have narrow yellow fasciæ, and the fifth a square yellow patch, the apical margins of the segments are dark rufo-piceous ; beneath, the first segment black, the rest rufous, the margins dark rufo-piceous, in rare instances there are two or more yellow fasciæ.

Male. Head black ; margin of the clypeus, labrum and base of the mandibles yellow, their tips rufous ; scape of the antennæ black, the remaining joints rufo-piceous beneath : the thorax black, tubercles and tegulæ rufous : legs as in the female : the face, cheeks, coxæ and femora, with a dense palish yellow pubescence : abdomen, first segment black, with a rufous fascia, the second with large lateral yellow maculæ, acute within, the third, fourth, fifth and sixth with yellow fasciæ, the apical margins broadly rufo-piceous ; beneath, the first segment black, the rest with indistinct rufous fasciæ, more or less variegated with abbreviated yellow fasciæ.

This species somewhat resembles some of the dark varieties of *ruficornis*, but is very distinct : its black thorax and scape easily separate them ; the abdomen also is much broader than that of *ruficornis*. This insect was taken by Mr. Newman, some years ago, at Leominster, in Herefordshire. He fortunately captured a series of specimens,

* The description is reprinted from page 409 of 'The Zoologist.'

which, together with his other British bees, will be placed in the cabinet of the Entomological Club. I possess a single specimen, which I formerly considered an extreme variety of *N. ruficornis*.

These are all the British species with which I am acquainted. I am aware that here and there an odd specimen may be found not at first sight determinable, but the individuals of this Protean genus run into such extremes that the capture of multitudes alone will show the great range of variety in some species, as in *cornigera*, *Solidaginis*, *ruficornis*, &c.

There are two undescribed specimens in the British Museum cabinet, placed there, I believe, by Dr. Leach; but there being no means of ascertaining with certainty either the place of their capture or by whom they were taken, I hesitate to describe them, and think it better to wait until future discovery proves them to be indigenous. I have been extremely careful not to sink any species into a variety without very satisfactory evidence in support of my views, and if I have committed any error in that respect it has arisen from circumstances which, from their complex nature, render it pardonable to err in the endeavour to unravel them; but I hope the bringing together of the sexes in many instances will prove a step towards a perfect arrangement. It will be found that the thirty-one species described in Kirby's Monograph are reduced to fifteen; eight of these are sexes which I have united to their partners, and eight are mere varieties; six species new to the British list are added. The descriptions may perhaps appear unnecessarily lengthened, but in a genus whose specific distinctions depend almost entirely on their colouring I am of opinion that minuteness in pointing out that particular is indispensable. I have omitted to mention sculpturing, as I found the species very similar in that respect, and after all by colour the species must be recognised. I have entered, in fact, no further into minutiae than I deem sufficient to discriminate the species.

F. SMITH.

5, High-street, Newington Butts,
June, 1844.

Description of a Bee-tree. By P. H. GOSSE, Esq.

IN my pedestrian excursions through the forests of Alabama, I was often accompanied by an intelligent youth of about seventeen. I call him intelligent, for though he knew little (and cared less) about Xenophon or Euclid, he had an open eye for the manœuvrings of the recluse woodland creatures, and could hit a squirrel, twist a rabbit, or tree a 'possum with most of his seniors. I had several times observed him watching, with considerable interest, the flight of honeybees, and at length I ascertained his object. Like most of the transatlantic youth, he was somewhat of an utilitarian, and I found that his mind regarded not so much the amœnities of entomological science, as the honey which he knew these bees produced. His keen eye would catch the bee when above the tops of the trees, and knowing by its straight course that its flight was homeward, he would quickly but surely mark its direction, and, if occasion permitted, would pursue the line through the woods, occasionally "correcting his reckoning" by other bees, until the increasing numbers, and their converging lines of approach, informed him of the proximity of their home. A little perseverance now enabled him to detect the identical tree which they had chosen, and to observe the orifice far up on its trunk by which they entered. The nest being discovered, the hunter carefully marked the spot, and returned for assistance to avail himself of it. Many were thus found, and honey was plentiful.

One day in July, some of the negroes on the estate at which I was residing, having found a "bee-tree," I went with them to see them cut it down. They carried two axes, some cotton for smoking the bees, and a "gum," or square box to hive the swarm for domestication. On arriving at the spot, but a few yards from the side of the high road, I found that the nest was far up in the lofty stem of a large long-leaved pine, (*Pinus palustris*). The negroes immediately lighted a little fire, and then commenced felling the tree, one on each side. The tree, as I have said, was large, but the negroes were skilful and sinewy; not a blow was given in vain; and soon the top was seen to quiver tremulously, it bowed, and fell with a roar and a crash among the bushes and saplings, snapping off its own stout limbs like glass, and scattering the moist earth far over the leaves on every side. One of the men instantly ran to the bee-hole, which was about three inches in diameter, perfectly round, its edges smooth and white from the continual passage of the bees. Having lighted a handful of cotton, he held it close to the hole, blowing in the smoke with his breath, to pre-

vent the bees from coming out, which they had already begun to do. While he was doing this, the other was gathering broad leaves from the shrubs around, and rolling them up tightly to form a ball, which he then thrust into the orifice to stop it up. The bees being thus imprisoned, the next proceeding was to find out the situation of the comb, by cutting into the tree. They first cut a deep notch on the side opposite the entrance, about two feet higher up the trunk, the nest being entered from below. As soon as the axe began to penetrate the hollow of the tree, as the bees began to hum and cluster to the new opening, the men knew that they had not reached the top of the nest; so, having held the smoking cotton there until it could be closed by another stopper of leaves, they tried about two feet higher; here, however, the bees were as thick as before; so, having stopped this, they cut another notch higher still, and at length found that they had reached a point above the summit of the nest. One of the negroes now strongly blew the smoke into this orifice, while the other, having fixed the "gum" by props over the original hole, drew out the stopper of leaves, that the bees, driven out by the smoke blown in at the upper end, might take shelter in the new hive, and render the seizure of the honey more easy. The bees, however, did not seem to manifest that decided preference for the new lodging over the old that the negroes wished; so they, being impatient, proceeded to split off the chip between the first two notches; but as they could lift one edge sufficiently to peep in, before it was quite separated, and as they saw that the comb was not there, they did not split it off, but tried the upper chip. Here, at length, they exposed the combs, of a long oval form, lying one on another as the tree now lay prostrate, but side by side, parallel with the sides of the trunk, when it was erect. The men now commenced cutting out the comb with their knives, disregarding the bees, which crawled about, manifesting little disposition to sting, seemingly "more in sorrow than in anger;" but probably stupified and disabled by the effect of the smoke.

We began to feast on the honey, part of the comb being full to overflowing of rich clear honey, nearly as transparent as water, indicating that the swarm was young. A good deal of the comb was empty, or contained the bees in different stages of their growth, some in larva and pupa, others perfected, but soft and white. The negroes now fixed the gum over this main opening, and blew in the cotton-smoke at the original hole at the lower end; but as they had taken out most of the comb, I did not stay to see the result. A great many of the bees were flying off. The gum had previously been rubbed on

the inside with salt and peach-leaves, the smell of which was considered attractive to bees. None of us were stung, except one of the negroes, and he before they began to cut into the hollow.

P. H. GOSSE.

Kentish Town, June 8, 1844.

Notes on Osmia tunensis and O. bicolor, bred from Snail-shells. The bee which you forwarded to me for inspection, together with the snail-shell figured in your pages (Zool. 336), proves to be the *Osmia tunensis*. I have just received some shells containing cocoons, and also some specimens of the same bee from a gentleman of Clifton, Bristol, from whose interesting information I am enabled to give the following account of the bee. This gentleman has bred the insect from the shells of two species of *Helix*—*H. nemoralis* and *H. aspersa*. In the shell of the former I found five cocoons, the shell of the latter, being the largest species, sometimes contains as many as six. Between the cocoons is a division about the thickness of a common address-card. The cocoons resemble those of *Osmia cornuta*, being of a toughish texture, dark brown and highly polished within. The entrance to the shell is closed by the parent bee with agglutinated sand, but the divisions between the cocoons are of some vegetable preparation, as scrapings from the stems or leaves of plants &c. The shells were collected about the middle of March; those containing *O. bicolor* produced the bee at the end of the same month, *O. tunensis* a fortnight later. Who does not admiringly wonder at the surprising instinct which teaches these bees that the shells are exactly adapted to their purposes of economy! for I have watched the same bee (*O. tunensis*) industriously excavating her burrow in an old post; but she also avails herself of a spiral tube ready prepared for her purpose, totally differing from the burrow she would excavate herself. *Osmia bicolor* I have observed entering her burrow formed in the perpendicular side of a sand-pit at Gravesend.—*Fred. Smith; April 22, 1844.*

Note on Bees and Laurel-trees. Last week, during a visit to Herefordshire, my attention was drawn to a fact which has not, I think, been recorded, and I shall be glad to have the opinion of your readers upon it. At the back of nearly every leaf of the common laurel, I observed two or three small holes penetrating through the cuticle, and when newly made allowing the sap to exude. At the same time, numerous hive bees were seen about the tree, and upon further notice it was seen that the bees went to the above mentioned wounds in the leaf and applied their proboscis to them, apparently sucking up the sap of the laurel. I wish to learn if this has been before observed, and if the use to which the bees apply the laurel-sap is known. I have not now time to look through books on the subject. The wounds were always (I believe) situated on the under side of the leaf, close to the midrib and near to the petiole.—*Charles C. Babington; St. John's College, Cambridge, May, 1844.*

Notice of a singular gregarious Caterpillar of a Tenthredo. At a meeting of the Linnean Society held on the 6th of February, 1844, a paper was read, entitled "Descriptions of the Nests of two Hymenopterous Insects inhabiting Brazil, and of the species by which they were constructed." By John Curtis, Esq., F.L.S. Mr. Curtis obtained the materials for this paper from a collection in the possession of Lord Goderich, to whom it had been presented by the Right Hon. Henry Ellis, on his return from his

late special mission to Brazil. The insect first described belongs to the family of Tenthredinidæ, and to the genus *Hylotoma* of Klug. But this extensive group, as Mr. Curtis has already remarked, affording sufficient grounds for further generic subdivision, he has distinguished the present species by the name of *Deilocerus*. This genus is most nearly related to *Schizocerus*, *Latr.* The species on which it is founded is named by Mr. Curtis *D. Ellisii*, and is described at length, and the distinctions are pointed out between it and *Hylotoma formosa*, *Klug*, to which Mr. Curtis was at first inclined to refer it. Its economy is totally different from that of any other known species of Tenthredinidæ; the caterpillars of the solitary saw-flies, especially the larger species, forming single oval cocoons of a very tough and leathery material attached to twigs; and those even of the gregarious species placing their cocoons (which are oval cases of silk and gum) in an irregular manner, with no unity of design. The caterpillars of *Deilocerus Ellisii*, on the contrary, which are evidently gregarious, unite to form on the branch of a tree, an oval or elliptical case, four or five inches long, narrowed superiorly, very uneven on its surface, and of a dirty whitish ochre in colour. The cells, thirty-eight in number in the nest examined, are placed at right angles to the branch, piled horizontally one above the other, unequal in size and irregular in form, those next the tree being pentagonal, the central ones hexagonal, and some of the outer ones nearly round or oval. In one of these cells Mr. Curtis found a dead female, and most of them had the exuvæ of the caterpillars remaining, but no shroud of the pupæ; he thinks the smaller cells may have been occupied by the males. At the end of each cell is a circular lid, formed of the same leathery material as the rest of the comb, which being cut round by means of the sharp mandibles, leaves an opening through which the saw-flies make their way. In two of the cells were found the dead caterpillars, which closely resemble those of the genus *Hylotoma*. The author observes upon the dissimilarity of the mode of formation of this nest to that of any previously observed, the compound nidus (as far as hitherto known) being always the work of the parent insects for the protection of their young through the first three stages of their existence. In this case, however, it is formed by the larvæ themselves for the purpose of their own metamorphosis. The nearest approach to this economy seems to be the nidus formed by the maggots of some of the *Ichneumon*es adsciti, whose silken cells are placed regularly in rows. The other nest brought home by Mr. Ellis is that of a wasp of the Fabrician genus *Polistes*, but differing apparently from any of the species hitherto recorded as forming similar habitations. The nest is attached to a twig, not much more than an eighth of an inch in diameter. It is eight inches long and fifteen in circumference, pear-shaped, and having on its outer margin a hemispherical tubercle pierced with a circular hole a little more than half an inch in diameter. The materials of which the nest is composed are very substantial; and the external undulations allow of the tracing of four layers of comb. Many of the neuters fell out on shaking, but neither males nor females were detected. The specimen being unique, Mr. Curtis has not cut it open, but he entertains no doubt that its structure is very similar to that of the nest of *Polistes nidulans*, figured by Reaumur. The insect is named *Myraptera brunnea* by Mr. Curtis.—*From the 'Proceedings of the Linnean Society,'* i. 186.

Notes on the Habits of Hylesinus Fraxini, (Fab.) The family of bark beetles (Scolytidæ) appears to have occupied a good deal of the attention of entomologists, partly from the interesting nature of their habits, and partly from their powerful and injurious agency in the destruction of park and forest timber. The histories of many spe-

cies have therefore been well ascertained, and the Germans especially, whom the policy of their governments has commissioned to enquire into such things, have so completed the biography of many species as to leave nothing else for future observers to do, but to add the lives of the remainder. Those kinds whose habits have been thus investigated, are *Tomicus Laricis*, *typographus*, *orthographus*, *pinastri*, *abietiperda* and *chalcographus*, *Hylurgus piniperda*, *Trypodendron dispar* and *Scolytus hæmorrhous* and *destructor*. The kinds whose economy is still obscure, are chiefly those belonging to the genus *Hylesinus*, and it would require but a moderate degree of industry to complete the whole history of this interesting group of insects. *Hylesinus Fraxini* is an obscure beetle, about one sixth of an inch in length, and, as its name implies, affects particularly the ash tree. It is rather prettily variegated with marks of light and dark brown, the female being distinguished from the male by being a trifle bulkier, and deeper in colour. The period of their greatest activity is the sunny days of early spring, about the months of April and May, when the perfect insects are developed from the pupa state; they are then found flying about in numbers in the neighbourhood of ash trees, either the young tree, the branches, or the main stem of older growth, and also ashen poles used in palings. After pairing, the little creatures commence the work which is the main object of their existence. The female selects a place in the bark, perhaps preferring a smooth pole, where there is a little roughness, and begins to bore, applying its short-snouted mouth to the surface, and twirling round, sometimes even rapidly, and forming in a marvellously short space of time a cylindrical hole, sufficiently large to receive half its body. At this stage of its proceeding, I have invariably observed that the male comes to her assistance, places his head and fore feet on the tip of her body, and employs all the energy his little frame is capable of, in thrusting his mate into the interior. In this singular work the male evinces extraordinary anxiety, vibrating his antennæ and moving rapidly round the disappearing body of his fellow-labourer. When both the insects are within the inner bark of the tree, they close the entrance, whether accidentally or designedly I do not know, with the dust of the outer woody part of the bark. From this cause it is impossible, on a superficial glance, to judge of the enormous amount of destruction which these little creatures are capable of effecting in a short time. The pole whereon I observed their habits was newly cut from the tree but a few days, before fresh galleries were drilled under the bark in every part of it. In the boring of these galleries they work transversely across the stump, the male and female diverging when they have effected an entrance. Sometimes I have seen the two in one gallery, but my impression was that the one had run to the other through the alarm occasioned by cutting open the place. It is also a peculiarity, that when two different galleries approach each other, one of them always diverges, their mutual approach being doubtless made known by the gnawing in the wood, thus the course of one family never interferes with that of another. The male soon dies, but the female continues to deposit her eggs, which evolve in a few days a whitish grub, as voracious as its progenitors. There are other species of this and other genera in the family, whose habits are perhaps equally interesting with those of the preceding species. We have *Hylesinus crenatus* in the rough bark of those ash trees which *Sinodendron cylindricum* has disfigured, and *H. sericeus* in palings made of poles of fir timber. There are also a species of *Tomicus* in larch poles, and a *Hylastes* of equivocal designation in the bark of those oak stumps which have been cut down in our woods.—*H. W. Bates: Leicester.*

Note on the capture of Apate capucinus. I took a remarkably large and fine specimen of this rare insect in Kensington Gardens, in July, 1839.—*F. Holme; Oxford.*

Note on the variableness of Aphodius rufescens. *Aphodius rufescens* varies occasionally to a uniform dull piceous black, having only the anterior angles of the thorax rufous. Stephens does not notice this variety, and I had been at a loss to what species to refer an individual which had been for some years in my cabinet, when in September, 1838, I found several others in company with the common one, and a complete series of intermediate stages of suffusion. Perhaps it is an autumnal change.—*Id.*

Note on the habits of a Water-beetle. I derived great amusement, a few days since from watching the movements of a large *Dyticus* in a ditch, which the extraordinary clearness of the air and water gave me unusual facilities for doing. The minnows and other small fry gave way in all directions on its approach, apparently in great alarm; but I did not perceive that any symptoms of hostility were manifested by the insect, whose speed appeared to be inferior to theirs, although I have found that specimens confined in a bottle, speedily dispatched and devoured any small fish enclosed with them, (*Zool.* 200). I was an eye-witness however to the fate of a luckless leech, upon which the *Dyticus* darted while wriggling its way out of a tuft of aquatic herbage, and seizing it, as appeared to me, with the jaws and fore feet at once, carried it off under the bank. Esper, who kept one of these insects alive for a long period, states that it will attack and kill the giant *Hydrous picens*, by seizing it in the only vulnerable part, between the head and thorax. But with all deference to the high authority of the German naturalist, I much doubt the practicability of this; since, setting aside the powerful means of defence possessed by the prey, it appears impossible for a *Dyticus* to seize any object except from above, its attitude in the water being always with the head much lower than the other extremity, from the preponderance in swimming power of the hinder limbs, which prevents its raising the head even to a horizontal posture; the mandibles also are covered above by the labrum, so as to be unable to act on any object above them: and it is only on the under side of the neck that the *Hydrous* can be attacked with success, as the juncture of the head is protected above by the overlapping of the prothorax.—*Id.*

Anecdote of long abstinence in a Beetle. Walking near Porrock-wood in Kent, on the 24th of September last. I found a specimen of *Melasoma Populi*, which I put into a card-board pill-box and forgot it. On the 28th of February I accidentally opened the box and found the beetle as lively as when I put it there, its long abstinence from food appeared to have had no effect on it, but in four days after it died. I do not remember any account of this insect living so long without food.—*Geo. J. Dalman; 61, Willow Walk, Finsbury, April 30, 1844.*

Note on the occurrence of the Glow-worm in Scotland. So far as I am aware, the glow-worm is very seldom seen north of the Tweed. Two localities where it is found have come to my knowledge. The one is the Girvan hills in Ayrshire, which lie on the shore of the Atlantic, nearly opposite to the picturesque rock of Ailsa. The other is the Muchart hills, which form a part of the Ochil range, immediately to the north of the river Forth. An individual, on whose veracity the utmost dependance can be placed, assures me that in the latter of these places it is not an uncommon occurrence for the herd-boys to bring home half a dozen of these creatures with them when they return from their evening labours.—*Robert Dick Duncan.*

Note on captures of Coleoptera near Cambridge. The following insects have occurred, with one or two exceptions, in tolerable abundance during the last few months at

Cambridge; and it may be well to remark that the season, although upon the whole prolific in Coleoptera, has proved particularly unfavourable to several of our most local species. *Panagæus crux-major* and *Odacantha melaniura* have as usual appeared in the greatest profusion, especially the latter, which has occurred by tens of thousands amongst the sedge.

- Triplax ænea*. Twenty-two specimens from an old ash tree at Trumpington. The insect is considered exceedingly rare in Cambridgeshire, and has not been observed for many years.
- Elater bipustulatus*. Abundant at Maddingley in moss.
- Strongylus strigatus*. With the above, in moss.
- Cryptophagus cellaris*. Also in company with the preceding.
- Crypta bipunctata*. Amongst sedge, washed up after a flood.
- Ptomophagus anisitomoides*. In dead leaves at Granchester.
- Rhyncholus lignarius*. Abundant in old trees at Fulbourn.
- Acalles variegatus*. Granchester, one spn.
- Apion carbonarium* and *subsulcatum*. Very abundant in dead leaves and moss. It is remarkable that out of at least one hundred specimens of the former insect which I have examined, not a single male has occurred, nor can I discover a single example in any of our local cabinets. I should be glad to know if any contributor to 'The Zoologist' has observed in other localities this unequal distribution of the sexes.
- Crepidodera Salicariæ*. In the utmost profusion amongst sedge, in company with *Crypta bipunctata*.
- Ischnomera cærulea*. Three specimens from an old ash tree, in company with *Triplax ænea*, at Trumpington.

Were I to add less recent captures, I might enumerate, amongst other rarities, *Athöus pubescens*, *Ptinus 6-punctatus*, *Ips 4-punctata*, *Limnobius fulvipes*, *Dorytomus salacinus* (*Gyll.*) and *Thyamis dorsalis*. I may also here mention that I had the good luck in June last to capture a specimen of *Omius Baumanii* (*Germ.*), which I brushed into my net from a meadow in the neighbourhood of Stamford, in Lincolnshire. — *T. V. Wollaston*; *Jesus College, Cambridge*,

Note on a proposed Substitute for Spirits of Wine in preserving Specimens of Natural History. Perhaps the following cheap substitute for spirits of wine, in preserving anatomical and other specimens, may be new and useful to some of your readers, viz., kreasote, 10 drops, water, 1½ pint. The antiseptic properties of this solution, which are said to be superior to those of spirits of wine, were discovered by M. Pigne, and first published by him in the 'Gazette Médicale de Paris,' March 9, 1844.—*R. C. R. Jordan*; *Lympstone*.

Anecdote of extraordinary duration of torpidity in a Bat. A very curious instance of the great length of time that a bat can remain in a state of torpidity, came under my notice about three weeks since; and as I believe instances of the kind are but rarely observed, perhaps an account of the facts of the case may not prove uninteresting. Upon opening a vault in Bishopsbourne church, the bricklayer observed a large bat clinging to the wall. Thinking it a curious thing to find a bat in a vault which he knew had not been opened for twenty-one years, in the evening he sent it to me by his

boy, who, when he arrived at the door, was tempted to open the basket to look at the inmate, when most unfortunately it made its escape, and flitted into a leaden spout which was placed against the house, from whence I was unable to recover it. Upon learning the particulars of its discovery, I made a careful search about the vault, but was unable to trace any hole or crack, through which the smallest bat could have crept. The bricklayer also informed me that there was no place where a bat could have entered, in the part where he opened the vault, as the entrance was bricked up, and over the steps was placed a slab, which fitted close. If indeed it had been possible for a bat to have got between this, the brickwork at the entrance would most effectually have prevented it from finding an asylum in the vault. The natural inference therefore is, that the bat must have got into the vault when it was last opened, and consequently, had been entombed since the year 1823! It was most unfortunate that I was not able to decide what species it was, but from the bricklayer's description, I think it must have been *Vespertilio Pipistrellus*. When first taken out of the vault it was in a torpid state, but the effects of the air may be imagined from its taking the first opportunity to escape in the evening; it flew, however, far more "leaden winged" than even bats are wont to fly, which was by no means marvellous, when we consider it had been out of practice for twenty-one years. The fact of toads living in blocks of stone, and in the timber of trees for a great length of time (and it is impossible to say how long) is now so clearly established, that no one possessing any knowledge of Natural History for a moment doubts it. And not only has the fact itself been established, but it has also been proved that the frog and salamander tribes imbibe their chief supply of fluid through their skin alone, the liquid particles being absorbed by the skin. In an experiment made by Dr. Townson, he found that by placing a frog upon blotting-paper soaked in water, it absorbed nearly its own weight of fluid in an hour and a half; and it is supposed they only emit it when suddenly frightened or pursued, and that their reason for so doing is to lighten their bodies, and enable them to escape with greater ease. This, then, is doubtless the cause of toads being able to live in quarries and trees. Only a few weeks since, in cutting down a fir tree here, the workman discovered, completely imbedded in the centre, a toad, which had doubtless been there some years, as the tree had completely grown over it: it must have been kept alive by absorbing the moisture of the tree. It was not in a completely torpid state, and after being exposed to the air a few hours, it crawled in true toad-like style. The age of the tree in which it was found, was, as far as I could judge from the number of circles, about twenty-five years. A knowledge of the peculiar mode of absorbing fluids by the frog tribe, accounts for toads being able to live when enclosed in quarries or trees, but does not assist us in determining how bats contrive to exist for a great space of time, without food and almost without air.—*J. Pemberton Bartlett; Kingston Rectory, Kent.*

Anecdote of a Cat catching Eels. One often hears of the great dislike cats have to the water, but also occasionally of exceptions to the rule. I remember, when living at Worcester, many years ago, many times seeing the cat of a near neighbour of ours bring fish, mostly eels, into the house, which it used to catch in a pond not far off. This was an almost everyday occurrence.—*Everley R. Morris, A.B., M.D.; York, May 2, 1844.*

Anecdote of a Fox. In the summer of 1842, a bitch fox reared a litter of cubs here in the middle of a wheat-field. The crop was in full ear when they were discovered, and being thick and high, afforded them excellent shelter. The spot occupied by the young family was on the top of a dry land, and the stems of the corn were trodden

down and padded close to the earth for many yards in circumference. The parents provided a most bountiful table; for scattered around them lay no less than two leverets, a young Bantam cock, a partridge, the wings of a pheasant, besides the remains of fowls and a vast profusion of feathers and bones. The novelty of the scene tempted the curious to visit the spot, and the dam led her family away, not quitting the field, however, but concealing them amongst the thickest parts of the crop which hovered over or were laid by the rains and wind; and although eventually reared, they were rarely seen afterwards.—*J. J. Briggs; Melbourne, Derbyshire, May 20, 1844.*

Note on the discovery of the Badger near Melbourne. During the second week in April last, one of the Donnington park-keepers, in digging for some rabbits, discovered a nest of badgers; animals which have long been considered as nearly extinct here. In the larger woods an individual may be killed in nine or ten years, but they are never seen in the open country. This litter consisted of three young ones, though they will have as many as five at a birth. It was secreted in a very long and most curiously excavated earth. From the principal chamber occupied by the young, led several others, which, in their execution must have swallowed considerable labour. They were deep in the ground, and in one was a bed of leaves, dried grasses, and moss, for the better accommodation of the young.—*Id.*

Note on the Foumart. In former times the foumart haunted the coverts, copses, and retired parts of our neighbourhood, especially those which produced the most game; but through the vigilance of gamekeepers, became extremely rare, and is now only known by name. In the 'Complete Angler' by Isaac Walton, in the quaint dialogue between Piscator, Venator and Auceps, where each discourses about his favourite art, Auceps gives his companions a list of those wild animals which were formerly hunted in the chace, and amongst them is mentioned the "foumart." The practice of hunting this animal was in use here about sixty years ago. Three or four dogs were employed in the pursuit, and the first or best wore round his neck a bell, which, as their object was hunted by moonlight, served the better to point out the course it was taking. Little can be gathered at this period of its habits, but some of our ancient villagers remember well the pastime, and recount the pleasures of it with more than their usual felicity.—*Id.*

Anecdote of a Stoat being tamed. Great doubt having hitherto existed as to the possibility of taming the stoat, the following account of one of these animals, which was for some months in the possession of a gentleman residing in Cambridgeshire, may be deemed worthy of note. The little creature was first discovered as it was borne across a river in the mouth of the parent stoat; and Mr. Thurnall having fired at and killed the mother, succeeded in saving the little one, which was at the time so young that it had not the power of seeing. For some days it was fed with milk, but as it appeared to make but little progress, the limb of a small bird was offered to it, which it took most readily, and being constantly fed in this manner, it soon grew rapidly. It became very tame, and would follow Mr. T. to any part of the garden or fields, and when set at large in the sitting apartment would evince the greatest playfulness, bounding up on the different articles of furniture, and taking in its mouth gloves, balls of cotton, or anything which was thrown down for its amusement. It gave signs of the greatest sociability, and evidently courted the attention of any one who attempted to sport with it, frequently taking a finger in its mouth, without offering to bite or injure it in any way. To bound upon the person of any one present was a favourite practice with it, often springing upon the shoulders of the ladies of the family, and seating

itself in the braids of their hair. Its sense of hearing was extremely acute, as it could distinguish Mr. Thurnall's step long before he appeared in sight, and would bound upon the window-sill to watch for his coming. After having kept it for some months, it unfortunately made its escape one evening, and the next morning was found dead near the stable in which it was always kept. The cause of its death was never quite ascertained, but as the night was very wet and cold, it was supposed that the exposure to the air was more than it was able to bear, having been previously accustomed to warmth and shelter.—*C. Thurnall; Duxford, Cambridgeshire, May 20, 1844.*

Note on hunting the Squirrel. To chase this beautiful animal from tree to tree, formed a favourite amusement with the lower classes during the earlier ages, and the practice is still kept up in some parts of this county. It is customary for the young men of the village of Duffield to assemble in troops on the Waltes[?] Monday, and carrying with them horns and instruments calculated to make a great noise, to proceed to Kedleston Park. Here they commence blowing them and shouting, and frighten the poor animals until they drop off the trees and are taken by the hunters. After taking several in this manner, they go back to Duffield, release the squirrels and commence hunting them again in a similar way. It was said of Charnwood forest, in Leicestershire (using the language of an old tradition), "that at one period a squirrel might be hunted six miles without once touching the ground," owing to the number of thick woods, and the proximity they bore to each other.—*J. J. Briggs.*

Note on the Black Rat. A young rat of this species (*Mus Rattus*) was trapped in a dry bank in a field near some farm buildings, at Leyton, Essex, on the 15th of May. About twelve months since we caught another of this species near the same place; and several years back a third was killed on the premises.—*H. Barclay; Leyton, Essex.*

Note on the Two-toed Sloth. It may be interesting to some of my readers to know that a specimen of the two-toed sloth (*Bradypus didactylus*) has been for nearly a month in the possession of the Zoological Society. It is kept in the giraffe-house, occupying a spacious cage to the right of the ourang outang. During the day it is extremely lethargic, lying on its back at the bottom of the cage, and holding the sides of the cage, or the branches of its artificial tree, by the long claws of one or both of its hind feet. The head is bent forwards on the chest, and the fore legs folded over it so closely, that were it not for the stretched out hind legs, the animal would seem little more than a living mass of long shaggy hair. I observed that the body was in continual motion, not as with the regular process of inspiration and expiration, but as though constantly acted on by some irregular convulsive movement, which gave me the idea that its slumbers were painful or its position uncomfortable. The keeper told me that at night it was more active, but I could not learn that it has ever shown that activity which, since the publication of Mr. Waterton's 'Wanderings,' sloths are supposed to possess in a state of nature. I need scarcely add, that the sloth is a native of South America, and that its being brought alive across the Atlantic, is a very uncommon occurrence. I only recollect a single instance of this on record. It will, of course, give me pleasure to add in a future number any particulars I can learn, and I shall feel greatly obliged for any information on the subject with which my correspondents may be able to furnish me. Every incident in the life of so extraordinary a being is worthy of note, and I trust those of my readers who reside in London, and who have leisure, will not fail to pay him a visit, and record their observations in the pages of 'The Zoologist.' A careful drawing for engraving would be a most acceptable present.—*Edward Newman; Hanover St. Peckham, June 15, 1844.*

Notes on the Ornithology of Kent. By J. PEMBERTON BARTLETT, Esq.

“How pleasant the life of a bird must be!
 Wherever it listeth, there to flee:
 To go where a joyful fancy calls,
 Dashing adown 'mong the waterfalls;
 Then wheeling about, with its mates at play,
 Above and below and among the spray,
 Hither and thither, with screams as wild
 As the laughing mirth of a rosy child!”

One of the greatest benefits which a work like ‘The Zoologist’ confers on the cause of Natural History, is derived from its pages being open to communications from every part of the kingdom, on every branch of that most fascinating study. It is through the instrumentality of such a publication, that many facts most interesting to those who love

“To trace in Nature’s most minute design
 The signature and stamp of Pow’r Divine;”

are brought under their notice, which otherwise would not have extended to them.

For notwithstanding the popularity which the study of Natural History has of late years acquired, and consequently the great increase in the number of those who turn their attention to it, yet it may truly be said,

“There are still in thee,
 Instructive book of Nature! many leaves
 Which yet no mortal has perused.”

In the hope that the following brief notes on the feathered tribes of Kent, may not prove altogether useless or uninteresting to the lovers of this branch of Natural History, I am induced to send them to ‘The Zoologist.’ Among the birds which have been taken in this county, are a few of extreme rarity, and many others which are not commonly met with. I had included in my list a notice of that very rare and beautiful little bird, the blue-throated warbler (*Sylvia suecica*), which I was informed had been shot at Margate, and which at first I quite believed was the fact, indeed the account was in several of our county papers; but upon making further and more particular enquiries, I am led to believe that the bird alluded to was a *foreign skin*, which had been introduced by a person in Margate, and palmed upon the public by him as a specimen killed there! It is, I believe, in the Margate museum.

I am indebted to F. Plomley, Esq., M.D., of Lydd, in Romney Marsh, for kindly furnishing me with a list of the birds collected by him in the parish of Lydd, which consists of upwards of a hundred and seventy specimens, the majority being water birds, among which are many rare ones.

Cinereous eagle, *Haliaetus albicilla*. This is, I believe, the only eagle now to be met with which breeds in England. It is not unfrequently seen in winter in Romney marsh. There is a specimen in Mr. Plomley's collection, which was shot there.

Osprey, *Pandion Haliaetus*. A specimen in the Dover Museum, shot in the neighbourhood.

Goshawk, *Falco Palumbarius*. Not common. A good specimen was lately shot in a wood near Swingfield Minnis.

Sparrow-hawk, *Falco Nisus*. This species is annually becoming more rare, from its being so unrelentingly persecuted by gamekeepers.

Jer falcon, *Falco Islandicus*. Rare.

Red-legged falcon, *F. rufipes*. Very rare.

Peregrine falcon, *F. peregrinus*. Not uncommon in Romney-marsh, and occasionally to be seen about the cliffs near Dover.

Hobby, *F. subbuteo*. Not uncommon.

Merlin, *F. Æsalon*. Ditto.

Kestrel, *F. Tinnunculus*. The kestrel is the commonest of all the hawk tribe which we have in Kent, and is known commonly by the name of wind-hover, from the extraordinary power it possesses of poising itself in mid air, and during very high winds; from whence also, in some counties, it is called "stannel" or "stand gale."

Common buzzard, *Buteo vulgaris*. Rare.

Rough-legged buzzard, *B. Lagopus*. This is but an occasional visitor. A specimen, which is now stuffed, was taken by the keeper of J. P. Plumtre, Esq. M.P., at Fredville. There is also a specimen in Mr. Plomley's collection.

Honey-buzzard, *Pernis apivorus*. Rare. A specimen killed in the parish of Lydd, is in Mr. Plomley's collection.

Marsh harrier, *Circus rufus*. Not uncommon in Romney-marsh.

Hen harrier, *C. cyaneus*. Not uncommon in Romney-marsh.

Montagu's harrier, *C. cineraceus*. Rare. A pair of these birds were shot in May, under the cliff near Dover.

Kite, *Milvus Ictinus*. Rare.

Snowy owl, *Strix nyctea*. I have heard of two specimens of this very beautiful and rare bird being shot in Kent.

Short-eared owl, *Strix brachyotos*. Common in Romney-marsh, and occasionally met with throughout the county.

White owl, *Strix flammea*. Common. I am always grieved to see this beautiful and most useful bird nailed, with extended wings, to barns and other depositaries of gamekeepers' trophies. It is truly the farmer's friend, and at the same time I think not the game-preserver's enemy; at all events, to so slight an extent is it so, that the good it does abundantly counterbalances its slight poaching propensities. This is

"The owl, that, watching in the barn,
Sees the mouse creeping in the corn,
Sits still and shuts his round blue eyes
As if he slept — until he spies
The little beast within his stretch —
Then starts and seizes on the wretch!"

Tawny owl, *S. stridula*. Not uncommon.

Long-eared owl, *S. otus*. Rare.

Ash-coloured shrike, *Lanius excubitor*. This bird has been shot in the neighbourhood of Dover.

Red-backed shrike, *L. collurio*. A year or two since I observed a male shrike of this species, flying with a bird in its claws, after the manner of an owl. Being curious to know which bird it was, I threw a stone at it; whether I hit it or not, I could not tell, but the effect was, that it dropped its prey, which I found to be a blue-headed titmouse. These birds are very generally distributed throughout the county. They arrive in this neighbourhood about the first or second week in May, and are seldom seen after the end of August.

Pied flycatcher, *Muscicapa grisola*. Rare.

Water ousel, *Cinclus aquaticus*. Very rare.

Rose-coloured ousel, *Pastor roseus*. One specimen in Mr. Plomley's collection.

Ring ousel, *Turdus torquatus*. Not uncommon in spring and autumn.

Missel thrush, *T. viscivorus*. Common.

Fieldfare, *T. pilaris*. Very abundant throughout the winter. They arrive about the middle of October, and take their departure about the end of April. Stragglers are occasionally seen early in May.

Song thrush, *T. musicus*. These "heralds of approaching spring" are abundant.

Redwing, *T. Iliacus*. Redwings generally arrive a short time before the fieldfares, but depart about the same time.

Blackbird, *T. Merula*. Abundant.

Hedge accentor, *Accentor modularis*. Common.

Golden oriole, *Oriolus Galbula*. One of these brilliant birds was shot at Sandwich.

Black redstart, *Phœnicura Tithys*. Very rare.

Redstart, *P. ruticilla*. Common. They arrive here about the first week in April, and leave towards the end of August.

Grasshopper warbler, *Sylvia locustella*. Not uncommon.

Sedge-warbler, *S. Phragmitis*. Common.

Reed-warbler, *S. arundinacea*. Ditto.

Wood wren, *S. sibilatrix*. Ditto.

Willow wren, *S. Trochilus*. Ditto.

Blackcap, *S. atricapilla*. Ditto. Blackcaps arrive here about the middle of April, and are rarely to be seen after September, although an instance is recorded of a blackcap being shot in Kent as late as January. It is frequently called the "Kentish nightingale," which epithet it deserves, for its notes are wildly melodious.

Nightingale, *Philomela Luscinia*. Abundant.

Whitethroat, *Curruca cinerea*. Common.

Lesser ditto, *C. garrula*. Not uncommon. Both the whitethroats arrive about the first or second week in April, and usually depart about the end of August.

Greater pettychaps, *C. hortensis*. Not uncommon.

Lesser pettychaps, *C. Hippolais*. These birds arrive about the end of March and depart early in October.

Dartford warbler, *Melizophilus provincialis*. Though deriving its name from a Kentish town, this bird is by no means so common here as in some other parts.

Golden-crested wren, *Regulus auricapillus*. Common.

Wren, *Troglodytes vulgaris*. Common.

Redbreast, *Dandalus rubecula*. Abundant.

Yellow wagtail, *Motacilla flaveola*. Not uncommon.

Grey wagtail, *M. Boarula*. Common.

Grey-headed wagtail, *M. flava*. Common in autumn.

Pied wagtail, *M. alba*. Common.

Richard's pipit, *Anthus Ricardi*. Has been shot in Kent.

Meadow pipit, *A. pratensis*. Common.

Tree pipit, *A. arboreus*. Not uncommon. It arrives early in May and departs in September.

Shore pipit, *A. aquaticus*. Not common.

Wheatear, *Saxicola Œnanthe*. Common in Romney marsh.

Whinchat, *S. rubetra*. Common.

- Stone chat, *S. rubicola*. Ditto.
- Greater titmouse, *Parus major*. Ditto.
- Blue titmouse, *P. cæruleus*. Ditto.
- Marsh titmouse, *P. palustris*. Ditto.
- Cole titmouse, *P. ater*. Not common.
- Long-tailed titmouse, *P. caudatus*. Common.
- Bearded titmouse, *P. biarmicus*. Occasionally found in Romney marsh.
- Sky-lark, *Alauda arvensis*. Abundant.
- Wood-lark, *A. arborea*. Common.
- Yellow bunting, *Emberiza citrinella*. Abundant.
- Common bunting, *E. miliaria*. Common.
- Reed bunting, *E. Schœniclus*. Ditto.
- Snow bunting, *E. nivalis*. Common in Romney marsh.
- Cirl bunting, *E. Cirlus*. Rare.
- Sparrow, *Passer domesticus*. Abundant.
- Tree sparrow, *P. montanus*. Tree sparrows are tolerably abundant in winter, mixing with the house sparrows and finches. I have met with two or three instances of their breeding in the holes of trees.
- Greenfinch, *Fringilla chloris*. Abundant.
- Chaffinch, *F. cœlebs*. Ditto.
- Goldfinch, *F. carduelis*. Common.
- Brambling, *F. montifringilla*. Common in winter. I never knew them to breed in Kent, but suspect they occasionally do, as I have seen the old and young birds together in September.
- Mountain linnet, *F. montium*. Not uncommon.
- Grey linnet, *F. Cannabina*. Common.
- Lesser redpoll, *F. Linaria*. Common in winter.
- Siskin or aberdevine, *F. Spinus*. Arrives at the end of autumn in considerable flocks.
- Hawfinch, *F. Coccothraustes*. Visits us in winter, but not in great numbers.
- Pine grosbeak, *Corythus enucleator*. Has been occasionally killed in Kent.
- Bulfinch, *Pyrrhula vulgaris*. Common.
- Crossbill, *Loxia curvirostra*. These curious and interesting birds visit the fir-plantations in this neighbourhood in greater or less numbers nearly every year, appearing in considerable flocks some years in the autumn, while in others only a few stragglers are to be seen. I have shot several very fine-plumaged birds, but from their exceeding tameness it is difficult, in a fir-plantation, to get sufficiently far from

them to avoid blowing them to pieces. Although I have myself never found a nest of the crossbill, I have ascertained from good authority the fact of their nidification in the fir-plantations of Sir H. Oxenden, Bart., at Broome. In a note to Bewick's 'British Birds,' the visit of a vast number of crossbills in Kent is mentioned, in the year 1593.

Starling, *Sturnus vulgaris*. Common.

Chough, *Fregilus graculus*. These birds are still rarely to be met with in the neighbourhood of the cliff at Dover, where, in the time of Shakspeare, they were wont "to wing the midway air." But there is every probability that the hissing and roaring of engines and railway trains will speedily and for ever scare them from their ancient haunts.

Raven, *Corvus Corax*. Not uncommon.

Hooded crow, *C. Cornix*. Common in winter.

Carrion crow, *C. Corone*. Common.

Rook, *C. frugilegus*. Abundant.

Jackdaw, *C. Monedula*. Ditto.

Magpie, *Pica melanoleuca*. Common.

Jay, *Garrulus glandarius*. Ditto.

Nutcracker, *Nucifraga caryocatactes*. A specimen of this rare bird has been obtained in Kent.

Wax-wing, *Bombycilla garrula*. Several specimens of this beautiful bird have been taken in Kent. In the autumn of 1840, I was attracted by the strange note of a bird in an Acacia in the garden, which proved to be a wax-wing. I speedily got my gun and shot at it, and it fell in a fir-plantation near, but from the high grass, and not being certain of the exact spot in which it fell, I was unable to find it, although I made a long and keen search.

Green woodpecker, *Picus viridis*. Common.

Greater spotted woodpecker, *P. major*. Not uncommon.

Lesser spotted woodpecker, *P. minor*. This is a rare bird; it has been found in Blean woods, near Boughton.

Wryneck, *Yunx torquilla*. Arrives here generally the first week in April and leaves us in September.

Creeper, *Certhia familiaris*. Common.

Hoopoe, *Upupa Epops*. We generally receive an annual visit from one or more specimens of this very pretty bird. Mr. Plomley has three specimens, killed in Romney marsh. Two more were killed at Fredville, a year or two since, and one at Heden, in this parish.

Nuthatch, *Sitta europæa*. Not uncommon.

Cuckoo, *Cuculus canorus*. Common. The cuckoo arrives here about the first week in April and departs at the end of August.

Roller, *Coracias garrula*. This is a rare bird. Mr. Plomley has a specimen in his collection, and informs me it is occasionally to be met with in Romney marsh. A good specimen was shot a year or two ago at Wootton.

Bee-eater, *Merops Apiaster*. A specimen of this rare bird was shot in the Isle of Thanet, in May, 1827: there is also one in Mr. Plomley's collection, which was shot in the parish of Lydd.

Kingfisher, *Alcedo Ispida*. Common.

Swallow, *Hirundo rustica*. Abundant.

Martin, *H. urbica*. Ditto,

Sand-martin, *H. riparia*. Common.

Swift, *Cypselus Apus*. Ditto.

Alpine swift, *C. alpinus*. The first example of this rare bird seen in England, was shot in the Isle of Thanet, in June, 1820, by the bailiff of R. Holfond, Esq.; since which time three others have been shot in England and one in Ireland.

Goatsucker, *Caprimulgus europæus*. This interesting bird arrives here about the first week in May, and takes its departure early in September.

Ring dove, *Columba Palumbus*. Abundant.

Turtle dove, *C. Turtur*. Common.

Pheasant, *Phasianus colchicus*.

Partridge, *Perdix cinerea*.

Red-legged ditto, *P. rubra*.

Quail, *Coturnix vulgaris*. Not common.

Little bustard, *Otis Tetrax*. Very rare. Two specimens obtained by Mr. Plomley, in Romney marsh.

Cream-coloured courser, *Cursorius europæus*. Of this very rare bird "five specimens only," says Mudie, "are recorded as having been seen, three of which were in England, but wide apart both in space and time, one in France and one in Austria." One of the three taken in England, was shot within five miles of this place, by the late W. Hammond, Esq., of St. Albans, and from whose son, the present proprietor of St. Albans, I received the following account. While walking over a ploughed field, Mr. H. observed this bird; it was perfectly fearless at his approach, and he sent to a cottage, not far distant, and obtained a rook-gun, which however hung fire, and he missed it. The report made the bird rise, but after making two or three circles in the air, it again alighted within a hundred yards of him. Although some time elapsed before he could obtain another gun, yet so bold was the bird that it continued running with great swiftness, occasionally pick-

ing up something from the ground, till the gun arrived, when it was shot without difficulty.

Thick-knee, *Ædicnemus crepitans*. Breeds on the shingle in Romney marsh.

Ring plover, *Charadrius hiaticula*. Ditto.

Kentish plover, *C. Cantianus*. Common in Romney marsh, where it breeds.

Dotterel, *C. Morinellus*. Common in Romney marsh, in spring and autumn.

Golden plover, *C. pluvialis*. Common.

Grey plover, *Squatarola cinerea*. Common in Romney marsh.

Lapwing, *Vanellus cristatus*. Common. Breeds in Romney marsh.

Turnstone, *Streptilas interpres*. Common in the spring and autumn in Romney marsh.

Sanderling, *Calidris arenaria*. Found in Romney marsh in the winter.

Oyster-catcher, *Hæmatopus ostralegus*. Breeds on the shingle.

Heron, *Ardea cinerea*. Common.

Purple heron, *A. purpurea*. This is a very rare bird. Mr. Plomley has obtained a specimen in Romney marsh.

Great white heron, *A. alba*. Has been seen in Romney marsh.

Night heron, *Nycticorax europæus*. One or two specimens have been obtained in Kent. Mr. Plomley has one which was shot in the parish of Lydd.

Common bittern, *Botaurus stellaris*. Not common.

Little bittern, *B. minutus*. Has been shot in Kent.

Black stork, *Ciconia nigra*. Has been killed in Kent.

White stork, *Ciconia alba*. Rare: a specimen in Mr. Plomley's collection.

Crane, *Grus cinerea*. Has been seen in Romney marsh.

Spoonbill, *Platalea leucorodia*. This very rare straggler has been killed in Romney marsh, and is in Mr. Plomley's collection.

Curlew, *Numenius arquata*. Common.

Whimbrel, *N. phæopus*. Common in Romney marsh.

Buff-breasted sandpiper, *Tringa rufescens*. Has been seen in Romney marsh.

Purple sandpiper, *T. maritima*. Common in Romney marsh.

Knot, *T. canutus*. Common in spring and autumn in Romney marsh.

Little sandpiper, *T. minuta*. Not common.

Dunlin, *T. variabilis*. Common.

Common sandpiper, *Totanus Hypoleucos*. Common in spring and autumn.

Green sandpiper, *T. ochropus*. Common in autumn.

Wood sandpiper, *T. glareola*. Common in autumn.

Red shanks, *T. Calidris*. Breeds in Romney marsh.

Dusky sandpiper, *T. fuscus*. To be met with occasionally in spring and autumn in Romney marsh.

Greenshanks, *T. glottis*. Not common. A good specimen was shot last year at Milton, by the keeper of Matthew Bell, Esq., of Oswalds.

Avocet, *Recurvirostra Avocetta*. Not uncommon in Romney marsh.

Bar-tailed godwit, *Limosa rufa*. Common.

Black-tailed godwit, *L. melanura*. Rare.

Sabine's snipe, *Scolopax Sabini*. Has been shot in Kent. A good specimen was shot on the banks of the Medway, October 26, 1824.

Jack snipe, *S. Gallinula*. Common.

Common snipe, *S. Gallinago*. Ditto.

Great snipe, *S. major*. Rare.

Woodcock, *S. rusticola*. Common.

Ruff, *Machetes pugnax*. Common in Romney marsh in spring and autumn.

Water-rail, *Rallus aquaticus*. Common.

Corn-crake, *Crex pratensis*. Not uncommon.

Spotted crake, *C. Porzana*. Common in autumn in Romney marsh.

Moorhen, *Gallinula chloropus*. Common.

Coot, *Fulica atra*. Ditto.

Grey phalarope, *Phalaropus lobatus*. Common in Romney marsh in autumn.

Red phalarope, *P. hyperboreus*. This bird is rare: Mr. Plomley has obtained only one specimen.

Bewick's swan, *Cygnus Bewickii*. Rare. Mr. Plomley has a specimen in his collection which was killed in Romney marsh; one was shot by a labouring man in the parish of Kingston a few years since.

White-fronted goose, *Anser albifrons*. Common in Romney marsh.

Grey lag goose, *A. ferus*. Ditto.

Bean goose, *A. segetum*. Common in Romney marsh.

Bernicle goose, *Bernicla leucopsis*. Has been seen in Romney marsh.

Brent goose, *Bernicla Brenta*. Ditto.

Shieldrake, *Tadorna Bellonii*. Ditto.

Wild duck, *Anas Boschas*. Ditto.

Pintail, *Dafila acuta*. Ditto.

- Wigeon, *Mareca Penelope*. Common in Romney marsh.
- Shoveller, *Spathulea clypeata*. Ditto.
- Teal, *Querquedula Crecca*. Ditto.
- Garganey, *Q. cirra*. Not common: Mr. Plomley has obtained four specimens in Romney marsh.
- Black scoter, *Oidemia nigra*. Common in Romney marsh.
- Velvet scoter, *O. fusca*. Ditto.
- Pochard, *Fuligula ferina*. Ditto.
- Scaup duck, *F. Marila*. Ditto.
- Golden eye, *Clangula chrysophthalmos*. The females are common in Romney marsh, but the males are rare.
- Long-tailed duck, *Harelda glacialis*. There are two specimens of this duck in Mr. Plomley's collection.
- Goosander, *Mergus Merganser*. Rare.
- Red-breasted merganser, *M. serrator*. Common.
- Smew, *M. albellus*. Rare.
- Little grebe, *Podiceps minor*. Common.
- Eared grebe, *P. auritus*. Common.
- Horned grebe, *P. cornutus*. Ditto.
- Crested grebe, *P. cristatus*. Has been seen in Romney marsh.
- Red-throated diver, *Colymbus septentrionalis*. Common.
- Northern diver, *C. glacialis*. This bird has been observed in Romney marsh.
- Black-throated diver, *C. arcticus*. Has also been seen in Romney marsh.
- Guillemot, *Uria Troile*. Common.
- Black guillemot, *Uria Grylle*. Of this very rare bird one specimen has been obtained in the parish of Lydd, and is now in Mr. Plomley's collection.
- Little auk, *Mergulus Alle*. This curious little bird has been shot in Kent.
- Puffin, *Fratercula arctica*. These curious birds are occasionally to be found in the cliff in the neighbourhood of Dover, and are sometimes common in Romney marsh.
- Razor-bill, *Alca Torda*. Common in Romney marsh.
- Cormorant, *Phalacrocorax Carbo*. Rare: a specimen shot in Romney marsh is preserved in Mr. Plomley's collection.
- Gannet, *Sula Bassana*. Common in Romney marsh. Breeds on the shingle.
- Common tern, *Sterna Hirundo*. Common. Breeds on the shingle in Romney marsh.

- Little tern, *S. minuta*. Common in Romney marsh.
- Black tern, *S. nigra*. Common. Breeds in Romney marsh.
- Sandwich tern, *S. cantiaca*. Rare.
- Gull-billed tern, *S. anglica*. Found in Romney marsh, but not common.
- Roseate tern, *S. Dougallii*. Has been seen in Romney marsh.
- Black-headed gull, *Larus atricilla*. Breeds in Romney marsh in great abundance.
- Kittiwake, *L. tridactylus*. Common.
- Glaucous gull, *L. glaucus*. Mr. Plomley has obtained a specimen of this bird in Romney marsh.
- Laughing gull, *L. ridibundus*. Has been seen in Romney marsh.
- Great black-backed gull, *L. marinus*. Common.
- Herring gull, *L. argentatus*. Ditto.
- Common gull, *L. canus*. Ditto.
- Little gull, *L. minutus*. This bird has been seen by Mr. Plomley, in Romney marsh.
- Common skua, *Lestris cataractes*. Common.
- Arctic skua, *L. parasiticus*. Rare.
- Fork-tailed petrel, *Thalassidroma Leachii*. Mr. Plomley has obtained one specimen of this rare bird.
- Storm petrel, *T. pelagica*. These ill-omened birds are sometimes to be seen on the Kentish coast in stormy weather. I once observed several from the pier at Dover. The "Mother Carey's chickens," or "Spenries," as they are called by sailors, are curious and interesting birds, not only from the superstition which attaches to them, of causing storms and shipwrecks, but also from their swiftness of flight, and the apparent ease with which they fly immense distances. The following account of a flock of "spenries" was sent by a brother gunner who lately took a voyage to America, which illustrates their power of flight. He says:— "The Mother Carey's chickens are mysterious creatures. We have had a flock of them constantly in our vessel's wake, from the time we left the English Channel. To all appearance *they never rest*; they are with us day and night. They cannot go to rest on the yards and rigging, for their web feet will not allow them to hold on; and if they float upon the water, how is it that they are so incessantly with us, when we have passed over perhaps 200 miles of sea between sun-rise and sun-set? I at first imagined we must often change our birds, and be followed at different times by different flocks of them; but this was disproved from the fact of the Captain

having marked one of them, by a broken leg, which has followed us across the Atlantic without ever being absent."

They are easily tamed, and it is said they will live upon oil. They are put to rather a curious use by the Faroese, who draw a wick through their bodies, which are so saturated with oil that they are thus enabled to use them as candles, and they are even sometimes used as fuel! How few of the animal creation are there which are not in some way formed, by the Great Creator, for the use of man!

"Thus then to man the voice of Nature spake —
Go, from the creatures thy instruction take;
Learn from the birds, what food the thickets yield;
Learn from the beasts the physic of the field;
Thy arts of building from the bee receive;
Learn of the mole to plough, the worm to weave;
Learn of the little nautilus to sail,
Spread the thin oar and catch the driving gale."

J. PEMBERTON BARTLETT.

Kingston Rectory, May, 1844.

Notes on the cause of the nudity of the throat &c. and of the absence of nasal bristles in the adult Rook. By A. E. KNOX, Esq. M.A.

So much has already been written about the rook, and the bird itself is so well known and so widely distributed, that ever since the time of Virgil it has been a favourite with field naturalists, and volumes have been compiled to illustrate its manners and domestic economy.

There is, however, no point connected with the history of this bird which has led to such frequent discussion, or concerning which so many conflicting opinions have been maintained, as the cause of the absence of the nasal bristles, and the nudity of the throat and portion of the forehead which characterize the adult birds; the young, it is well known, present no such appearance. The question, then, has hitherto been, — Is this an original peculiarity in the rook, or does it result from the habit of thrusting its beak into the ground in search of worms and grubs?

Two years have now elapsed since I made up my mind to attempt to solve this mystery. I found that many even of our recent ornithologists, who had ventured an opinion on the matter, were strangely at variance; while others again, who had written or compiled long histories of the rook, had passed over this momentous question in ominous silence. I was therefore at liberty, with Bewick and Waterton,

to entertain one view of the question, or with Cuvier and Yarrell, to embrace the opposite opinion. —

“Grammatici certant, et adhuc sub iudice lis est.”

In May, 1842, I procured eight young birds from the rookery at Petworth. Four of these were fed upon oatmeal, bread soaked in milk, and boiled potatoes; in short, they subsisted almost entirely on a vegetable diet. The other four partook of animal food, such as hard boiled eggs and raw meat, and were even allowed the flesh of sparrows, and other small birds. The result was, that the four former birds wasted away and died in about a fortnight, while their carnivorous brethren continued in the enjoyment of excellent health, showing that the rook (at least in his state of nonage) has no legitimate claim to the title of *frugilegus*.

These birds were confined under a large inverted crate, furnished with two perches, and placed in a dry situation in the garden, sufficiently sheltered from the heat of the sun by the overhanging boughs of a tall sycamore. As soon as they were capable of feeding themselves, their food, which now consisted almost entirely of raw meat, chopped into small pieces, was scattered upon the ground inside the crate. While in the act of devouring it, many particles became mingled with the soft earth at the bottom, and these the rooks endeavoured to recover by boring and digging, and turning up the soft earth in all directions, with a zeal and perseverance which I believe to be peculiar to this species of *Corvus*. Other portions of the meat accidentally fell beyond the precincts of the cage, but frequently at such a tantalizing distance as to induce the birds to use their utmost efforts to reach them, by standing on tiptoe, and stretching their necks as far as possible through the bars of the crate; but this experiment failing, they had recourse to stratagem, and exhibited a skill and cunning which one could hardly have expected at their tender age. They commenced undermining the foundations of their prison, plying their beaks like pickaxes, causing the mould to fly right and left, and succeeded at length in making such an aperture as allowed one of the birds (who from the beginning appeared the most enterprising of the party) to thrust out his head and one of his shoulders, and eventually bring his beak within an inch of the tempting morsel. This, as may be supposed, only caused him to redouble his efforts; his wings were uncut, and a few more struggles sufficed to liberate him for ever, while his companions, either astounded at his escape, or possessing less decision of character, were so slow in following his example, that the

breach was secured, the prisoners pinioned, and future escape rendered impossible.

I may here remark that the rook, in a state of confinement, is much less docile and sociable than its congeners, the raven, the daw, and carrion crow, all of which I have, at different times, domesticated. This appears singular, when we consider the natural attachment of the rook to the neighbourhood of man.

One of these birds died during the autumnal moult, the remaining two survived, and both continued in good health during the ensuing winter and spring. When undergoing the first moult in the autumn, the bristle-like feathers which covered the nostrils fell off very gradually, in common with the rest of the plumage, but were regularly renewed; and when the winter arrived, neither of the birds exhibited any symptoms of nudity on the throat, forehead, or upper part of the beak, but were as perfectly fledged, in every respect, as the raven or the carrion crow.

On the approach of the breeding season, one of them appeared very restless and uneasy, perpetually cawing and running about the cage, or thrusting his head between the bars, and now and then turning a wistful glance upwards, as some of his wild brethren of the rookery passed to and fro overhead. I noticed one morning, that some of the bristle-like feathers near the forehead were partially abraded, as well as a few at the base of the lower mandible. I felt much surprised at the moment, but a few hours patient observation sufficed to point out the cause, which was simple enough. Since the commencement of his restless fits this bird had contracted the habit of thrusting his head between two of the horizontal bars of the cage which lay near to, and parallel with, his favourite perch. The space was not sufficiently wide to allow of his projecting more than the entire beak, the upper and lower portions of which were thus respectively brought into contact with two of the bars. In this attitude he would run along the perch sideways, and this constant trituration had the effect of producing the partial loss of feathers which had attracted my attention.

This bird died soon afterwards, after having lived for nearly a year in a state of confinement.

The last bird survived to complete his second moult, when he, too, perished. I preserved his skin, which, as well as that of his predecessor, is now in my collection. The feathers of this rook were perfect at the time of his death. Those portions of the head and throat which, in the wild adult rook, are observed to be naked, did not, at any period, in this individual, exhibit the remotest tendency to be-

come so, and the bird itself presented the same appearance as it did before its first autumnal moult, with the exception of a glossy purple tint on the head, back and shoulders, which had gradually succeeded to the more sombre hue of the nestling plumage.

The result of this experiment would, perhaps, be sufficient to set the question at rest for ever ; but before I quit the subject, I will add a few observations on the habits of the rook in a state of nature, which bear more particularly on this portion of its history, and will, I trust, serve to convince the few who may even yet continue incredulous.

Every observer who has resided in the neighbourhood of a large rookery, must have noticed the number of young birds which continue in company with the old ones for many months after they have left the nest. The notion that the former *finally* shed the nasal bristles, and the feathers on the throat at the first autumnal moult, I have shown to be erroneous. While investigating this subject during the last two years I have constantly made use of a good spyglass (a more valuable auxiliary, by the way, to the field naturalist, than even the favourite fowling-piece), and when examining detachments of rooks during September and October, either when feeding together during the day in the stubbles and meadows, or when congregated in the evening in immense numbers on the tall trees in the park, I have found that there were quite as many young birds among them at that period as during July and August. As winter approaches and provisions become scarce and more difficult to procure, I am of opinion that many of these are driven away from their native haunts by the older birds, or, obedient to a general law of Nature, which forbids local accumulation, migrate during the early spring to other parts of the country, and fill up the ranks that have become deficient in distant rookeries, whether caused by famine, disease, or the annual persecution of man.

In the winter and early spring, when rooks assemble in considerable numbers on extensive pastures, after heavy falls of rain, to feast on the myriads of worms that have risen to the surface of the ground, I have had many opportunities of leisurely examining them, and have observed, that (on an average) about one in eight or ten was a bird of the year ; that is to say, its appearance at a distance was nearly similar to that of the carrion crow, which bird, as far as my experience goes, never, under any circumstances, associates with the rook. To satisfy myself on this subject, I have, after some difficulty, rooks being very shy at this season, occasionally succeeded in shooting one of these crow-like birds, which invariably turned out to be a rook of the

year. Some of these have by this time lost a small portion of the bristle-like feathers which cover the nostrils, but the plumage on the throat is still nearly perfect, nor does it disappear until after the bird has found a help-mate in the ensuing spring, when its keen sense of parental duty, and the calls of a hungry family, urge it to dig from morning till night in search of the grub of the cockchafer, and the deep-set germ of the lately planted potato, and induce it to convert the dilatable skin of the throat into a convenient hunting-pouch, the naked scabrous appearance of which can be no mystery to any one who has narrowly observed the habits of the bird at this season of the year.

See him returning to his nest with steady flight,—his pouch apparently well filled, and projecting, pelican-like, from beneath his beak : many a well bruised beetle and savoury grub is there; it seems to be distended to the utmost, and to be incapable of containing another morsel — not so — in passing over yonder field his keen eye has detected a lump of old manure, which had escaped the notice of his fellows—he alights on it, and for some time his efforts to break through the hard external crust appear to be fruitless; at last he effects an opening, and by repeatedly plunging in his head, he succeeds in penetrating to a considerable depth, while at every blow the front of the well filled pouch comes into rough contact with the edges of the aperture — one or two more victims are then secured — he is apparently satisfied, and just about to fly, when suddenly his anxiety to obtain “one” grub “more” causes him to redouble his exertions, and secure an additional prize before he leaves the field.

Let any one examine the denuded portion of the throat of an old rook with a magnifying glass, and the stumps of the feathers may be easily discerned. In some instances which have come under my notice, they were even perceptible to the naked eye.

Young rooks, as I have said, do not lose the feathers on the throat until after the assumption of parental duties; in fact, before that period, they are not expert diggers, except where the ground is soft and easily penetrated: and until their beaks have acquired the firmness and temper of age, they may be seen, even at a very late period of the year, with outstretched quivering pinions and tremulous voice, soliciting a morsel of food from the veterans of the colony: but having once acquired the art, they continue to dig more or less at all seasons and in all soils, and thus the abraded plumage has no chance of being renewed during the lifetime of the bird.

Other species of the genus *Corvus* have undoubtedly the power, to

a limited extent, of applying to the same purpose as the rook the elastic skin of the throat. I have had favourable opportunities of observing the raven, the crow, the jay and the jackdaw, during the breeding season. When the raven returns to his young ones, after feasting on the decomposed flesh of a large quadruped (which is perhaps his favourite food), he contrives to secrete a tolerable supply in his pouch, but the excrescence thus caused is small compared with that of the rook, when the relative proportions of the two birds are taken into consideration; and on returning from a foraging expedition with a young rabbit or duckling in his beak, his pouch is empty, and the prey is broken up near the nest before the young ones are fed. The jay and the daw have the same power, in a still more limited degree, and exercise it accordingly, under similar circumstances; but all these birds, when in a state of nature, are more carnivorous in their propensities than the rook, and procure the greater portion of their food *above ground*. The carrion crow, at this season, feeds chiefly on eggs, young poultry and game, mice and carrion; and I once took from the mouth and from underneath the tongue of an old jay (which had been shot by a keeper while in the act of feeding its young), several oak-caterpillars and fragments of beetles (apparently a small species of *Melolontha*), with which the dilatible skin had been partially distended, while the stomach contained, besides beetles, several pieces of a slow-worm, particles of the shells of small birds' eggs, and the heads and claws of unfledged young ones. The rook, on the other hand, as I have shown, procures food for himself and his young at this season, almost exclusively from *beneath* the surface of the earth. He is, *par excellence*, a digger; and if, among the various changes and modifications to which the nomenclature of birds seems to be liable, this species of *Corvus* should ever be voted a new specific title, I would humbly suggest that of *fodiens*, as at least more applicable and distinctive than some which have occasionally been proposed as worthy of superseding the old Linnæan *frugilegus*.

A. E. KNOX.

New Grove, Petworth, May, 1844.

Notes on the Birds of the Isle of Wight. By The REV. C. A. BURY.

(Continued from p. 524).

IN my former paper I stated, and shall state in this, and in any future communication, upon what authority I give the various birds described as belonging to the Fauna of the Isle of Wight. My doing so may appear tedious to some of your readers; but I think others will duly appreciate the measure of exactness thus imparted to my information. It would be easier for me, and it would occupy less of your space, if I merely stated that such a bird is common, uncommon, an occasional visitor, &c., appending such polysyllables as are understood by the initiated, and admitted by them as sufficiently descriptive. But I write equally for the uninitiated, and wish to be intelligible to all. I would therefore rather incur the charge of tediousness than that of indefiniteness; I would gladly, if I could, make my communications interesting to the general reader, to whom the bare matters of fact, on which the naturalist loves to ruminate, are, in truth, but dry bones. I am desirous to interest the young especially; for I maintain that if 'The Zoologist' succeed in imparting a more general taste for Natural History, and in stimulating those who shall have acquired the taste to a study of some one or more of its branches; it will have effected no unimportant object. If, therefore, I can, by the occasional mention of little incidents which may have occurred in the course of my rambles; or by allusions to persons, times, and places, which may not be strictly pertinent or necessary, infuse a little life into what would otherwise consist of dry details, I shall not have wasted your space or my own time; perhaps not that of even your scientific readers, for one advantage will accrue to them, viz., it will be in their power to form their own judgment, as to how far this or that bird may be said to be common, or uncommon; and then to apply their peculiar phraseology. Moreover, common honesty seems to require the adoption of such a course. I have not personally examined every wood and glade, much less every creek and bay belonging to our island. I must, therefore, state much on the authority of others, who have explored parts to which I may be nearly or altogether a stranger. To some I am indebted for the result of many years' patient and accurate observation before I became an inhabitant of the island. To them, one and all, I feel under great obligation, and trust they will excuse the mention of their names, whenever such mention may suit my purpose. I will, once for all, assure both you and your

readers, that what I may record, if not the result of my own observation, is given on the authority of men not only of undoubted veracity, but, what is of equal importance in the present case, not likely to have been themselves mistaken.

Should I ever carry out my original intention, and reproduce these notes in another form, accompanied by certain lucubrations not perhaps exactly suited to 'The Zoologist,' I shall then feel bound to express more distinctly my sense of obligation to the gentlemen above alluded to, as well as to others to whom I am equally indebted, although in a different manner. But my preface has grown longer than perhaps is meet; so I will proceed with my notes on The Perchers.

The Great grey Shrike I can ascertain to have been met with but once. Mr. Butler, of Yarmouth, has in his possession a fine adult male, shot by himself on Yarmouth-common, in the spring of 1841. A female was seen in company, but not obtained.

The Red-backed Shrike is met with pretty frequently. A pair reared their family last year (1843) in an orchard adjoining my house. The nest was placed on a large horizontal limb of an apple-tree; and though more than one pair of eyes, and those none of the worst, repeatedly examined the neighbourhood (for the old birds would not allow us to doubt the existence of a nest), yet did it escape detection until the young were able to take wing. I have never been able to discover either small birds or insects spitted by the shrike, as have more fortunate observers. The shrike is a late feeder. I frequently see it hawking for crepuscular insects after the sun has gone down.

The spotted Flycatcher visits us regularly, but not in great numbers; and remains to breed. It is, however, unusually common this year, (1844).

The pied Flycatcher has been met with by Mr. Butler. Mr. Yarell states that "Mr. Blyth has seen a specimen that was shot in the Isle of Wight." This reference is most probably to the same bird; as Mr. Blyth has more than once visited Yarmouth, and is known to Mr. Butler.

The Missel Thrush, called here the "squawking thrush," abounds; and is as noisy and courageous in defence of its brood as elsewhere.

The Fieldfare is common in winter. I have seen very large flocks in the neighbourhood of Black Pan, and in the parish of Newchurch.

The Song-thrush is very abundant, and is peculiarly deserving of its name; for I believe I have heard its notes, and that not occasionally only, every month in the year.

The Redwing accompanies the fieldfare, as is usual; but during

hard weather I have seen flocks of fifty or sixty redwings down in the Undercliff, where the fieldfare seldom appears.

The Blackbird is very abundant. A fine male bird, with a few white feathers interspersed among the auriculars, on both sides, has frequented my lawn for the last four winters. I seldom see him in the summer, though he is a daily pensioner during the winter months.

The Ring Ouzel visits us both in spring and autumn. In the spring the number is small, and its stay usually but short; but in the autumn of some years it is more abundant, and remains longer. During the 8th and 9th of October, 1841, not less than a hundred were flying about in the Landslip. The adult males were very shy and difficult of approach. On the 11th, only a few stragglers were to be seen — chiefly females of that year. I find recorded in my note-book for 1842, "No ring ouzels seen this year;" and yet, had they visited us, or at least remained twenty-four hours, I think they could not have escaped my notice. On April 5, 1843, four or five adult males were seen on St. Boniface Down; on the 8th they had disappeared. — During the autumnal visit, one specimen was killed in Bonchurch as early as September 9. Considerable numbers were seen subsequently, but none later than October 3. This year (1844) three were seen on St. Catherine's Down on April 5; and a solitary male bird at Luccombe on the 15th.

The Hedge-warbler may be found in almost every bush.

The Redbreast is nearly as abundant.

Redstarts are plentiful on their first arrival. In 1843 I received two specimens, both males, killed on the north side of the island, as early as April 4.

The Black Redstart. A pair of these occasional visitors passed the winter of 1843-4 in the neighbourhood of Sandown. They were seen constantly from November to the end of February. The male bird seems to have attracted general attention. Every man, woman, and child, even to the mistress of the inn, was acquainted with "the little black bird." Yet, though Sandown is only five miles from my residence; though the birds frequented the garden of a man whose wife was in the constant employ of an ornithological friend, whose zeal, as well as acquaintance with Natural History, far exceeds mine; though both my friend and myself were in the neighbourhood many times in the course of the winter; — yet notwithstanding all this, neither the one nor the other of us was informed of the existence of these birds! It is true, it turned out on enquiry, that a message had been sent through my friend's groom, who omitted to deliver it to his master, thinking,

as he said, the bird was "only a black robin"! It is equally true that the man, on whose grounds the birds were most frequently seen, did on one occasion say, "How proud Mr. Dawson would be to have them birds;" and it is as true that he did actually bid his boy set a trap for them; and declared he would shoot them himself, but was afraid of spoiling them! — and yet no information was given in "the right quarter!" "The proper authorities were left in utter ignorance of all that was going forward, until the birds had apparently taken their departure; that is, until four days after they were last seen. Then indeed two days were consumed by my friend, and one by myself, in fruitless search; and we had nought to do but bear our disappointment as best we could. I think I may take the credit of evincing the larger share of equanimity on this trying occasion: though perhaps the fact of my already possessing a pair of these rare birds did much for the preservation of my temper: and, moreover, if I obtained not the birds, I learned somewhat of their habits, which I will proceed to detail; first premising, by way of moral to this long tale, and of apology for telling it, a word of advice to brother naturalists on the desirableness of using freely their tongues, as well as their eyes, in their researches: for they know not what treasures may exist in their immediate vicinity, which their unsophisticated neighbours are aware of, but do not give themselves the trouble to mention.

I have not met with any account of the habits of the black redstart more full than that given by Mr. Yarrell; who says, "The manners and habits of this bird are somewhat similar to those of the (common) redstart; but it prefers stony places, and is rarely seen in the plains." My male specimen was shot on the chalk cliffs on the sea coast; and was shy and difficult of approach. The female I found on a field of young wheat, some half-a-mile from the sea: it also appeared to be shy. But the account given by numerous independent witnesses of the winter residents at Sandown goes to prove them of a more domestic character: they were, in fact, as tame as robins, or nearly so. They remained almost constantly about one or other of two houses; they would perch on the roof, and more than once the male was seen on the window-sill, and once entered the room. He (for the female seems, as was likely, to have escaped general observation) would hop about close to labourers at work; and seemed very partial to a large heap of rubbish which lay within a few yards of the house. It was thought to roost very near the house; and was observed sometimes alone, and sometimes in company with other small birds.

I have said that these birds had *apparently* taken their departure;

but after an absence of some days the male returned, was caught alive, having taken refuge from its pursuers in a hole in a bank, and brought to my friend Mr. Dawson. It beat itself violently against the bars of its cage; and being consequently allowed to fly about the room, was next morning found dead.

These and the two specimens in my collection, are the only instances of the occurrence of the black redstart I have been able to ascertain. The one, an adult male, I shot on the sea-cliffs at Bonchurch, December 2, 1842; and the other, a female, at Luccombe, January 2, 1844.

The Stonechat is very abundant, and breeds early. In 1843 I found a nest on St. Boniface Down, containing four eggs, as early as April 8.

The Whinchat is by no means common. I think, however, it must breed with us, as I once saw a female in the month of June.

The Wheatear is abundant along the coast, and many pairs breed with us. I have more than once found its nest in a hole in the cliff, two or three feet only below the summit, and quite as many feet deep. It frequents the shore, and feeds freely on the sandhopper. The sexes migrate separately, the male appearing first. I once saw a solitary male on the sea-shore, as late as October 21st.

The Grasshopper Warbler I have not succeeded in meeting with. My authority for its insertion is Mr. Butler, who has frequently obtained it in the marshy ground about Yarmouth. Mr. Butler's description both of the bird, and of its habits, was too accurate to admit the possibility of mistake. Dr. Bromfield also has frequently heard its note. But whatever may have been my disappointment in failing to obtain the bird, I was, on June 12th of this year (1844), abundantly gratified by having brought to me the nest containing four newly laid eggs. It was found half way down the Culver cliff, which is about 400 feet high. The nest is composed externally of seaweed chiefly, with some lichens; then grass bents; and is lined with finer bents and fibrous roots. The man who found it had seen similar nests only once or twice before.

The Sedge Warbler I have obtained in Newchurch marshes, where it is abundant.

The Reed Warbler, its usual companion, I have also found in the same locality.

The Nightingale is generally distributed, and abundant over the island. Dr. Bromfield informs me, on the authority of two credible witnesses, that its song was heard, three or four years ago, in the month of February.

The Blackcap is not infrequent. Its partiality for a particular spot, as well as that of the nightingale, has struck me: the first blackcap I hear is in a copse close to my house; where a pair has bred regularly for the last four seasons.

The common Whitethroat abounds.

The lesser Whitethroat I cannot give certainly on my own authority. Mr. Butler has obtained it in the neighbourhood of Yarmouth; and I found its egg among a number brought me last year from Newchurch.

The Willow-warbler is common, making its appearance usually about the middle of April. Many more appear to land here than remain with us. For about a fortnight in April every copse is alive with this elegant little bird. Its congener the wood warbler I cannot find. The garden warbler has also escaped by observation.

The Chiff-chaff is abundant.

The Dartford Warbler is, I think, sparingly distributed over the island. I have seen it on St. Boniface Down, and Shanklin Down: two were killed in March last, by R. Loe, in Bordwood Forest; where he used to see it frequently. Mr. Butler has obtained it at Yarmouth: and I have heard of its being found on Bridleston-common, near Newport. It certainly is resident with us throughout the year.

The Golden-crested Regulus abounds; but is, I think, more numerous in the winter than in the summer. I incline to the opinion that more birds than are bred in the island resort hither for the winter; at the same time gold-crests may be found in almost every fir-plantation during the summer; and I once found two nests within a dozen yards of each other.

The great Tit is equally numerous, and as saucy as in other parts.

The blue Tit is the most numerous of the genus.

The crested Tit has been once obtained by Mr. Butler, in the neighbourhood of Yarmouth; and the specimen is still in his possession.

The cole Tit I have met with in Bonchurch, in Bordwood-copse, Apse-copse and Shanklin-wood.

The marsh Tit has not often occurred to me. I have seen it once or twice in Apse-copse, once in Bonchurch, and once in Shanklin-copse.

The long-tailed Tit is much more common. It is to be seen in most of the woods I am in the habit of perambulating.

A Bearded Tit came into the possession of Mr. Wild some years ago: it was killed near Ryde.

Bohemian Waxwing. A fine adult male is now in the possession

of Mr. Grapes, of Newport : it was killed about fifteen years ago not far from Yarmouth.

The Pied Wagtail is found here throughout the year, but only sparingly in winter. In the autumn, flocks of from eighteen to twenty birds make their appearance, and mostly frequent the sea-shore : after remaining about a fortnight they disappear, and are not seen again till the following spring. I am perfectly satisfied of the migration of this bird ; though doubtless every individual does not leave the country.

The Grey Wagtail is a winter visitor with us, and in no great numbers. I have observed it usually in pairs, frequenting the mouths of rills on the sea-shore.

Ray's Wagtail, or *the Yellow Wagtail*, I usually see pretty frequently following the plough, on its arrival in the spring ; but I remember to have met with it but once during summer. It, as well as the wryneck, is here called the "Barley-bird," in consequence of its making its appearance at the time of barley sowing.

The Meadow-pipit is very common. I know no small bird which varies so much both in size and shade ; I think I might add, in note also. I have sometimes mistaken it for the tree-pipit (which, strange to say, I cannot find). At other times I have shot it, at a loss to decide what it was ; and once I felt almost certain I was in pursuit of Richard's pipit, nor was it till I reached home, and compared the specimen I had been at no little trouble in obtaining, with Mr. Yarrell's plate and description, that the illusion vanished. Once, too (for my mistakes have been almost as numerous as the birds themselves are), I was asked to decide whether certain small birds flying about on the shore at Yarmouth, were rock or meadow pipits ; I pronounced them, though with some hesitation, to be the former. Two or three were shot : I retained my opinion ; but was not surprised to find, on reaching home, and comparing the birds we had shot with a specimen of the rock pipit, that I was again mistaken. I do not find this diversity alluded to by writers on Ornithology ; and yet, I cannot believe myself singular in noticing it.

The Rock-pipit abounds along our southern coast, but is seldom, if ever, seen on the northern shore of the island.

The Skylark is, I think, equally common in summer and winter.

The Wood-lark is far from common ; it was not till this last winter that I succeeded in obtaining specimens. On February 3, 1844, there had been a fall of snow, and, as is always the case at such times, many birds resorted to the Undercliff for food and shelter. I was stalk-

ing a redwing in unusually fine plumage, when my attention was arrested by the not-to-be-mistaken note of a woodlark flying over my head. I marked it down, and it was soon my own. It proved to be an adult female, despite its powers of song. Seven more woodlarks were seen shortly after in flock, feeding, or searching for food, on the ground. I had seen a single specimen at Luccombe during the preceding autumn, perched on the top of a tree; and as I examined it with my glass, a fine ring-ouzel settled on another tree hard by: but while I, like the ass between the two bundles of hay, hesitated which I should select for my shot, both birds took wing. R. Loe assures me a pair breed regularly at Newchurch: and a couple of young birds were offered me this summer from the northern side of the island.

The Snow-bunting has been twice obtained at Yarmouth, by Mr. Butler.

The common Bunting is not common enough here to deserve the appellation. I have not met with it very frequently; but R. Loe informs me he has seen large flocks in winter time go to roost on the tops of the furze in Bordwood-forest. The eggs have been brought to me but twice.

The black-headed Bunting is distributed pretty generally over the marshy districts of the island. I have found it on Pan-common, in Sandham-flats, and on Apse-heath.

The yellow Bunting is very common.

The Cirl Bunting is far from uncommon. I hear its silvery call-note, if I do not see the bird, nearly every walk I take. It is seldom found far inland; I have never met with it a mile from the sea. My observations of the habits of the cirl bunting do not accord with those of Mr. Blyth, as recorded by Mr. Yarrell in his 'History of British Birds.' I have not found it "much more shy than the yellow bunting;" and, remarkable enough, I never but once saw a cirl bunting in a tree: that tree certainly was an "elm;" but the bird was perched very far below its "lofty summit." Neither have I known it to sing from the "upper branch of a tree," as has Mr. Yarrell: nor can I consider its song as "resembling that of the yellow bird." I crave pardon of both Mr. Yarrell and Mr. Blyth, for thus opposing my observations to theirs: but it is curious that the cirl buntings of Bonchurch and its vicinity should differ so widely in their habits from those observed by the above-named respected gentlemen. Abundant as is the bird, I have found it difficult to obtain the nest; the birdsnesting boys usually confounding it with that of the yellow bunting. I think it is a late breeder, as a nest containing three newly laid eggs was brought

to me June 12: and I am disposed to think it, occasionally at least, rears a second brood; as on August 8 and 9, 1841, I observed a female busily employed collecting bents within a few feet of my window.

The Chaffinch is abundant at all seasons, but especially during winter, when it assembles in large flocks, consisting of both sexes.

The mountain Finch I have obtained twice; once in Bonchurch, January 13, 1843, and once at Luccombe, March 15, of the same year. Both birds were adult males. Mr. Butler informs me that in the winter of 1842, during a severe frost, a large flock of bramblings visited the neighbourhood of Yarmouth; and great numbers were caught in bat-folding nets.

The tree Sparrow I have seen but on one occasion. Five birds, apparently a family party, flew past me, and alighted on a hedge at no great distance; they allowed me to approach sufficiently near to decide positively, with the aid of my glass, on their species. I had no gun, or I might easily have obtained specimens. This was near Shanklin, and occurred November 15, 1843. Mr. Butler has met with it twice, during hard weather; upon the former occasion, a few years back, the birds were so numerous that he killed ten at a shot; and last winter he obtained four specimens. The three of these that I saw in his possession were adult males.

The house Sparrow bears as bad a character, and meets with as little kind treatment here as elsewhere: nevertheless, he is the farmer's friend (except at seed-time and harvest), the gardener's friend, in short, every body's friend, save the owner's of a thatched roof. That he is a pert saucy chap there is no denying; and that he possesses few personal attractions to recommend him to the favor of the merely casual observer. Yet with us, I think he has some beauty to boast of; for the rich chesnut suit of the back and wing-coverts is really fine. I once saw an ornithological friend at a loss for a time to identify a stuffed specimen in a collection we were inspecting together.

The Greenfinch is common.

The Hawfinch I have not met with; but R. Loe has seen it not unfrequently. It goes by the name of the "cow bird." Mr. Simeon has kindly furnished me with a note of his, made at the time, on the margin of his 'White's Selborne,' to the effect, that in the winter of 1832 there were great numbers of the hawfinch about the pleasure-grounds at Swainston, the seat of his father, Sir R. Simeon, Bart.; but that he heard of them nowhere else. "They flew," the note proceeds, "in parties of four or five, with a quick and jerking flight,

pitched on high trees, and were very tame. They were shot in such numbers by my brothers and myself, that we ate them like blackbirds."

The Goldfinch is abundant; sufficiently so to attract a race of beings I am not very partial to, namely, the London bird-catchers.

The Siskin I have found in Newchurch marshes. I once saw a flock there consisting of at least fifty individuals. The specimen in my collection I shot on an alder, in company with redpolls.

The common Linnet is very abundant; I have seen very large flocks of them in winter.

The lesser Redpoll I have met with in Newchurch-marshes in winter; but I have in my possession the nest, containing two eggs, of this little winter visitor, taken in Shanklin Chine, May 17, 1843. The boy who found it, an experienced birdnester, was at a loss to identify it, though he knew of another resembling it. This second nest was taken by some other person. I could not obtain a sight of the parent birds; but the boy's description corresponded with that of the redpoll. The nest and egg perfectly coincide with those described by Mr. Yarrell: the former is lined with the catkin of the willow, and was built in an elder, hard by the stream which flows down the chine.

The mountain Linnet. Two or three were once pointed out to Mr. Butler on Freshwater Downs, by an accompanying naturalist, I believe Mr. Blyth.

The Bullfinch is tolerably abundant. Notwithstanding the habitual shyness of this bird, a female, while sitting, once allowed me to pass my finger several times down her head and back, without taking wing. I did this on two or three occasions; once in presence of other persons: the bird would open her beak in a threatening manner, and submit, open-mouthed, to my caresses.

The common Crossbill has appeared occasionally, at uncertain periods, and in considerable numbers.

The white-winged Crossbill. Mr. Butler informed me that about six years ago he obtained a pair of birds, which he supposed to be only the common crossbill in one of its many states of plumage; but the conspicuous white bars across the wings, described by Mr. Butler, seem to decide that they belonged to the rarer species.

The common Starling is now generally distributed, and in considerable numbers; yet, fifty years ago, as I am credibly informed, the bird was not to be found in the island. Several persons have spoken of it to me as having been very scarce only twenty years back.

The rose-coloured Pastor, I have reason to think, has been once killed in the island. R. Loe described it very accurately, and as hav-

ing made its appearance, many years ago, during harvest; the bird was shot while feeding on the berries of the elder.

The Chough was once common along our southern coast, but is so no longer. One or two pairs breed at Freshwater; and two pairs more in the cliffs between Niton and Blackgang. Mr. Butler once obtained a chough alive: the bird sought refuge from a peregrine in a barn, and was there captured.

The Raven. Several pairs breed in the cliffs on our southern coast.

The carrion Crow is more abundant than pleases the gamekeepers.

The hooded Crow is seen occasionally only. I have been sometimes amused by the very opportune appearance of birds. I was one day tramping the Sandham marshes, with my ornithological *fidus Achates*, Robert Loe. "Did you ever see the hooded crow?" I asked. "Yes, I have," was his reply; "but not these seven years:" (a moment's pause, but only a moment's): "Why, what's that? Sure enough it is one of them!" And sure enough there was a hooded crow. I never saw but one other in the island, flying across, some two hundred yards from the spot where we were standing.

The Rook is abundant, but would be more so if the farmers knew its value.

The Jackdaw. Large colonies of this merry chatterer are established along the southern coast.

The Magpie is almost as abundant with us, as I found it on the opposite shores of Normandy; where, I verily believe, it is more plentiful than any other species of bird. I once counted eighteen in company in this neighbourhood; and I saw lately the effigies of at least twice that number, nailed up against a keeper's wall, all killed during last winter.

The Jay, which goes by the name of the "Pranky Jar," is common enough. C. A. BURY.

Bonchurch, Isle of Wight, June, 1844.

Notes on the capture and appearance of some of our rarer British Birds in the County of Derby. By J. J. BRIGGS, Esq.

(Continued from p. 556).

THE Merlin, *Falco Æsalon*. This pretty falcon is very rare throughout the whole of this county. A specimen was shot near the borders of Donnington-park (part of which is in this county) about four years ago; and on January 15, 1844, I had an individual sent to me, which had been shot near the game-covers a few days before, by a keeper

belonging to that domain. It was a female, and in exceedingly fat condition and fine plumage.

Common buzzard, *F. buteo*. Glover mentions one as having been killed at Melbourne in 1827, and another at Aston a few years before. Several individuals have been taken in the traps of the Donnington-park keepers.

Hen harrier, *F. cyaneus*. Shot near Eastmoor and Derby, and has been taken at Donnington-park. It is considered one of the most destructive of winged vermin, and will take a partridge or young pheasant. It is also called the "blue hawk."

Eagle owl, *Strix bubo*. In the Derby Museum are three specimens of this noble bird, in beautiful condition of plumage. They are not labelled, but were probably shot in the neighbourhood.

Snowy owl, *Strix nyctea*. Glover says a female of this species was found near Stavely, sitting upon two white eggs, rather larger than those of the ringdove; but when is not stated.

Little owl, *S. passerina*. A live specimen of the Little Owl was exhibited at Mr. Cook's museum, Derby, May 17, 1843. It was about the size of a blackbird, quaint and amusing in its manners, and grotesque in appearance. It was taken in or near the town, I think in a chimney, and afterwards sold for 30s. This is the only bird ever captured in Derbyshire for a great number of years.

Great grey shrike, *Lanius excubitor*. One shot near Derby some years ago, but it is very rare.

Red-backed shrike, *L. collurio*. This bird is said to be not unfrequent about Duffield, where it arrives about the latter end of May. It is met with occasionally in some other parts of Derbyshire, but must be considered uncommon. They arrive in the neighbourhood of Melbourne about the third week in April, and depart about the third or fourth week in August. A pair (one of which is in my possession) was shot on the 27th of April, 1839, immediately on their arrival; and three more individuals had been killed on the 20th. When first discovered, they were busily engaged in pulling up some peas in a garden, which were just springing from the earth. They had despoiled several rows, but appeared to be searching for beetles and large insects, as not one of the peas was eaten. The crop was entirely spoiled; and the owner of the garden, mortified to find his hopes thus blighted, through vexation shot the whole party. The year previously, a pair had built their nest in a low gooseberry-bush, in the same garden. It was composed of coarse, thick, dried grasses, with a little intermixture of moss; and contained four eggs, of a reddish

brown colour, having their broader ends encircled by a ring of small red spots and stripes. The young were fledged by the 2nd of June. This bird has no song, but occasionally gives utterance to a broken and abrupt cry, rather louder and more harsh than that of a house-sparrow. It is also restless and unsettled, changing its situation on the top of one bush for the uppermost twig of another. Its flight is performed in an uneasy and irregular manner: the bird takes three or four strokes together, very quickly, then springs forward, and may readily be distinguished in flight by these actions.

Pied flycatcher, *Muscicapa atricapilla*. Very rare throughout Derbyshire. Some years ago a specimen killed near Alderwasley was shown to me; and I have once observed it near Melbourne.

Dipper, *Turdus Cincla*. The Dipper ranks amongst our feathered tribes, being found occasionally upon the Trent and Derwent, and sometimes in the Peak, upon the brilliant streams which play amongst wild dells, and fall over straggling rocks and moss-clad stones. A pair were killed off the Trent in January, 1836; and on January 12, 1841, I noticed three pairs upon the river, the waters being at that time partly frozen over, and snow lying on the ground to the depth of twelve or fourteen inches. They were swimming on the surface of the stream, and at intervals dived into the deeps, keeping under water about seven seconds each time, and rising to the surface about five yards above the spot whence they disappeared. When alarmed they will keep under water more than a minute, and dive during that period more than fifty yards. They are extremely shy and vigilant in their habits, being very difficult to shoot, for they perceive the least motion of the hand or body, and immediately disappear. They are not unfrequently taken by poachers in their nets, during the summer months, and sold to bird-preservers. Some few pairs are known to reside south of the Trent the year through, and yet the nest is never found; nevertheless, it seems probable that they do breed. North of the Trent, it breeds annually, particularly among the wilds and fastnesses of our rude Peak hills. When a schoolboy at Darley-dale (a valley which is in beautiful contrast to many of the wilder ones in Derbyshire, and which mark the course of its mountain rivers), I remember a party of us finding a nest of this bird by the brink of a rocky stream, a few miles distance from the village. It was situated on a ledge of stone underneath a rude bridge thrown across the stream, being composed of short green moss, closely enwoven together, and contained two eggs of pure white. It was considered a great rarity in the neighbourhood.

J. J. BRIGGS.

King's Newton, Melbourne, May 20, 1844.

Notes on Birds and Birds' Nests. The delightful weather which we enjoyed during the two last months of the year that is past, kept up or awakened the musical propensities of many of our song-birds. Not to speak of the robin and the wren, on many calm mornings and evenings, the whistle of the blackbird, of the missel-bird and of the mavis, here invited us to the woods. And even the songs of the hedge-sparrow, yellow bunting and skylark were frequently heard when the wind was gentle and the sky serene. But not only did the mildness of the season call forth the vocal powers of these little creatures, in some cases it bewitched them "to forestal sweet St. Valentine." And accordingly the birds,

"In many an orchard, copse and grove,
Assembled on affairs of love,
And with much twitter and much chatter,
Began to agitate the matter."

I have heard of a few cases of actual nidification. A nest was found somewhere in the woods of Lasswade, near Edinburgh; but the particulars of this case I have not learned. The house sparrow has ever been famous for choosing unusual seasons of nidification. Three instances of its building in winter have been mentioned in the 'Zoologist,' I may add a fourth. In the middle of December, last year, in an out-house connected with a farm-yard near the foot of the Pentland hills, a sparrow built its nest, laid five eggs, hatched them and eventually succeeded in rearing the little ones till they were able to evacuate the nest. Another instance of nesting towards the close of last year was communicated to me by Mr. Hector Brown, of Livingstone-mill. In a letter which I lately received from him, he thus writes. "The nest was found by Mr. Robert Buchanan, in December, 1843. On discovering it he took it down, thinking it was an old one. But after examining it, he found it to be quite new. It was built of withered grass and moss, and it contained five eggs, about the ordinary size of small birds' eggs. They were spotted all over with red. One of them was broken by accident, and it was evidently undergoing incubation. The nest was afterwards replaced, in order that the bird to which it belonged might be taken; but the replacing of it injured it so much that it was forsaken by its possessor. It was again taken down about three weeks afterwards, when the nest and eggs were found to be much decayed." The nest and eggs described in the extract which I have now given, were probably those of a redbreast. There is only one circumstance which would lead me to hesitate for a moment in affirming that they were; and that is, the statement that the nest was taken down.

I may mention another instance of a bird having in all probability prepared a nest during this winter. A labourer, whilst walking through a field a little to the north-west of Mid Calder, found the nest of a partridge, containing the usual number of eggs. He supposed it to be one that had been left by the birds during last spring or summer, with the eggs unincubated. But it appears to me that since the redbreast's eggs referred to in the preceding paragraph, lost their bloom, and were putrescent in the course of a few weeks, it is very unlikely that those of a partridge, lying upon the ground, would remain undecayed throughout an autumn and the half of a winter; even were it at all probable that they should have escaped, for such a length of time, the prying eyes or other sensitive organs of the many kinds of birds, quadrupeds, and little vermin which are continually prowling about in search of something to satisfy their craving appetites. As this communication has reference principally to the nests of birds, I may here introduce an extract from a letter which I received a few months

ago, from a friend, Mr. David Inglis, at that time resident in the north of England. I know not whether the circumstance narrated in it was accidental or otherwise. The writer says: — "One evening, about last Easter, I was enjoying a quiet walk by the banks of the Eden, when I observed a small graceful bird hopping about in a hedge-row. From its appearance I soon perceived that it was the long-tailed titmouse, or, as it is here called, "Bottle Tom," (*Parus caudatus*). I resolved to watch its motions. It went from bush to bush, occasionally uttering a shrill chirp, until it reached a thorn tree, where it remained. I went up to the tree, and as I expected, found its nest upon it. It was built upon a most convenient place; resting upon three twigs, one of which ran through it. The nest seemed to be just newly finished, and was empty. It was of an oval shape. There was a long entrance to the nest proper, which was slightly arched; so that the interior of the domicile was thus protected from wind and rain. But there was a still more curious contrivance, by which the nest was, as it were, guarded from the intrusion of unwelcome visitors. A strong feather was fastened to the nest by hairs woven around it and through the moss and lichens. It was so placed that its top hung over the hole. It bent upwards with the slightest pressure, and immediately resumed its position when the pressure was removed. I once saw the bird fly out in great haste, and the feather did not in the least incommode it in its egress. I frequently visited the nest in order to ascertain the manner of opening the door; but I never saw the bird enter the nest. I fully expected to have my curiosity gratified when the young ones would burst from the shell; but one day, ere that time came, I saw two boys scampering off from the tree. I pursued, and found in their hands the shattered nest and the eggs of the poor titmouse. You may be sure I thrashed them within an inch of their lives."—*Robert Dick Duncan.*

Note on the use of Oil from Glands for the purpose of lubricating the plumage in Birds. I have much diffidence in differing from a naturalist of such skill and experience as Mr. Waterton, but I certainly do so in a few particulars. In his 'Essays on Natural History,' pp. 60—64, he is very severe on those who maintain that birds "use oil from glands for the purpose of lubricating the surface of their plumage." It would be somewhat difficult for any one to *prove* the actual fact, that "a bird procures oil from the gland with its bill," &c. (p. 61); since that perhaps could not be decided even by shooting the bird in the very act of pressing the gland. But it surprises me that one, who speaks of watching the actions and habits of animals so attentively and so *closely*, should never have observed proceedings, which at least strongly *countenance* the opinion he so positively condemns. Mr. Waterton has other opportunities, but most persons must confine their observations to domestic fowls and cage-birds, which has been the case with myself; who must assert, that I have *frequently* watched birds in the operation of pruning themselves, when they have inserted the bill among the rump-feathers, with a motion precisely such as if compressing the gland in order to squeeze out some of the contents, and then resumed dressing the feathers. This (seemingly) lubricating process is often repeated; and the effect is imparted to the head and neck (which Mr. Waterton considers the bird cannot reach) by a very simple contrivance. The beak, having been applied to the oil-gland, is then used (as if to discharge its contents) upon the feathers on the middle of the back, when the head and neck are rubbed over the spot (which the length and flexibility of the neck enable the bird to do), so as completely to apply every part except the forehead, the plumage of which I remember noticing in the duck to throw off the water less than that of any other part.

These observations were made by me long before I was aware of Mr. Waterton's ideas on the subject. Tame ducks (when treated with only moderate kindness) will perform their toilette with a visitor close to them; and whoever will embrace opportunities of watching the operation, cannot, I think, fail to perceive that the above description is correct, as to the *apparent* object.

Note.—It is very satisfactory to me to perceive, that the above remarks, made many years ago, are completely confirmed by (evidently) a very accurate observer, Mr. Bury, of Bonchurch, as recorded in 'The Zoologist' for May last, (Zool. 522). In addition to what I have already said, I would request persons, who have the opportunity, to watch any small cage-birds in the operation of dressing themselves, when they will see the process to be, that the bird inserts its beak among the rump-feathers, with a gentle action, precisely what one would expect for the purpose of expressing the contents of the oil-gland, and then draws the feathers, particularly the larger ones, separately through the beak, so as equally to lubricate the whole. — *Ar. Hussey; Rottingdean.*

Note on the dispersion of Seeds by Birds. On reading Mr. Jordan's remarks upon this subject (Zool. 591) I am reminded of an experiment made by my brother the autumn before last, on some acorns which he had obtained from the crop of a wood-pigeon that he had shot. Most of them were in a half digested state, but those on which the stomach had scarcely begun to act, had been so forced by the warmth and moisture as to throw out roots. He planted them, together with other acorns which had not been submitted to the same action: both kinds are now growing, the former are very much the most forward.—*I. W. G. Spicer; Esher Place, Surrey, June 12, 1844.*

[May I be allowed to suggest the *possibility* of the pigeon's having swallowed acorns which had already begun to germinate? — *E. Newman*].

Note on the arrival of Summer Birds at Bonchurch, Isle of Wight, in 1844. I herewith forward you my list of summer arrivals. It is not very complete, as I was sometimes prevented making the necessary observations. Of some regular summer visitors I have omitted all mention: viz., such as were likely to have been in the country for any time before I had opportunity of seeing them: but with respect to those included in my list, I think I may venture to affirm that they had not reached our shores twenty-four hours previous to their having been seen by me. In each case I have noted the date of the occurrence of the first individual: for some species continue to arrive by small parties for the space of ten days or a fortnight. Of some species, too, many more land here than remain to breed in our immediate neighbourhood, or, perhaps, in the island; such as the pied and yellow wagtails, the wheatear, swallow, martin, swift, willow warbler, whinchat, redstart and nightjar: while, of others, as the nightingale, black-cap, spotted fly-catcher and red-backed shrike, the same individuals appear to return to their old haunts. I know exactly where to find them, if they have arrived; and I seldom see other individuals than these, which may be called natives. I am also satisfied that birds of different species travel in company, or, at least, make their appearance simultaneously; and that this is the case, not with the first-comers only, but also with parties that arrive subsequently. For instance, I have noted in my list the simultaneous first arrival of several species; but I observed on April 16, at 6, A.M. (I was out in search of a hoopoe I had seen come in from the sea the day before), a party of about thirty female wheatears, a solitary male nightingale, and several willow-warblers, which had evidently just landed. I knew that such was the case, not only from their close proximity to the sea, and because none of them were to be seen the day previous; but also from the tired appearance of the wheatears, and

from the feeble song of both the nightingale and the willow-warblers, also an indication, I think, of weariness. Now, although this was the first appearance of the nightingale and of the willow-warbler, it was not so of the wheatear; and on May 18 a male red-backed shrike was seen perched upon the identical apple-twig he was wont to resort to last summer, and within three yards of which he reared his family: a pair of fly-catchers returned to the same orchard, where they bred last year; several swifts were flying about; and as the shades of evening drew on, I cast a wistful look to the window, in expectation of the night-jar. The east wind blew strong and cold, and I could scarcely summon resolution enough to leave my fireside; when lo! (polite bird) a female night-jar appeared, and dropped to take some quarry from very near the ground, within half a dozen yards of the window. Now again, although this was the earliest appearance of the shrike and of the night-jar, I had previously seen the fly-catcher and the swift on the 5th, an unusually early appearance, by the way, of the former. I have noted the appearance of the ring-ouzel, of the hoopoe, and of the green sandpiper; not intending thereby to imply that they are "common birds" with us, but because I thought that you, or some of the readers of 'The Zoologist,' might be interested in knowing that the first is a regular vernal and autumnal visitor; because the second is said to visit this country more frequently after Midsummer; and because, of the movements of the third, very little appears to be certainly known.

Pied Wagtail,.....	March 16	Whinchat, Redstart, Yellow	
Chiff-chaff,	30	Wagtail & Whitethroat,	April 17
Ring Ouzel,	April 5	Cuckoo,	23
Wryneck,	7	Common Sandpiper,	27
Swallow and Martin,	12	Green Sandpiper, Turtle Dove	
Hoopoe,	15	and Sedge Warbler	May 1
Nightingale, Willow-warbler,		Swift and Spotted Fly-catcher	5
and Blackcap,	16	Red-backed Shrike & Night-jar	18

Chas. A. Bury; Bonchurch, Isle of Wight, May 27, 1844.

Enquiry as to the arrival of the Swallow &c. Are not the swallow tribe unusually late this year? I heard of swallows appearing here about the 14th of April, but saw none myself until the 22nd (if then, for I am rather doubtful whether the bird was a swallow), and another on the 23rd, but the numbers increased very slowly. On the 1st of May, very early in the morning, I heard martins for the first time above my bedroom window, where they build. A solitary pond being the only temptation for these birds to pause here, they may very probably be seen earlier further inland, unless by any one who has a good opportunity of noticing their first arrival. — *Arthur Hussey; Rottingdean, May 8, 1844.*

Note on the arrival of Summer Birds at Northchapel, near Petworth, in 1844. The following are the dates of arrival of two or three of our summer birds, which I see you are desirous of noting.

Wryneck and Swallow	April 2	Nightingale and Cuckoo,	April 18
Blackcap,	4	Martin,	23

These are, I think, the earliest arrivals here this year. — *William Peachey; Northchapel, near Petworth, May 24, 1844.*

Note of the arrival of Summer Birds at Kingsbury, Middlesex, in 1844.

Wheatear, <i>Sylvia Cenanthe</i> ...	March 25	Willow-wren, <i>Sylvia Trochilus</i>	April 6
Chiffchaff, <i>S. rufa</i> ,.....	29	Blackcap, <i>Curruca atricapilla</i>	8
Wryneck, <i>Yunx Torquilla</i> , ...	April 3	Garden warbler, <i>C. hortensis</i> ,...	12

Redstart, <i>Tithys ruticilla</i> ,	April 12	Corn-crake, <i>Crex pratensis</i>	April 22
Tree pipit, <i>Anthus arboreus</i> , ...	12	Yellow wren, <i>Sylvia sibilatrix</i> ,	22
Nightingale, <i>Philom. Luscinia</i>	12	Grasshopper warbler, <i>S. Locus</i> .	23
Sedge-warbler, <i>S. Phragmitis</i> ,	17	Cuckoo, <i>Cuculus canorus</i> ,	23
Swallow, <i>Hirundo rustica</i> ,.....	17	House-martin, <i>Hirundo urbica</i> ,	27
Whitethroat, <i>Curruca cinerea</i> ,	20	Flycatcher, <i>Muscicapa grisola</i> ,	29
Sand-martin, <i>Hirundo riparia</i>	20	Common sandpiper, <i>T. hypol.</i>	29
Yellow wagtail, <i>Boarula flava</i> ,	20	Butcher-bird, <i>Lanius Collurio</i> , May	2
Whin-chat, <i>Sylvia rubetra</i> , ...	20	Swift, <i>Cypselus Apus</i> ,.....	6
Lesser whitethroat, <i>C. garrula</i> ,	22		

The above are all that occur in this neighbourhood, some of them are rare, and many that are usually very common, are this season very scarce, whether it is owing to the long continuance of the north-east wind, I do not know. We have had many of the sandpipers, terns, &c., some of which have not occurred here before, namely, the knot (*Tringa canutus*) and the sanderling (*Arenaria Calidris*), and some that are rare, viz., the wood sandpiper (*Tringla glareola*), Temminck's sandpiper (*T. Temminckii*), and the little stint (*T. minuta*), besides some that have already been noticed in 'The Zoologist' as having occurred at Kingsbury reservoir. The names are from Eyton's Catalogue.—*Fred. Bond: June 17, 1844.*

Note on the arrival of Summer Birds at Layton, Essex, in 1844. Observing in the last number of 'The Zoologist,' a request from the Editor for a notice of the time of the arrival of the common summer visitants in various parts of the country; I have noted the following. A swallow seen on the 27th of March. Chiffchaff first seen 2nd of April. Blackcap heard on the 4th of April. Redstart first seen on the 12th April. Goatsucker on the 8th of May. Wood wren 26th of April. — *H. Barclay; Layton, Essex, May, 1844.*

Note of the arrival of Summer Birds at Epping, in 1844.

Lesser pettychaps or chiffchaff, March	31	Wheatear,	April 11
Redstart,.....	31	Whitethroat,	14
Swallow,	April 2	Whinchat,	15
Blackcap,	2	Lesser whitethroat,.....	21
Willow-wren,	3	Yellow wagtail,	21
Nightingale,	5	Turtle dove,	24
Wood wren,	10	Goatsucker,.....	26
Tree pipit,	10	Swift,	30

Henry Doubleday; Epping.

Notes on the arrival of Summer Birds at Elvedon and its vicinity in 1844.

Lapwing,	Jany. 18	Sand-martin,	April 18
Black and white wagtail,	March 3	Redstart,	19
Wheatear,	22	Turtle dove,	19
Lesser pettychaps or chiffchaff,	23	Blackcap,	21
Great plover,	23	Nightingale,	22
Ringed plover.....	26	Whinchat,	22
Willow wren,	April 6	Night-jar,	28
Wryneck,	9	Landrail,.....	May 9
House martin,	9	Spotted flycatcher	10
Swallow,	13	Swift,	16
Cuckoo,	16	<i>Alfred Newton; Elvedon, May 30, 1844.</i>	

Note on the arrival of Summer Birds at Leicester, in 1844.

Wheatear arrives,	March 28	Cuckoo arrives and sings (An-	
Chiff-chaff arrives and sings,...	April 9	sty woodlands),	April 22
Willow-wren arrives and sings,	13	Redstart arrives (Dr. Noble's	
Chimney swallow arrives,	17	grounds),	22
House martin arrives,	18	Wryneck first heard in Ansty	
Yellow wagtail arrives,	18	Lordship,	22
Bank or sand martin arrives...	21	Blackcap warbler ar. and sings	22
Whitethroat arrives and sings,	22	Sedge-warbler ar. and chatters	26
Whin-chat, ditto,	22	Black swift arrives,	May 12
Tree pipit, ditto,.....	22		

Up to the time of my writing this extract, the flycatcher has not appeared in Leicestershire; at least, I have not seen it.—*James Harley; Leicester,*

Note of the arrival of Summer Birds near Derby, in 1844. Annexed is the list of the time of appearance this year of some of the summer birds of passage in this neighbourhood, agreeably to a request made on the cover of 'The Zoologist,' and which I hope will be useful.

Cuckoo,	April 10	House martin,	April 29
Yellow wagtail,	10	Landrail,.....	May 2
Swallow,	16	Red-backed shrike,.....	8
Whitethroat,	18	Spotted flycatcher,.....	13
Willow-wren,	18	Sedge-warbler,	13
Swift,	28		

Robert John Bell, Mickleover House, Derby, May 17, 1844.

Notes on the arrival of our Summer Birds of Passage at Melbourne, Co. Derby, in the spring of 1844.

- April 5. A few sand martins seen on the river Trent. Wind S.E.
6. Chiff-chaff heard on the Rookery, near Newton hall. Wind S.E.
6. Willow-warbler heard on some osiers near Weston-cliff. Wind S.E.
7. Ray's wagtail. A single male seen on a fallow. Wind E.
13. Blackcap warbler, (the males arrived). Wind N. Several weeks earlier than usual.
15. Wood-warbler. Wind N.
15. A single swallow appeared at Newton. Wind N.
16. A party of nearly twenty sand-martins seen on the Trent, a very brisk north wind blowing.
19. Several swallows appeared at Newton. Wind N.
20. Common whitethroat.
20. Blackcap warbler. The male birds generally precede the females, as far as I am able to judge, by from five to eight days. At the date here given, I noticed three females about the same patch of hedgerow, and as none had before been visible, I concluded that they had just arrived.
23. Cuckoo heard.
23. Wryneck appeared. A little bird generally seen flying in the wake of the cuckoo is the wryneck, and from its close attendance upon her, has gained the name of "cuckoo's maid" or mate. Nearly every year these two birds make their appearance at the same period. Wind W.
23. Sedge-warbler and Reed-warbler.

- April 23. A single house martin appeared. This year this bird is remarkably late in its arrival. Wind W.
23. Redstart: a single male observed. This bird is very true to the fourth week in April. Wind W.
24. Several house martins appeared. Wind E.
24. Observed a party of more than a dozen wheatears and whinchats, resting upon the top twigs of some thorn-bushes. Rarely ever are more than two birds of either species are seen here at the same time, and probably by so many being in company, they might be on their passage to some further quarters, merely using this spot as a "baiting place." The nights have been light, and favourable for the passage of birds. They always arrive here in the greatest numbers towards a full moon.
29. A pair of swifts seen. Wind E.
29. Noticed three individuals of the tree pipit.
29. Three sandpipers appeared on the Trent.
29. Grasshopper warbler heard.
- May 1. Land-rail heard. Wind E.
4. Nightingale. Wind E.

J. J. Briggs ; Melbourne, May 5, 1844.

Note on the arrival of Summer Birds near Sheffield, in 1844.

Yarrell's wagtail,	March 25	Corn crane or land-rail,.....	May 3
Willow warbler,	April 5	Whitethroat,	4
Redstart,.....	14	Lesser whitethroat,.....	8
Grasshopper warbler,.....	25	Grey flycatcher,	10
Wood warbler,	25		

J. Heppenstall ; Upperthorpe, near Sheffield, June 28, 1844.

Note on the arrival of Summer Birds at Hull, in 1844. Inclosed I beg to hand you a list of a few summer birds, with the dates on which I first noticed them in this neighbourhood, which please to insert in 'The Zoologist.' From the notes of a friend of mine in Hamburg, I observe that the swallow arrived there on the 15th of April, the swift on the 25th, and the nightingale on the 26th of the same month. He has promised to furnish me with a more extensive list next spring, which, if you should think suitable for the pages of 'The Zoologist,' I shall be happy to send.

Swallow,	April 15	Whinchat,	April 25
Redstart,.....	18	Cuckoo,	25
Willow wren,	21	Swift,	May 11
Martin,	23		

Note of the arrival of Summer Birds at Elgin, N.B., in 1844. In compliance with the request made on the cover of 'The Zoologist' for this month, I send you the following dates at which some of our summer visitants were first seen in the neighbourhood of Elgin, N.B.

Lark. The observations made this year, confirm me in the opinion already stated in 'The Zoologist,' that there is a migration here of this favourite bird.	Febry. 15	Lapwing,.....	March 2
		Oyster-catcher, arrives on the Lossie at its breeding station	12
		Ring-ouzel	22
		First flock of wild geese seen on their passage northwards.	

Others were observed at different intervals throughout the whole month: one of about 200 on the 20th. ... April	6	Cuckoo first heard,.....	April 29
		Several of the Sylviadæ arrive,	May 7
		Corn-crake first heard,	9
Wheat-ear,	8	Swift,	15

Most observations like the above are to be regarded only as negative evidence, — that none of the species were seen or heard earlier, and that the individuals then observed did not arrive later in the season. It is well to bear this in mind, as it is but seldom indeed that the migratory birds are actually seen to arrive at their summer residence. Almost invariably they have already occupied the ground, and seem as if already at home when we first observe them. Again, a few — as an advanced guard as it were — will be seen some days before the bulk of the species come. Thus, a few larks were met with on the 12th and 14th; but it was not until the 15th of February that the main body arrived. Other birds will reach particular localities, and will remain congregated there, according to the state of the weather perhaps, for weeks before they begin to disperse to their breeding stations. Thus the lapwing, although all had arrived by the first four or five days of March, did not separate until about the 19th of the month.—*G. Gordon; Birnie, by Elgin, May 28, 1844.*

Note of the departure of some of the Winter Birds of Passage from Yarmouth, in 1844

Jack snipe,.....	about May 1	Whimbrel,	May 24
Golden plover.....	6	Turnstone, bar-tailed godwit,	
Sanderling,.....	10	little stint, common stint,	26
Dotterel	20	Temminck's stint,	28
Knot and grey plover,	22	Greenshank,	29

William R. Fisher; Great Yarmouth, May 30, 1844.

Note of the breeding of some resident and migratory Birds at Yarmouth, in 1844.

Lapwing,	about April 2	Whinchat, water-rail and com-	
Blackbird, thrush, missel thrush	3	mon snipe,.....	April 18
Waterhen,	12	Reeve,.....	May 8
Meadow pipit,	16	Reed-warbler,	16
Redshank, sheildrake,	26	Cuckoo,	26

The 16th of May is, I believe, rather early for the eggs of the reed-warbler, which, about here does not generally lay till the second week in June. I dissected two cuckoos on the 29th of April, one of which was a female. The stomachs of both contained the remains of caterpillars, and in that of the female, I was rather surprised at finding a piece of flint, of considerable size. The other contained no stony substance whatever. The eggs in the female cuckoo were at this time very little enlarged.—*Id.*

Note on the capture of a Red-legged Falcon.—“*Falco rufipes.*—Last week a fine male specimen of this exceedingly rare falcon, being the fourth full-grown one on record as having been obtained in England, was shot by the gamekeeper of the Right Hon. E. R. Petre, in a wood near Selby. It now forms part of the collection of Mr. Massey Hutchinson, of that place.”—*Eastern Counties Herald, May 16, 1844.*

Anecdote of a Battle between two Kestrels. Kestrel hawks are exceedingly savage with each other. I had been standing waiting, hid in a covert, for rabbits, and had been immovable for about half an hour, near an open space, when they came out to feed. All of a sudden, from two trees near me, and about fifty yards apart, two hawks rushed simultaneously at each other, and began fighting most furiously, screaming and tumbling over and over in the air. I fired and shot them both, and they were

so firmly grappled together by their talons, that I could hardly separate them, though dead. They were two hen kestrels. What could have been the sudden cause of their rage? It was autumn, and therefore they had no nests. — *I. W. G. Spicer ; Esher Place, Surrey, May 12, 1844.*

Anecdote of a Battle between a Kestrel and a Magpie. It is very common in this neighbourhood for the kestrel to breed in a magpie's nest, generally a deserted one, but sometimes it appears in one from which they have driven the rightful owner. A few weeks ago, a man passing a tree, heard a screaming from a nest at the top. Having climbed the tree and put his hand into the nest, he seized a bird which proved to be a kestrel; and at the same instant a magpie flew out on the other side. The kestrel, it appears, had the advantage in being uppermost, and would probably have vanquished his adversary, had he not been thus unexpectedly taken. He has suffered a felon's fate, and is now suspended by his head against a wall. Whether the magpie still retains possession of his domicile, I am not aware. — *W. Peachey ; Northchapel, near Petworth, June, 1844.*

Note on the Nest of the long-horned Owl, (Strix Otus). My observations on this bird quite coincide with those detailed in an interesting paper in No. 18 (*Zool.* 562). I however once met with an instance of its nesting, not on a tree, but on the ground, in the manner of the short-horned owl, (*Strix brachyotus*). The specimen I allude to was a fine one, which I saw alive some years since in the collection of the Earl of Derby, at Knowsley, and which the man who had the care of it assured me had been taken when young, from a nest formed upon the ground, in that immediate neighbourhood.—*J. H. Gurney ; Norwich.*

Note on a young Cuckoo being kept in confinement through the Winter. We have in our possession a cuckoo taken from the nest of a wagtail last summer. When first brought to us, it was in the beautiful plumage of the young bird; but being unavoidably confined in a small cage for a few weeks, the tail and wing-feathers were much shattered, and they have never since been sufficiently renewed as to restore its powers of flight. A few ash-coloured feathers, such as characterize the adult bird, are now beginning to show themselves on the neck and back. Though fully fledged when we obtained it, it was a very helpless creature, and its clamorous cries could only be pacified by frequent meals of egg boiled hard, small pieces of raw meat, and bread and milk. It would sit on the perch, throwing its head back, with its wide orange-coloured beak open, and its wings quivering, awaiting each mouthful to be put down its throat with a quill; yet he soon became expert in catching his food, if dropped over his head. He now feeds like any other bird, from a saucer placed in his cage, and also devours with avidity small worms, caterpillars, spiders, &c., beating the larger ones from side to side while holding them in his beak, before he swallows them. As the cold weather came on, we found him very sensitive to the change of temperature, and when allowed to hop about the room, he usually found his way to the fender, where, with wings extended and head erect, he delighted to bask before the fire. At night he was placed in a basket, covered with baize. The winter being mild was probably much in his favour, for when the weather was frosty, he would sit the chief part of the day moping on his perch, which we covered with list to increase the warmth to his feet. The return of spring has now enlivened him again, and his favourite position is in a window exposed to the full warmth of the sun. In his habits he is very bold, never showing any signs of fear, but seems incapable of affection, throwing himself into an attitude of defence, and fiercely pecking at any one who attempts to touch him. His disposi-

tion is unsociable, and when a tame dove alights near him, he utters an angry chattering note, and will not rest until he has driven the intruder away. This expression of displeasure is his only note, excepting on three or four occasions, when he has been heard to utter a loud sound like the sharp bark of a little dog. — *A. F. B.*; *Layton*, May 18, 1844.

Note on the great grey Shrike. I saw an individual of this species on Lilley-hoo common, near Hitchin, the 15th of last June. The bird was very shy: it had been seen in the same locality a few weeks previously. I could not find a nest, though I suppose it must be breeding, as the season was so far advanced. A friend of mine informs me a specimen was seen near Tottenham, about the same time. — *J. Heppenstall*; *Upperthorpe, near Sheffield*, June 28, 1844.

Notes on the Carrion Crow. When cutting down grass in hay-harvest, mowers unavoidably lay bare numerous eggs of the pheasant, partridge, and landrail, which the carrion crow (ever alive to an opportunity of gratifying his appetite) most eagerly devours. Nor does his gluttony terminate with things inanimate. A friend assured me that once, whilst walking in the fields, he heard above his head a loud, shrill, shrieking cry, and looking upwards, beheld a young leveret firmly clutched in the talons of a carrion crow; nor could all the shouts and manœuvres which he made, induce the bird to relinquish his hold, but sailed off triumphantly with his prize. This bird will devour frogs, toads, and even lizards, but not unless his more usual food is scarce; and once or twice I have seen one banqueting upon stale fish. — *John Joseph Briggs*; *King's Newton, Melbourne*.

Notes on the Rook. The rook is very abundant hereabouts, and numbers are reared annually in the rookeries of Calke and Donnington, and the tall noble fir-trees of Melbourne gardens. They are observed to frequent their nesting-trees generally about the beginning of March, but do not commence building in earnest till about the 18th. Young rooks abound in May. These birds are known to desert their nesting-trees without any visible cause, after having occupied them for a very considerable number of years. They are also said never to build on any except those which are still growing (or after they have arrived at maturity), both of which circumstances may be accounted for in the following manner. Trees still growing, by shooting forth young twigs annually, afford the rooks a better means whereby their nests may be attached to them; while, on the contrary, those on the decline have their summits composed of dead, dried branches, on which the nests have little hold, and are consequently liable to be blown down by every hurricane. Carpenters and woodmen sometimes turn these habits to good account, when determining the proper age for cutting down rookery timber, deeming it quite ready for the axe when these birds forsake it for another habitation.—*Id.*

Anecdote of a pair of Missel Thrushes twice using the same Nest. A pair of missel thrushes built a nest in a low shrub in a neighbour's garden, and brought off their young; since which the hen laid four more eggs, but after sitting some time, deserted the nest, in consequence of its cracking nearly in two. It is the first instance within my knowledge of a bird laying twice in the same nest. — *Frederick Bond*; *Kingsbury* June 13, 1844.

Note on Redwings and Fieldfares. It is not an unusual practice with these birds, when a deep fall of snow takes place, or the weather increases in severity, to retire for a few weeks until it has vanished, and again return to their former haunts. Birds are greatly influenced in their manners and actions by weather and food.—*J. J. Briggs*.

Remarks upon an Enquiry respecting the Song-thrush. Mr. Jerdon acquaints us (Zool. 493), that song-thrushes leave the neighbourhood of Bonjedward towards November, and enquires whether they resort to the sea-coast, or migrate to the south of England? Long before this gentleman's note met my eye, I had conjectured that these birds visited England in the winter, sometimes in large numbers, at others in smaller ones. Occasionally they arrive earlier. My journal for 1843 contains the following observations. Oct. 25. "I imagine that with our regular complement of redwings and fieldfares, we receive every year a very considerable addition to our song thrushes, and which, as far as I am able to judge, depart with them in the spring. These birds always appear to exist in greater numbers about the fall of the leaf than at any other period, and whether the trees and hedge-rows being bare we discern more readily our constant residents, or whether a number of strange birds visit us from the north, I cannot exactly ascertain, but I think the latter."—*J. J. Briggs.*

"Curious Locality for a Nest. A small steamer, the Clarence, lies at Annan Waterfoot, and plies between it and Port Carlisle, in the way of tugging vessels. A pair of swallows built their nest last year under the sponsons of one of the paddle-wheels, not more than three feet above the water, and succeeded in bringing forth their young. There they are this summer again. During neap tides the Clarence plies every other day, and often every day. When she leaves the Waterfoot, the birds leave her, and keep on the Scotch side; and then when she returns, and is nearing Annan, the swallows invariably meet her, and accompany her to her berth."—*Hampshire Advertiser, July 13, 1844.*

Remarks upon the Skylark. The skylark is so well known, so great a favourite, and its manners and character have been so frequently detailed by every poet and lover of Nature, that little remains to be added to its history. An April day — a green field starred with daisies — a bright sunshine overhead, and the skylark carolling between earth and heaven, — are amongst our earliest and sweetest recollections. The most ordinary and casual observer of Nature, however, must sometime or other have been struck with the glad song of this "air-wandering messenger," for there is in it something so peculiarly fresh and exhilarating, that few can hear the wild joyous notes which he pours forth as he ascends higher and higher to the blue dome of heaven, without the sweetest and most pleasurable emotions being awakened. He is, moreover, one of our earliest, as well as our sweetest songsters. During the few genial days which sometimes intervene amidst weeks of frosts and snow, even on the very dawn of the opening year, he may be heard in mid-air, giving forth his welcome ditty with a vigour and melody, oftentimes never excelled or even equalled at any other season. It is commenced in January, and continued at intervals the year through. These birds appear to prefer those fields where herbage is short, thick and young, and has been closely grazed, and in addition to worms, snails and insects, sometimes feed on tender grasses. Towards October they congregate in flocks for the winter, feeding together during the day, and nestling in the warm stubbles at night. These companies frequently consist of some hundreds. Except in very severe seasons they remain here the whole year. In December, 1840, the larks and meadow pipits left us to a bird, and migrated, I suppose, further south, for immense flocks were observed passing over in that direction, which was considered (and which proved to be the case) a sure prognostic of a Laplandish winter. The lark displays considerable affection for her young; and I have frequently noticed in hay-harvest, that when a nest has been mown over and rendered exposed to view, the female, with great cunning, draws the live grasses

round the rim, and artfully conceals it from observation, never forsaking her progeny, as some birds are known to do in a similar situation, and never relaxing in her assiduous attentions to her brood. The skylark never, I believe, perches on trees, but is always seen either on earth or in air, and gives forth his song from either element.—
J. J. Briggs.

Remarks upon the Tree Pipit. The tree pipit is one of those pleasant little birds whose appearance and manners contribute so much to add interest and animation to a sylvan district. He is a summer bird of passage, arriving about the fourth week in April or the first in May, and is pretty freely distributed over this neighbourhood; indeed, as Mr. Yarrell remarks, upon the authority of Mr. Neville Wood, "it is abundant in all the sheltered and cultivated parts of Derbyshire. This bird shows a decided preference to the latter, loving the oldest enclosed grass fields, verdant meads, especially knowls and uplands. He may be observed generally about hedge-rows, perching on isolated trees, and building his nest near one, from which he can overlook his young, and give forth his pleasing song. They commence the latter immediately on their arrival, and at that period I have noticed as many as four birds upon the outer branches of the same tree, practising their agreeable manœuvres and essaying their sprightly songs. These were probably a party of individuals which had just performed their aerial voyage to this country in company, and had not separated for the breeding season. As summer advances, scarcely ever more than two birds are seen together. This bird has a constant and favourite habit of perching on the uppermost branch of a leafy tree; darting upwards into the air in a perpendicular manner for a few yards, and then, by giving his body a sudden jerk, turning himself head downwards, when, spreading out his tail and stiffening his wings, he steadily wheels his flight to the ground, sometimes to the same tree from which he rose, at others to the branching twig of a neighbouring hedge-row. He repeats these actions very frequently, and accompanies them each time with the same song, which, although perhaps neither varied nor melodious, has a wild freshness of tone and much of sprightliness of delivery to recommend it, and does not lose its interest by repetition. The bird will also sing perched on a branch, or even when procuring insects amongst the long grass, but rarely ever in ascending from the ground to a tree. He runs along the turf like a skylark, and feeds nearly upon the same food. The tree pipit remains with us the summer through, and leaves us late in the autumn. I have seen him in October for some weeks after harvest. His nest is frequently found by agricultural labourers, when mowing the grass-crops in July, and is sometimes hidden in a tuft of herbage, in a coarse pasture. It is composed of long dried grasses, a little moss, and lined with finer grasses and a few delicate fibrous roots, and is invariably placed on the ground. The eggs are four or five in number, of a greyish white, clouded and mottled with ash-grey and two shades of brown, growing darker in colour towards the broader end. Here this bird is perpetually confounded with the meadow-pipit (*Anthus pratensis*), and both are called by the common appellation of "ground-lark," probably from the fact that their nests are built upon the ground, and yet, in most respects, they are essentially different. The tree pipit is a migratory bird,—the meadow pipit is a stationary one; and whilst the former, as its name would indicate, is generally seen sporting near the summits of lofty trees, the latter confines his operations to the meadow, running amongst the herbage and taking occasional excursions into the air.—*Id.*

Note on a Hedge-sparrow's Nest. The other day I accidentally discovered the nest of a hedge-chanter (*Accentor modularis*), in a rather singular situation for this bird.

The nest in question was built among the small branches of an elm tree, which, unconnected with any hedge, stands in a straw-yard. It was placed close to the bole or trunk of the tree, at about ten feet from the ground. Exteriously, it was composed of wheat-straw, intermingled with small recently-dead twigs of the elm, to which the dried leaves were still attached. It had no other lining than the green moss commonly used by the hedge-chanter in the construction of its nest, and contained a single egg. — *Chas. Forge ; Driffield, June 5, 1844.*

Note on the occurrence of the Hoopoe in Cornwall. A pair of hoopoes have been shot this spring between the Land's End and the Logan-rock. The first was brought in on the 27th of April, and the other, the male bird, and the best British-killed specimen I have yet seen, about a week afterwards. This species is not uncommonly observed here during the spring and autumn months; probably a few individuals straggle to us during the period of their migration northerly in the spring, and upon their return southward in the autumn to their winter quarters on the continents of Asia and Africa.—*Alfred Greenwood ; Penzance.*

Correction of an Error in a previous Communication. I observe a slight error has crept into my paper on the hawfinch, which appeared in the June number (*Zool.* 569), either through my own inaccuracy or a mis-print. The date of my finding the nests of the above-named bird was *May*, not *March* as stated, and which I think it is rather important to correct.—*J. G. Barclay ; Walthamstow, Essex, June 10, 1844.*

Note on the habits of a Pigeon &c. Various interesting communications have appeared in 'The Zoologist' on the peculiar habit of flying to and pecking at windows, observed in the grey wagtail (*Motacilla Boarula*, *Zool.* 136, 230, 358, 566), and by Mr. Hardy (*Id.* 568), the same habit has been noticed in the domestic pigeon. I coincide with the latter writer, and believe the bird's reflected image to be the object of attraction, especially as I have witnessed a male "mule" (the produce of the canary-bird and goldfinch) singing a song of defiance to an imaginary rival, his own image reflected from a mirror. A friend of mine, on whose veracity I have the most implicit reliance, informs me that by placing a mirror before an old male mule, in his possession, he could at any time be induced to sing, beginning with a gentle cadence, and gradually rising as he became excited, at length he poured forth his notes with rapidity and vehemence, and if not prevented by a timely removal of the mirror, dashed madly forward to the attack of his imaginary rival! That his song was not one of love, was proved by introducing a bird of the opposite sex into the cage; for after singing his usual song, he attacked it with fury, and would soon have destroyed it, had it not been removed. The same party kept a redbreast in confinement for nine months. On placing a mirror near its cage, it immediately expressed the recognition of its fellow by a particular low and sweet note, and would give vent to its satisfaction in a loud song. In fine weather, this bird was generally placed outside, and daily carolled his gay notes to his own image reflected from the window, especially during the limited time that the sun shone upon the glass. Perhaps he then saw his fair form with more than usual clearness and precision; imagining he saw a rival, or, perchance, a mate, his song might be one of defiance, of emulation, or of love. The habit of cage-birds singing when a mirror is placed before them, is one of common occurrence, and well known to bird-fanciers, and can easily be verified by any person curious or interested enough to make the experiment.—*T. J. Bold ; 24, Cloth-market, Newcastle-on-Tyne.*

Notes on the Ring-dove. By the Rev. J. C. ATKINSON, B.A.

FEW among the more common of our feathered friends meet with more of my admiration than the ringdove. Of considerable size and great power of wing, its flight is vigorous, easy and rapid; while the risings and fallings of the male during the season of incubation, add to it a character of peculiar gracefulness. His plumage also, if not strictly beautiful, is certainly handsome; and from the contrast of the white collar with the prevailing colour of the rest of the plumage, and the beauty of the glossy and varying hues of the neck, peculiar to the pigeon tribe, it is singularly pleasing. And when he is at rest, there is a sort of dignity in his attitude, a repose, and — if I may so call it — self-possession, which by no means detracts from the favourable impression already formed with respect to him. You see him most at disadvantage when on the ground; for his very short legs do not fit him for graceful progression. But notwithstanding this, I regard him with great admiration and not a little interest; which, if not originating in, is at least greatly increased by, the recollection of former pets, one or two of which renounced their natural shyness and love of unconstrained liberty to a remarkable degree.

A schoolfellow had taken a nest of young ringdoves, but succeeded in rearing one only. This, on his going home for the holidays, was made over to me; being then about five weeks old, or rather better, and nearly full-fledged.

I took him home with great care, and never suffered any one to feed him but myself; and never fed him without accompanying the meal with a certain whistled call: I also accustomed him to take his food from my mouth, or perched on my shoulder. I continued this process for several days; until, in short, we were on the best and most intimate terms possible: and it is more than likely that his earlier reminiscences aided me not a little; for the greater part of his time before he became my property, was spent in the corner of a play-ground tenanted by numerous noisy boys, none of whom were particularly considerate of the poor ring-dove's feelings of timidity and shyness. Until I had succeeded in rendering him quite familiar, I did not venture on taking him out of doors; and when I did so, it was not without a measure of caution. I soon found, however, that he had no intention of flying away; and after a day or two I left him to amuse himself during the day-time as he pleased: for we were then living in a very retired district, and I had no fear of his meeting with any mishap.

When the evening approached I went to seek for him, and proceeded to call him by whistling the call I used when I fed him. He instantly responded, and flew to my shoulder or head, and was taken in for the night. Occasionally I neglected to do so until long after his usual roosting hour; but he never once refused to come when I called him. At last I left him out all night. He then roosted in some fir-trees about a stone's cast from the house. No sooner did I make my appearance in the garden in the morning, than I was sure to see him come flying to me for his breakfast; and at any time in the day, if I omitted to feed him at the stated intervals, he came to remind me of my neglect as soon as he saw me. Soon after he was regularly turned out in the day-time, I had taken him to the bed of peas, and there indulged him with the green peas, of which he was particularly fond: but he did not like the trouble of shelling them for himself; and if he saw me in that part of the garden and was at all hungry, he generally flew first to me and then to the peas: if I did not follow him at once but continued where I was, he soon returned, and after waiting a little, presently went back again. This I always understood as an invitation to go and open the pea-pods for him; and it was one I always acceded to, although sometimes I caused it to be repeated two or three times. When he flew to me he generally alighted on my shoulder, sometimes on my head; in the former case, if hungry, he sought my mouth with his bill, which he endeavoured to insert in search of peas, being not forgetful of his early habits.

He was now as nearly in a state of nature as possible; with abundance of his natural food within his reach, uncontrolled as far as liberty was concerned, and with numerous birds of his own species in the neighbourhood. There was nothing to prevent his making off if he chose: yet he never showed the least inclination to do so. He flew to me as fearlessly as ever, to the very last day of my stay at home: if he saw me lying on the grass, he came and nestled on my breast: I walked about the garden, and in and out of the house, with him on my shoulder; and though he never favoured any of my friends with the same symptoms of confidence and attachment as he did myself, he was under no kind of fear of them. At last, "Black Monday" came round again. I loved my bird too well to confine him; still less could I think of taking him back to school with me: so I left him to do as he liked. For the first three or four days of my absence he continued to keep about the house; he seemed to be looking for something he had lost; once, and once only, he flew on to my father's shoulder, but seemed instantly to be aware that it was not his well-

loved master ; and stayed no longer than to find it out. He was seen about the garden for long afterwards, but came no more near any of my relatives.*

Some of his habits were sufficiently amusing. For instance, if a dead bird were shown to him, his ire was instantly roused, and he attacked it with the greatest fierceness. A rough harsh note was first emitted, and then followed a shower of pecks and blows of the wing upon the bird, the feathers of which were dispersed in all directions. So determined was the onset, that the bird was half plucked in a very short time. If, while sleeping, — previous, that is, to his being left out all night, — I wakened him unceremoniously, his anger was expressed much in the same way ; the rough coo, and blow with his wing, were instantly given. When he spent the night in the house, the top of the kitchen door, or else one of my old caps (which lay upon a table or the mangle) was his resting-place. To the latter he was very partial.

*Since writing the above I have met with the following account in Jesse's 'Scenes and Tales of Country Life.' "Every sportsman knows that the common wood-pigeon (the ringdove) is one of the shyest birds we have, and so wild that it is very difficult indeed to get within shot of one. This wild bird, however, has been known to lay aside its usual habits. In the spring of 1839, some village boys brought two young wood-pigeons, taken from the nest, to the parsonage house of a clergyman in Gloucestershire, from whom I received the following anecdote : — 'They were bought from the boys merely to save their lives, and sent to an old woman near the parsonage to be bred up. She took great care of them, feeding them with peas, of which they are very fond. One of them died, but the other grew up, and was a fine bird. Its wings had not been cut, and as soon as it could fly, it was set at liberty. Such, however, was the effect of the kindness it had received, that it would never quite leave the place. It would fly to great distances, and even associate with others of its own kind ; but it never failed to come to the house twice a day to be fed. The peas were placed for it in the kitchen-window. If the window was shut, it would tap with its beak till it was opened, then come in, eat its meal, and then fly off again. If by any accident it could not then gain admittance, it would wait somewhere near till the cook came out, when it would pitch on her shoulder, and go with her into the kitchen. What made this more extraordinary was, that the cook had not bred the bird up, and the old woman's cottage was at a little distance ; but as she had no peas left, it came to the parsonage to be fed. This went on for some time ; but the poor bird having lost its fear of man, was therefore exposed to constant danger from those who did not know it. It experienced the fate of most pets. A stranger saw it quietly sitting on a tree, and shot it, to the great regret of all its former friends.'" I was much pleased on reading this interesting account, and could not resist the temptation of appending it to my own. I could have wished to know whether it met with its untimely fate previous to the commencement of the breeding season : but I conclude it did. My pigeon seems rather to have been influenced by attachment to an individual, than by want of food or general fearlessness of man.

I have never had another ringdove so thoroughly tame as this one, though I have succeeded in familiarizing several; the fact is, I never took so much trouble and pains with any other. And with respect to the individual in question, my firm impression is, that had I stayed at home and continued my attentions to him, he would have remained with me until the breeding season; at the arrival of which time he might probably have left me: but even then, I should have expected him to pay me frequent visits for food; and most likely to have nested in the immediate vicinity of the house.

It is well known that few birds are wilder and more distrustful than the ringdove in autumn and winter; but that at the approach of spring they throw off much of their wildness, and become comparatively familiar and confiding. And it appears to me somewhat remarkable, that the strongest case of this change in their habits I ever heard of, has since occurred in the garden about which my tame ringdove spent his time. A pair of these birds nested in a shrub about twenty yards from the front of the house. Under the shrub was placed a garden-chair, which was usually occupied several hours in the day. Reading aloud was frequently resorted to by the parties occupying the chair; and three or four children were pursuing their sports all round, and, like other children, did not always pursue them in "solemn silence." But this was not all. The nest was not six feet from the ground; and visitors were often introduced to the sitting bird; who, seeming to care nothing for the close approximation of human eyes to her own, sat on in spite of all, and in due time hatched. This regardlessness of the eye of man has always seemed to me very strange. Look stedfastly at your favourite dog, and he turns away his eye in apparent uneasiness, and will not look at you, even though you call him, while he suspects you are still gazing at him. The wild-fowl shooter will tell you to be careful not to look at the approaching flight of wild ducks; for they will "see your eye," and turn another way. Walk under the tree in your garden where the ringdove is sitting; take no notice of her and she will take none of you. Come back again, and look stedfastly at her as you pass, and in nineteen cases out of twenty she will fly off. Yet in the case I am describing, the visitor's eye was often not more than two feet from the bird, and unless it was long fixed upon her, she never moved. During the time of incubation, the male—or, that bird which was not sitting—for I believe the male relieves the female for a space of seven or eight hours every day,—the domestic pigeon certainly does) was generally to be seen sitting in an ash tree at the bottom of the garden. A similar instance of extraordinary con-

fidence was exhibited, and probably by the same birds, in the following spring.

Some people, we all know, adopt very singular theories on certain subjects; and so long as they are theories merely, or are quite innocent, or their upholders do not seek to enforce their adoption upon other people; I do not see why the theorists should be disturbed in their belief. And on this ground I claim indulgence, when I assert my belief that these very familiar and fearless ringdoves were either the direct descendants of my old pet, or that one of them was the identical pet in question. I make a point of believing this, for it is to me a satisfactory belief. And it is not, after all, a very singular theory: although it must be confessed that a period of five or six years intervened between the departure of my bird and the occurrence of this instance of fearless tameness.

The ringdove began to assume the white ring when about nine weeks old; and a space of nearly a fortnight elapsed before the change was completed. There is, I believe no perceptible difference, either in size or plumage, between the male and female; but the undulating flight of the male in spring, is a sure means of distinction. At this time they not only are less wild in the neighbourhood of our houses and gardens, but also in the fields and roads. Here there are often belts of plantation along the road-side, and as I walk along, the ringdoves allow me to approach within half gunshot, and then fly forwards perhaps thirty or forty yards only, and again suffer me to come very near them; and so on.

These birds are greatly on the increase in various parts of the kingdom; owing principally, I think, to the large extent of recent fir-plantations. In Norfolk (and here the plantations are chiefly of fir) I have seen them in flocks of many hundreds, where some years ago they were a comparatively rare bird. It is the same in this district, except that they are not nearly so numerous as in that last mentioned. They resort to the same tree or trees for several weeks in succession, to roost; and usually begin to come in an hour at least before sunset. This habit leads to their being shot in considerable quantities. The sportsman marks their roosting-place, and betakes himself to its vicinity before their return has commenced. He is thus pretty sure to get several shots, as they seldom come in (unless suddenly disturbed in the fields) in a body, but drop in by twos and threes; and those that have been frightened by a shot, generally come back again in the course of half an hour. At other times, when their roosting-place is a narrow belt of plantation, two persons go and "double" the belt,

just at the close of the day, or later if there be a good moon, and shoot them as they fly out.

Where they are numerous they inflict considerable loss upon the farmer, visiting his pea-fields and seed tares with great assiduity; and each bird will eat not less than two ounces of peas daily. It is worthy of observation, that when invading a pea-field, they keep very much together: there are, for the most part, no detached parties, but the last comers join those already in occupation. Does this proceed from their social disposition;—their certainty of finding what they want where they see their friends employed;—or that sense of safety increased by numbers which seems to actuate so many birds and animals? Their flocking in autumn and winter, as does that of larks and other gregarious birds, proceeds mainly, of course, from the first-mentioned source; though I think it is certain that other motives also influence them. But I doubt if these minor assemblages, when they have their young to attend to, can be similarly accounted for; and should be more inclined to assign the second cause as probably the principal one; and particularly when they often go to the same spot in the pea-field, day after day, for two or three days together.

“This bird does not always confine itself to woods, for I knew a pair breed, for several years, at the edge of a corn-field, in a large solitary hawthorn,—overhanging the river Ayr,—although there was a wood of considerable extent on the opposite bank. This, however, must be considered rather an exception to the general rule; for it is most generally found in large woods.”—So says Professor Rennie. It is rather mortifying to discover that nineteen out of every twenty ring-doves with whom I have been on visiting terms in spring and summer have been decided “exceptions to the general rule;” very excentric birds, in fact, and not, as I had flattered myself, dounce, steady-going, respectable creatures, whose acquaintance might be esteemed a credit. Yet such is the fact, however humiliating it may be to tell it. I have distinct recollections of some dozens of ringdoves’ nests; and could go to the spots, in various parts of the country, wherein I found them; and yet I should hardly go at all into a wood on such an errand. Pollard trees in hedge-rows, ivied trees,—even by the road side,—thick shrubs in gardens—isolated or standing amidst others,—fir-trees and thorn-bushes,—the latter even on the outside of a wood, or standing alone in a field or park,—these and such like places are selected for the situation of the nest. It may be, and most likely is the case, that the discrepancy between the Professor’s statement and my experience may be accounted for on the ground of difference of locality. Until

recently, I have always lived in a country abounding with wood, and divided by hedgerows containing an unlimited number of pollard trees intermixed with the others. The ringdoves inhabit the woods in late autumn and winter, in large flocks, which, at the approach of the breeding season, break up into separate pairs, and furnish tenants to trees in half the hedgerows in the country; often to the gardens. Now, in a country of this kind, they might suit themselves: if they preferred the wood, there it was; if a pollard tree or a thick bush in a hedge, they needed not go far for it. But if a country or district afford no such choice,—why then they must perforce be contented with what they can get; and on the principle of “If we can’t do as we *like* we must do as we *can* ;” or this, “Any port in a storm ;”—breed in the woods or plantations if there be no hedgerows with “charming” trees for their nuptial abode in them. This is very much the case in those parts of Norfolk to which I have already referred. To a great degree it is the case here; and yet even here, where a pollard is unknown, and a tree of thirty years old, *out* of a plantation—save in the vicinity of some gentleman’s residence—is a singular rarity, they do not confine themselves to the plantations to breed. I have found their nests in the shrubs of the garden, in a thorn-hedge overhanging a path, in a thorn-bush quite close to a plantation, &c. &c. On the whole, then, I conclude that Mr. Rennie might have suffered Montagu’s statement on the subject of the ringdove’s nesting-places, to stand uncontradicted by the quotation I have given above; a quotation, too, from his (the Professor’s) own book,—‘The Architecture of Birds.’

It is a common belief in Essex, that if you touch, still more, if you breathe on, the ringdove’s eggs, she will forsake them. It is, however, totally without foundation: for I remember, when a school-boy, testing its truth,—I being much inclined to scepticism on the subject,—by putting the eggs into my mouth and then replacing them. I need hardly say she covered them again. I have seen it somewhere stated that this bird occasionally lays three eggs: I have never met with an instance of the kind. Sometimes, though very rarely, I have found a nest with but one egg in it. The young, when discovered in the nest, often attempt, as it would seem, to frighten the intruder, by swelling up their neck, and making a sort of half puff half hissing sound. These gestures and sounds have been known to frighten away a domestic pigeon, under which a pair of ringdove’s eggs had been substituted for her own. She was so alarmed, it is supposed, by their uncouth gestures and sounds, that she left them to starve. And

yet the young common or domestic pigeon has habits of a very similar kind, when molested, that is, by man;—to their parents of course they would not behave in so undutiful a manner. The fact must be, I apprehend, that in the case of the ringdoves hatched under a common pigeon, instinct was so strong as to reveal to them the circumstance that the bird which was tending them was not in reality their parent, and might, therefore, be their enemy.

J. C. ATKINSON.

Hutton, Berwick-on-Tweed.

Anecdote of a Hen periodically changing the Colour of her Plumage. My friend Mr. Thurnall has a hen which regularly changes her colour with every moult; one moult pure white, and the next jet black. How is this to be accounted for? — *Frederick Bond; Kingsbury, June 13, 1844.*

Anecdote of a Pheasant. In the breeding-season of 1843, a cock pheasant and two hens had taken possession of a hedge-row at the bottom of a field before the house of my bailiff. The hens were sitting, and the cock was strutting about during the day, but would occasionally venture near the house. One day a cat from the house was stealing down the field in the direction of the hedge-row, the cock pheasant perceiving her instantly flew at her, attacked her and fairly drove her back. The pheasant had not been reared there, and I imagine was bred in a state of nature. — *William Peachey; Petworth.*

The Moa, or Gigantic Bird of New Zealand. “From a letter just received from Mr. Walter Mantell, of Wellington (son of Dr. Mantell), there seems still to be some doubt as to the extinction of this colossal race of bipeds. It appears that an emigrant from Sydney, lately settled at Piraki, or Waikawaite, has fallen in with a tribe of natives, previously unknown to the Europeans, and from them he has obtained information as to the existence of birds from ten to fourteen feet high, in the interior of the island Te Wai Ponama. Mr. Mantell proceeds to remark that ‘our comparative anatomist, Dr. Knox, and myself, much regret that no copy of Prof. Owen’s paper on the *Dinornis* is in this colony: but the account in the ‘*Penny Cyclopaedia*,’ Art. Unau, has interested us greatly. I long ago directed the attention of M. Sturm (a German naturalist, residing at the East Cape) to this subject, and he has promised to procure me a large collection of the Moa’s bones from the bed of the Wairoa, a river flowing into Hawke’s Bay, when the stream shall be sufficiently lessened by the summer heat. Near Taranaki, to the north of Cape Egmont, the bones are said to occur in large quantities, on the site of an ancient and deserted Pa.’” — *Athenæum, July 6, 1844.*

Note on a Woodcock. A young woodcock, half grown, was taken in Wharnccliffe wood, near this place, a few weeks since.—*John Heppenstall; Uppertorpe, near Sheffield, June 28, 1844.*

Notes on the Moorhen. I venture to trouble you with the following remarks, which have occurred to me in consequence of reading in the April number of ‘*The Zoologist*,’ under the head of “Notes on the Moorhen,” some observations with reference to the power which the moorhen possesses of “submergence,” and of keeping its body, and all but its beak or head, concealed under water, when alarmed by the approach of

an enemy. It is stated by your correspondent (Zool. 498), that "the feet are the instruments by which they are enabled to remain in this state of submergence;" and that "they lay hold of some weed or flag, and by the purchase so obtained, resist the tendency of the water to buoy up their body." But as this often happens in deep water, and where there are no weeds or flags whatever near the surface, to enable them to do so; this explanation appears far from being satisfactory, and more particularly so, as the same power of "submergence" is possessed by all the duck and diver tribes, the formation of whose feet totally prevents their acquiring any purchase or hold upon weeds, even if there were any within their reach. But I venture to suggest that the power of submergence is derived from another power possessed by the various classes of waterfowl, as well as other birds; namely, that of being able to expel at pleasure the air within the various cavities of the body, and which, when the air-cells are filled with air, is the cause of the buoyancy and resistance to the water of the former class, and enables them to float without any effort or exertion to themselves. Every observer of the habits of birds must no doubt have been frequently struck by seeing a wild duck, while endeavouring to conceal her young brood from the obtrusive gaze of any passing stranger, and at the same time of avoiding detection herself, gradually sink and lower her before plump and full looking body, to very nearly a level with the water, leaving only the head and a small portion of the upper part of the body visible above the surface; and thus partially concealed from view, the old duck will coast along the margin of the pool, and turning to account every root or other projection likely to afford shelter, will silently place herself in a position of safety. And when thus withdrawn from observation, and surrounded with her little timid progeny, from time to time she gently admonishes them that there is danger abroad, until she conceives that it has passed away, and all is safe again. If, during this period of cautious concealment, the old duck is carefully watched; or when it happens that a teal, wigeon, or any other kind of wild fowl, which has been winged and has dived, on raising its head only above the surface of the water, where it will frequently remain for a long time so submerged;—as soon as the apparent danger is removed, they will then be seen gradually to resume their former perfect size, and without the slightest effort, will raise themselves to their original height and fullness on the surface of the water; and as easily and speedily depress and sink the body if they again perceive the former cause of fear is renewed. Immediately also upon a tame duck, or any other water bird, where there exists no cause of alarm, arising to the top of the water after diving, it does not instantly assume its full plump form, but some seconds intervene before it is able to acquire it completely. And I cannot but feel assured, from having often watched the various kinds of golden eye, and others of the diver as well as of the duck tribe, that having previously expelled the air within the body, they are thereby the better enabled, with the aid of some positive exertion also on their parts, to dive and keep under water; and that upon their again returning to the surface, some little time is necessary before the various air-cells are sufficiently refilled by the freely restored respiration to give the bird its original fullness and height above the water. I have never had the opportunity of seeing this exemplified in swans and geese, but judging from a similar effect in cormorants, I have little doubt the same result would be perceived in all other birds whose habit it is to dive. I apprehend that without this power of ejecting or getting rid of the buoyancy caused by the air within the body of all descriptions of birds,—that a hawk, or any other bird, desirous of making a swoop, or sudden downward descent, would not be able to effect its object so easily, unless the internal air was first expelled

in addition to the force derived from volition which it also possesses. Whether the body of a bird when dead, a hawk or a lark for instance, if exhausted of all internal air by an air-pump, would then fall with the same or a less apparent degree of velocity, from any given height, as the same bird in its natural state of existence, with all its powers of volition would do, or what would be the difference in the quickness of its descent, might be an experiment worth trying, that would perhaps tend to explain and elucidate more fully the circumstances I have ventured to suggest, with reference to the means by which water-fowl are enabled to dive or submerge themselves at pleasure, and lead to more important reflections as regards the habits and powers which birds possess.—*W. H. S. ; Hatton Hall, Salop., April 28, 1844.*

Note on the Water-rail. I observe in 'The Zoologist' for this month (Zool. 575) a note by Mr. Hussey on the water-rail, in which he mentions that Mr. Yarrell speaks doubtfully as to whether water-rails remain in England during the winter. Perhaps you would be good enough to add, under *Rallus aquaticus*, in my list of Kentish birds (Zool. 625) the following confirmation of Mr. Hussey's opinion, that they do remain here all the winter. While walking by a small stream in this neighbourhood, in the early part of last December, a retriever which accompanied me caught in an old hedge a small water-rail, which, with considerable satisfaction, she laid at my feet. A few weeks after, near the same spot, she caught the female. I am quite of opinion that these birds are resident here all the winter. In fact, from finding them at different times, *during the winter*, I cannot doubt that some, at least, remain throughout the year, in England.—*J. Pemberton Bartlett ; Kingston Rectory.*

Note on the Water-rail. I am surprised that one of your correspondents (Zool. 149) should say that he knew of but one instance of the water-rail breeding in this country, for the nests of these birds are not very unfrequent about this place, and I have eggs taken from a neighbouring moor now in my possession. Nevertheless, many of these birds very possibly may depart in the summer, and probably do, as I think they are much less common at that time than in the winter. As to the bird found at the chain-pier at Brighton, I should think it most likely came from the south; because, in the first place (being a bird that, if it migrates at all, comes here in the winter), it would naturally go north in the summer; and in the second place, I should think it would not be so much exhausted by passing over the land, where it might settle when inclined, as to be rendered incapable of flight: and so on the whole I give it as my opinion that it came from the south, and was proceeding on its northern migration on the approach of spring.—*P. L. Sclater ; Hoddington, Odiham, Hampshire.*

Note on the Nidification of Swans. We are informed upon undoubted authority, that the swans (which usually build upon the ground) have this year invariably raised their nests to the height of two yards and upwards; a similar fact is observable with respect to water-hens. This is by some persons deemed an omen of a very deep summer flood.—*Nottingham Journal.*

Enquiry respecting the manner in which the newly-hatched Wild Duck is conveyed to the Water. "They who write on Natural History," says White of Selborne, "cannot too frequently advert to instinct, that wonderful limited faculty, which, in some instances, raises the brute creation as it were above reason, and in others leaves them so far below it." Having then the sentiment of good old White in view, I would respectfully invite the attention of the numerous out-door observers who read 'The Zoologist,' to some undescribed traits in the private life and manners of the wild duck. It cannot, I imagine, be denied, that that species of water-fowl not unfrequently selects

a pollard ash, or willow, or other forest tree, where shelter and security is afforded for nestling work. Occurrences of the kind are by no means uncommon; yet by some ornithologists the nestling of the wild duck in such spots is denominated an occasional departure from the general and more obviously marked habits of the species. Montagu, Selby, Waterton, and other ornithologists for aught I know, who have written on incubation, have been very careful to inform their readers of the wild duck's vagrancy while the important work of reproduction is being carried on. For some time past I have paid a little attention to the manners and private life of several species of bird belonging to the Fauna of this inland district; and am desirous, through the medium of 'The Zoologist,' to be put in possession of some features in the wild duck's history, which appear to have escaped the notice and observation of those estimable men who have "Essayed" and written so well on the subject. There are, it must be granted I know, knotty points, and gnarled stops, and notches, with many gaps and breaks, even now, in the history of many species of British birds. Notwithstanding the manifest light which modern science has flung around us, much remains in store for the enquirers of the present day and all future time to investigate. Perhaps the best monograph on "the habits of the mallard," is that of the kind-hearted squire of Walton Hall; but it is remarkable and "passing strange," to me at least, that Mr. Waterton, in his essay on that species of bird, should have left it incomplete. Why did he fail to discover to us the method—the *modus operandi*—adopted by the parent duck during the season of incubation; and inform those of his readers especially the more inquisitive kind, how and by what artful stratagem the young ducks, when ready to leave the nest, were conveyed or transported from their abode in the tree, or the ivy in the old ruin, to the element for whose surface Infinite Wisdom designed and fitted them? Pleasantly therefore as the "Prince of out-door naturalists" has written, and he has written well of and about the haunts and habits of the mallard, drawing his admirers and readers in turn aside, to peruse for themselves a leaf plucked by "the Wanderer's" own hand from Nature's fulness, which the biographers of the birds of Britain had hitherto failed to supply with fidelity and truth. Yet with all this, the sun-browned traveller stops short, as though his pen failed in description, and faltered to delineate the whole; he bids his courteous readers look to the end—to Nature, for solution. No one, I am convinced, can admire the writings and the many excellencies of the kind Wanderer more than I do. Indeed I know no encomium more felicitous and just than that which the Welsh bard Mr. Dovaston some years since paid the Prince, when he designated him "the intrepid traveller, the accurate and almost unerring observer, the benevolent protector, the classic scholar and animated writer." May I be allowed to invite him to give the finishing stroke and last touch to his "Habits of the Mallard"? Mr. Selby, the Northumbrian ornithologist, in his 'Illustrations,' is a little more to the point, but evades description when he should be didactic and explicit. After describing the nest of the wild duck, our northern friend says several instances have been recorded where the species have deposited their eggs in the fork of a large tree, or in some deserted nest. Such an instance occurred within my knowledge, and near my own residence, where a wild duck laid her eggs in the old nest of a crow, at least thirty feet from the ground. At this elevation she hatched her young, and, as none of them were found dead beneath the tree, it is PRESUMED (mark the expression, 'tis a supposed case!) she CARRIED them safely to the ground in her bill, a mode of conveyance known to be frequently adopted by the eider duck. For my own part I am not acquainted with the private habits and history of the eider duck,

nor do I know any British naturalist, who, having observed the *canine-ornithologico* method such a bird "adopted" when the young are excluded from the egg, and ready to take the water; but reasoning from analogy, which is unsound, and never ought to be abided by, by the man of the fields, desirous of eliciting truth from the objects he seeks to investigate; methinks there is more matter of fact in Col. Montagu's account of a "nest of the wild duck" in his time "being found in the head of a pollard willow, impending the water, from whence the young might readily drop unhurt into their natural element," than all the *billing* methods which Selby refers to, and which he *presumes* the wild duck adopts to secure her offspring from destruction. We ought not to *presume*, in cases like these, but to ascertain whether the duck carries her offspring in her bill, in the season already referred to. If she does, it really occurs to me that such a phenomenon is barely known to Ornithology. If she does not, why then 'tis high time, methinks, to have that part in the history of the species expunged from our ornithological literature.—James Hardy; Leicester.

*Notice of Waterton's Essays.**

THE name of Waterton is so universally received as a guarantee for excellence in all that relates to out-door Natural History, that we may without hesitation excuse ourselves from any eulogium, since, however well merited, it would be considered trite and unnecessary. There is, however, one subject connected with the present publication, that must not be allowed to pass unnoticed;—we allude to its presentation to Mrs. Loudon. And sincerely do we hope that every reader of 'The Zoologist' will lend a helping hand towards furthering the "Wanderer's" benevolent design; and not merely purchase, but recommend, the present volume of Essays, in the hope of serving a lady whose husband, for so many years, stood prominently forward as an energetic, talented, and persevering labourer in all branches of Natural History. Mr. Waterton's words are these:—

"The volume which I now present to an indulgent public, is an unsolicited donation to the widow of my poor departed friend Mr. Loudon, whose vast labours in the cause of Science have insured to him an imperishable reputation. If this trifling present on my part shall be the medium of conveying one single drop of balm to the wound, which it has pleased Heaven lately to inflict on the heart of that excellent lady, my time will have been well employed, and my endeavours amply requited."—Preface, p. iv.

The volume commences with a continuation of the author's autobiography, the former part of which will be fresh in the memory of most

* Essays on Natural History, chiefly Ornithology. By Charles Waterton, Esq. Author of 'Wanderings in South America.' Second Series: with a continuation of the Autobiography of the Author. London: Printed for Longman, Brown, Green, and Longmans, Paternoster Row. 1844.

of our readers. It abounds in description of the most graphic kind, but treats principally of matters which have slender connexion with Natural History. We select a passage on pig-killing.

“As you enter Rome at the Porta del Popolo a little on your right, is the great slaughter-house, with a fine stream of water running through it. It is probably inferior to none in Italy for an extensive plan, and for judicious arrangements. Here some seven or eight hundred pigs are killed on every Friday during the winter season. Nothing can exceed the dexterity with which they are despatched. About thirty of these large and fat black pigs are driven into a commodious pen, followed by three or four men, each with a sharp skewer in his hand, bent at one end, in order that it may be used with advantage. On entering the pen these performers, who put you vastly in mind of assassins, make a rush at the hogs, each seizing one by the leg, amid a general yell of horror on the part of the victims. Whilst the hog and the man are struggling on the ground, the latter with the rapidity of thought, pushes his skewer betwixt the fore leg and the body, quite into the heart, and there gives it a turn or two. The pig can rise no more, but screams for a minute or so, and then expires. This process is continued till they are all despatched, the brutes sometimes rolling over the butchers, and sometimes the butchers over the brutes, with a yelling enough to stun one’s ears. In the mean time the screams become fainter and fainter, and then all is silence on the death of the last pig. A cart is in attendance; the carcasses are lifted into it, and it proceeds through the street, leaving one or more dead hogs at the doors of the different pork shops. No blood appears outwardly, nor is the internal hemorrhage prejudicial to the meat, for Rome cannot be surpassed in the flavour of her bacon, or in the soundness of her hams.”—p. lxix.

The following interview with Italian buffaloes is highly characteristic of the writer.

“As we were resting our horses at a little inn on the side of the road, I had a fine opportunity of getting close to a very large herd of Italian buffaloes. These wild-looking animals have got a bad name for supposed ferocity, and when I expressed my determination to approach them, I was warned by the Italians not to do so, as the buffaloes were wicked brutes, and would gore me to death. Having singled out a tree or two of easy ascent where the herd was grazing, I advanced close up to it, calculating that one or other of the trees would be a protection to me, in case the brutes should prove unruly. They all ceased eating, and stared at me as though they had never seen a man before. Upon this, I immediately threw my body, arms, and legs, into all kinds of antic movements, grumbling loudly at the same time; and the whole herd, bulls, cows, and calves, took off, as fast as ever they could pelt, leaving me to return sound and whole to the inn, with a hearty laugh against the Italians.”—p. lxxvi.

The only remaining passage selected from the Autobiography, is reprinted for two reasons: the first of these is that it exhibits a degree of candour which, in our opinion, is the great and unerring test of a true lover of Natural History; and the second is, that we may show our readers the estimation in which ‘The Zoologist’ is held by one whose good word is of no little value.

“An extensive preserve for every kind of British bird which may choose to take advantage of it, has afforded me excellent opportunities of making ornithological notes with tolerable exactness, and the observations of former years have occasionally been corrected by others in after-times. Still I recommend that what I have given to the public on the nature of our birds, should be received with a certain degree of reservation, as their habits are apt to vary in proportion as location varies. Thus, the windhover, or kestrel, at this place, abstains from killing birds during its abode amongst us; but, after it has left us on the approach of autumn, it is known to feed upon them during the winter months, as Mr. Bury has satisfactorily proved in the 17th number of that clever and instructive periodical the *Zoologist*.”—p. cxxxviii.

We now proceed to the Essays, two of which, ‘The Cayman,’ and the ‘Combat between two Hares,’ have appeared in our own pages; some of the others we have also seen. We select three passages which will be sure to interest our readers.

“*The Civetta, or little Italian Owl.*”

“This diminutive rover of the night is much prized by the gardeners of Italy for its uncommon ability in destroying insects, snails, slugs, reptiles, and mice. There is scarcely an out-house in the gardens and vineyards of that country which is not tenanted by the civetta. It is often brought up tame from the nest; and in the month of September is sold for a dollar to sportsmen, who take it with them in their excursions through the country, to look for larks and other small birds. Perched on the top of a pole, it attracts their notice and draws them within the fatal range of gunshot by its most singular gestures; for, standing bolt upright, it curtsies incessantly, with its head somewhat inclined forwards, whilst it keeps its eyes fixed on the approaching object. This odd movement is peculiar to the civetta alone. By it, the birds of the neighbourhood are decoyed to their destruction. Hence its value to the ranging sportsman. Often and anon, as the inhabitants of Rome pass through the bird-market at the Pantheon, they stop, and look, and laugh at this pretty little captive owl, whilst it is performing its ridiculous gesticulations.

“Its flesh is relished by the natives of Italy. You may see the civetta, plucked and ready trussed for the spit, on the same stall at which hawks, crows, jackdaws, jays, magpies, hedgehogs, frogs, snails and buzzards are offered for sale to the passing connoisseurs, who frequent the bird-market in quest of carnal delicacies. * * *

“Thinking that the civetta would be peculiarly useful to the British horticulturist, not, by the way, in his kitchen, but in his kitchen-garden, I determined to import a dozen of these birds into our own country.” [Here follows a little episode, not sufficiently zoological for our pages].

“All went well after this, until we reached Aix-la-Chapelle. Here, an act of rashness on my part caused a serious diminution in the family. A long journey, and wet weather, had tended to soil the plumage of the little owls; and I deemed it necessary that they, as well as their master, should have the benefit of a warm bath. Five of them died of cold the same night. A sixth got its thigh broke, I don’t know how; and a seventh breathed its last, without any previous symptoms of indisposition, about a fortnight after we had arrived at Walton Hall.

“The remaining five have surmounted all casualties, having been well taken care of for eight months. On the 10th of May, in the year of our Lord 1842, there being

abundance of snails, slugs, and beetles on the ground, I released them from their long confinement.

“Just oppoite to the flower-garden, there is a dense plantation of spruce fir-trees. Under these, at intervals, by way of greater security, I placed the separated parts of two dozen newly killed rabbits, as a temporary supply of food; and at 7 o'clock in the evening, the weather being serene and warm, I opened the door of the cage. The five owls stepped out to try their fortunes in this wicked world. As they retired into the adjacent thicket, I bade them be of good heart; and although the whole world was now open to them, ‘where to choose their place of residence,’ I said, if they would stop in my park, I would be glad of their company; and would always be a friend and benefactor to them.”—p. 15.

The dying Swan.

“Once I had an opportunity, which rarely occurs, of being with a swan in its last illness. Although I gave no credence to the extravagant notion which antiquity had entertained of melody from the mouth of the dying swan, still I felt anxious to hear some plaintive sound or other, some soft inflection of the voice, which might tend to justify that notion in a small degree. But I was disappointed.

“This poor swan was a great favourite, and had been the pride of the lake time out of mind. Those who spend their life in the country, and pay attention to the ordinary movements of birds, will easily observe a change in them, whenever their health is on the decline. I perceived that the plumage of this swan put on a weather-beaten appearance, and that the bird itself no longer raised the feathers of his wings, as he passed through the water before me. Judging that he was unwell, I gave orders that he should be supplied with bread and boiled potatoes. Of these he ate sparingly, and in a day or two he changed his quarters, probably for want of sufficient shelter from the wind. Having found his way down to the stables, he got upon a small fishpond there, out of the reach of storms. From this time he never fended for food, but he continued to take a little white bread now and then from my hand. At last he refused this; and then he left the water for good and all, and sat down on the margin of the pond, with evident signs of near-approaching death. He soon became too weak to support his long neck in an upright position. He nodded, and then tried to recover himself, and then nodded again, and again held up his head; till at last, quite enfeebled and worn out, his head fell gently on the grass, his wings became expanded a trifle or so, and he died whilst I was looking on. This was in the afternoon, and I had every facility of watching his departing hour, for I was attending the masons, some thirty yards from the pond to which the swan had retired. He never even uttered his wonted cry, nor so much as a sound, to indicate what he felt within.”—p. 128.

“The Windhover Hawk and the Oil-gland.”

“On my return from Belgium, in the middle of May, 1844, whilst perusing the seventeenth number of ‘The Zoologist,’ my attention was particularly drawn to the excellent observations of Mr. Bury, relative to the habits of the kestrel, or windhover hawk. I feel myself under great obligations to this courteous gentleman for the flattering manner in which he has introduced my name. May I entertain the hope that he will not be offended with me, if I venture to disagree with him on one point relative to what he has advanced on the habits of the bird in question?

“He has quite satisfied me that the windhover will now and then make a meal on the smaller birds; and this information on his part is very acceptable to me, as I have no opportunity of observing the windhover during the winter months, for it leaves this immediate neighbourhood in October, and seldom returns before the first week in February.

“The conclusion of Mr. Bury, as to the use of the oil-gland, is not quite so satisfactory. He says, “And I plainly saw the bird press the nipple with its beak, and rub the matter so expressed on its feathers.” This assertion would have put the question at rest for ever in my own mind, and I should willingly have yielded the disputed palm to this intelligent gentleman, had he not subsequently remarked, “I do not mean to say I ever saw the matter expressed.”

“Now he ought to have seen the matter expressed. The bird was on his finger, “under a strong light,” and this position afforded him the very best opportunity of seeing the matter, which is an opaque and palpable substance, and could not possibly have escaped the notice of so keen an observer as Mr. Bury, had it really been rubbed on the feathers, and even transferred, as he says, from the feathers of the body to those of the head. I can assure him that I have witnessed a favourite parrot press its nipple scores of times, but I could never detect the least moisture on the sides of its bill, nor observe the smallest portion of matter on the feathers which the bird was preening; hence I came to the conclusion that the parrot had pressed the nipple, not to procure the substance which it contained, but merely to gratify itself by producing that pleasing sensation which we ourselves experience when we rub our dry hand over our face.

“Again; in most waterfowl, the oil-gland is completely covered with a thick tuft of down, not moveable at pleasure, like the true feathers. This tuft would prove an insurmountable obstacle to the transfer of matter from the gland through the medium of the bill. In fine, there are some birds without any gland at all, as I have remarked elsewhere. Providence never does anything by halves. If the matter from the oil-gland were for the purpose of lubricating the feathers, it would not have been granted by the Creator to one bird, and denied to another. Had such an act of partiality taken place, “it would have been putting one sadly over the head of another.”

“Some years ago, when I was in hot dispute on this subject with writers in Mr. Loudon’s ‘Magazine of Natural History,’ a thunderstorm provided me with the means of having a very satisfactory view of the oil-gland on the rump of a kestrel or windhover. The poor hawk was sitting upon the branch of a sycamore tree, when the lightning struck it dead to the ground. It was a fine old male bird, and had no outward marks of damage on it. I carefully dissected the oil-gland. Around the base of it there was a circle of down. The shaft of the nipple was quite bare of down or feathers; but the orifice of the nipple was totally concealed by a very dense tuft of down, which had the exact appearance of a camel-hair brush.

“Had this kestrel’s intention been ever so ardent to lubricate its feathers with the contents of its own oil-gland, the thing would have been impossible, because the thick bunch of down, on the very extremity of the nipple, would have effectually impeded the transfer of the oil from the gland to the bill. Moreover, the oil would have disfigured the down, had it been expressed through the nipple; and Mr. Bury could not have failed to observe the change which the oil would have made in the appearance of the down itself. The tail and oil-gland of this kestrel are now on the table before me.”—p. 130.

We cannot lay down our pen without expressing our regret that the Wanderer should have avowed his intention of never again appearing before the public as an author. We heartily hope he will reconsider and amend the resolution. We heartily hope that in these pages—the legitimate medium for such communications—“Essays” from the same hand will again appear. When he has ceased to observe; when he has ceased to commune with Nature; when he can learn nothing more of her doings; when he can detect no errors among our received notions of the habits and lives of animals; then, and not till then, let the Wanderer of Essequibo cease to write!

Note on the Food of the Tadpole of the common Frog. In answer to your correspondent Mr. Chennel (Zool. 579) on the subject of the food of the tadpole of the frog, I beg to offer him my experience on the point in question. Soon after the tadpole has effected its liberation from the spongy envelope of the egg, it adheres, by means of a pair of hooks on the breast, either to the empty egg, or to some other substance near; although it is frequently found lying on its side at the bottom of the wells or ditches. In this state it is entirely inactive, or at most its activity consists in only occasionally flapping its tail. At this stage it takes no food, and must therefore be nourished by the remains of egg within it. As the temporary external branchiæ disappear, the tadpoles become more and more active, and proportionably more voracious. At this time they very actively search for food, though they do it without the least intelligence. They generally, when in confinement, place their mouths against the bottom of the vessel, and search indiscriminately in all directions to obtain it; and although on many occasions, food was designedly placed near them, yet they never, in any instance, turned to it as if they perceived it either by sight or smell, but came upon it by accident. So it is also when they are at liberty in the ponds and ditches. They are said by some authorities to prefer a vegetable diet, and from some accounts indeed they might be supposed to reject all animal food. This however does not appear to be the case. In those which I have kept in confinement, I found that when I fed them on the water-cress, supposed to be their favourite food, they lived contentedly on it for about twenty-four hours, and then the strongest would attack their weaker companions, and in the end devour them. This act of cannibalism was generally prevented by feeding them on an animal diet; but still they always showed a preference for their weaker companions. During the earlier stages of their development they are very active and voracious, but as development goes on, and the arms and legs are getting useful for progression, they get very inactive, and their appetite nearly leaves them. In this state they lie very inactively at the bottom of the vessel, or leave the water, and take shelter among the wet grass, and beneath stones in moist situations. So situated they become an easy prey to their more active and less advanced fellows, which rarely pass them without a bite. Hence, in this transition state from the tadpole to the frog, they are frequently found in a very mutilated condition. So voracious is their appetite, that if an individual in this helpless and advanced stage be left through the night with the others, it is sure to be found in the morning dead and half devoured. While their appetite is thus so voracious, it is not easily satisfied; for if a bit of beef or mut-

ton be offered to them, they will fasten on it immediately they discover it, and remain so for seven or eight hours at a stretch, and then only give it up by force. And though they may be actively devouring it all that time, yet at the first favourable opportunity will return and renew their attack as if they had been kept without food for a week. Provided it be animal food, nothing comes amiss, and hence it is not to be wondered at that they should be found feeding on the common white slug, as your correspondent noticed. On more than one occasion I have found these young cannibals congregated into large black masses, busily occupied with something, their heads being placed centrally, and their bodies regularly radiating from one point; they resembled a large, black, composite flower. On driving them away I have found them feeding on the dead body of a full grown frog, and probably the very one that had given them birth. They have no kind of affection. Anything in the shape of food is acceptable. The food of the adult frog is well known to be animal, such as worms and insects, and in this way they are of great benefit to the gardener. Their mode of capturing their prey is curious; but as your correspondent only asks about the food of the tadpole, I will not further occupy your space by touching upon that part.—*R. Q. Couch; Penzance, June 20, 1844.*

[I should feel exceedingly obliged to Mr. Couch for any particulars respecting the mode in which frogs capture their prey.—*E. Newman.*]

Note on the Anecdotes of Toads being found in solid stone. Mr. Bartlett (*Zool.* 614) speaks of this peculiar tenacity of life in the toad, as a matter proved beyond all doubt. The *cui bono* of a toad's being shut up, without air and without food, for an indefinite number of centuries, is certainly a most interesting problem. But let us grant that some result is achieved — a species may be thus preserved, or some such definite end accomplished—still several questions seem to occur as to the fact. 1. What scientific man has examined one of these toads, and ascertained that its situation was precisely as described; and has he compared the toad with existing species? 2. To what geological series do the strata containing these habitable sepulchres belong? 3. In what museum can we see one of these sepulchres and the toad which occupied it? 4. At what depth from the surface have these sepulchres been found? I must confess that the statements I have hitherto seen on the subject, have been unsatisfactory, — invariably seeming to want the testimony of competent witnesses. Mr. Bartlett will do an important service to science, if he can adduce any satisfactory evidence on this very obscure subject.—*Edward Newman.*

Note on the Edible Frog. I have been to the fen in Cambridgeshire whence the edible frogs were obtained last year (*Zool.* 393 and 466), and found them very abundant, indeed I am much surprised they were never seen before, their croaking being so very different from that of the common frog; the sound is more of a loud snore, exactly like that of the barn owl, (*Strix Flammea*, Linn.) The whole fen was quite in a charm with their song. The male, when croaking, has two large bladders, one on each side of the mouth, which give it a very curious appearance. This frog is a very timid creature, disappearing on the least alarm, and it is not very easy to catch. It seems to be entirely a water reptile, never coming on the land, at least I could not find one out of the water, like the common species.—*F. Bond; Kingsbury, June 13, 1844.*

Anecdote of a Shower of Frogs at Selby. In the course of the afternoon of Monday last, during the prevalence of rather heavy rain, the good people of Selby were astonished at a remarkable phenomenon. It was rendered forcibly apparent, that with the descent of the rain, there was a shower of another description, viz., a shower of frogs.

The truth of this was rendered more manifest by the circumstance that several of the frogs were caught in their descent by holding out hats for that purpose. They were about the size of a horse-bean, and remarkably lively after their aerial but wingless flight. The same phenomenon was observed in the immediate neighbourhood." — *Leeds Mercury*.

[This is one of the misstatements in Natural History which have obtained universal credit. I am continually receiving similar accounts, not only of frogs, but toads, white fish and eels. May I request of correspondents, who are on the spot where these facts are stated to occur, to enquire into them more narrowly; and methinks it would be no difficult matter to trace the presence of the animals to more natural sources than the clouds.—*E. Newman*.]

Note on the Salmon. "Prof. Twiss next read a paper in illustration of a collection of specimens of the ova and fry of the salmon, presented to the Ashmolean Museum, by Mr. A. Young, the manager of the Duke of Sutherland's fisheries on the river Shin, in Sutherlandshire. The collection consists of thirteen specimens of the ova, selected at intervals varying from twenty to one hundred and thirty-three days from the time of their being deposited; and ten specimens of the young fry, from the day on which they were hatched, the one hundred and thirty-fifth after impregnation, to the time when they assume the silvery character of the smolt, and descend to the sea; which in this case was one year and nine days after exclusion from the egg.

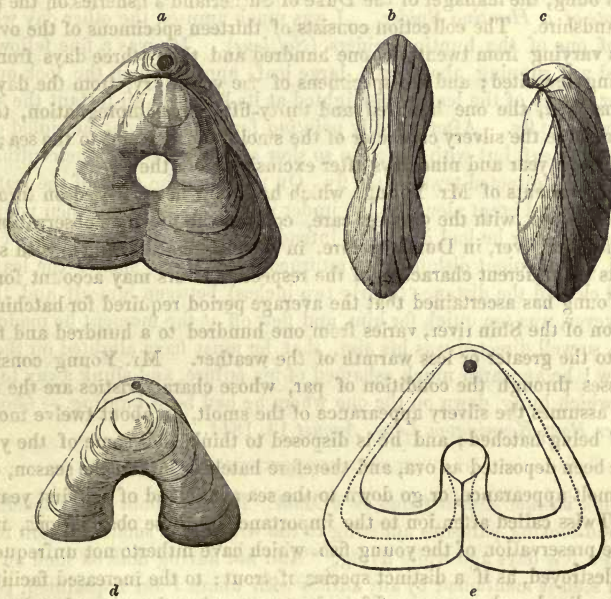
"The experiments of Mr. Young, which have now been carried on through a period of three years, with the greatest care, confirm the previous observations of Mr. Shaw, in the Nith river, in Dumfriesshire, in their general bearings, with such slight variations as the different characters of the respective rivers may account for.

"Mr. Young has ascertained that the average period required for hatching the ova of the salmon of the Shin river, varies from one hundred to a hundred and forty days, according to the greater or less warmth of the weather. Mr. Young considers that the fish passes through the condition of par, whose characteristics are the transverse bands, and assumes the silvery appearance of the smolt, in about twelve months from the time of being hatched; and he is disposed to think, that some of the young fish which have been deposited as ova, and therefore hatched, late in the season, do not assume the smolt appearance, or go down to the sea at the end of the first year.

"Prof. Twiss called attention to the importance of these observations, in connexion with the preservation of the young fish, which have hitherto not unfrequently been taken and destroyed, as if a distinct species of trout: to the increased facility of propagating peculiar breeds or races of fish, by transporting the ova, when impregnated, in water, from one river to another: and to the great value of careful notices as to the spawning seasons of the fish of different rivers, in connexion with a more discriminating system of legal regulations, as to the fence months.

"Dr. Buckland gave some account of his visit to the experimental ponds at Drumlanrig, in company with Prof. Agassiz, who was himself conducting a series of analogous experiments on the trout of the lake of Neufchatel. He alluded to the great probable advantages of hatching the ova in artificial ponds, with a view to the preservation of the young fry. In the experiments of Agassiz and Sir F. Mackenzie, Bart., it was found necessary to feed the young fry with the paunches of sheep." *Athenæum*.

Note on the occurrence of the Opah, or King-fish, on the coast of Norfolk. On the 6th of July a fine specimen of the opah (*Lampris guttatus*) was brought to Norwich, having been left by the tide on the beach at Eccles, on the western coast of Norfolk. It was a male fish, and weighed between four and five stone. The stomach was empty, and some parts of the flesh were bruised by the action of the waves upon the beach. Where this was not the case, the flesh was found quite eatable, and had a very sweet and rich taste. The flesh of the opah has been sometimes described as being red, like that of the salmon, but in the present case, it was white, with a tinge of yellow. The iris of the eye, which has also been described as being red, in this specimen was of a silvery white colour. Three other specimens are on record as having occurred on the coast of Norfolk: two of these, which are mentioned in Paget's 'Natural History of Yarmouth,' occurred near that town, the one in December, 1823, and the other in November, 1828: and the third was obtained at Hunstanton, in July, 1839, and is now in the Wisbeach Museum.—*J. H. Gurney; Norwich.*



Duval's Fossil *Terebratula* (*Terebratula Duwallii*), natural size.

a. View of the upper surface of a mature shell. *b.* Front view of the same. *c.* Side view of the same. *d.* View of the upper surface of a younger shell. *e.* Diagram, in which the outer line shows the outline of the shell *a*, the inner line the outline of the shell *d*, and the intermediate dotted line a supposed shell of intermediate growth.

Note on Duval's Fossil Terebratula. I am indebted to the kindness of Professor Duval Jouve, of Grasse, in the South of France, for the above sketches of two fossil shells in his collection, each of which he supposes unique, but at the same time expresses a very decided opinion that both are referrible to one species. The drawings

were sent by the hands of my brother, for publication in 'The Zoologist.' My own acquaintance with shells is so slight, that I hesitate to draw up a description; but in proposing for this singular fossil the name of *Terebratula Duvallii*, I hope the figures will be considered sufficiently precise to establish the species, without the aid of the customary technical characters. I will however venture to invite attention to a striking peculiarity of the larger shell (fig. *a*), the existence of a perfectly circular aperture through its very centre: and to mention that this character is unknown to Mr. Bowerbank as existing in any recent or fossil *Terebratula*, or in any allied genus. Prof. Duval Jouve, believes the lesser shell (fig. *d*) to be a younger state of the larger (fig. *a*), and suggests that shells of an intermediate form and size exist, as indicated by the dotted line in fig. *e*. Certain lines visible on the upper valve of the larger shell, I consider as corroborative of this opinion. In the same figure the outer line is an exact outline of the larger, and the inner an exact outline of the lesser shell. The correspondence between the two, as regards the central opening, is thus clearly shown.—*Edward Newman; Peckham, July 17, 1844.*

Anecdote of a Hunting Spider. I was much amused the other day with the proceedings of one of the hunting spiders (*Salticus*). He was a fine fellow, and very lively; and was running about on a large leaf, apparently on the look out for food. When near the tip of the leaf, a fly alighted at its base: in an instant the spider turned and faced the fly. After steadily *pointing* for a short time, he sidled off towards the edge of the leaf, but with a motion so slow as to be almost imperceptible, and still keeping his head directed towards the fly. On reaching the edge of the leaf, he quickly turned over, and crept along on the under side, every now and then popping up his head to see how near he had got to his intended victim. When he arrived at what he considered a convenient distance, he returned to the upper side of the leaf, and with one bound cleared the distance (nearly two inches) between himself and the fly; the latter, however, was too quick for him, and flew off at the moment he made his spring, otherwise, so well directed was his aim, that he must have alighted on the fly's back. Poor fellow! he appeared much ashamed of his failure, and slunk away to the shelter of a leaf which hung down on the one where he had been hunting.—*Geo. Luxford; 2, Ebenezer Row, Kennington Lane, August 13, 1844.*

Note on a minute Acarus found on a Moth. I found about thirty specimens of the enclosed odd-looking parasites adhering to the wings of a small common moth, which I captured a few days ago while flying. And not having noticed such an occurrence before, nor seen it mentioned by any author with whom I am acquainted, I have taken the liberty of sending specimens to you, hoping that some of the readers of 'The Zoologist,' who may have noticed such an occurrence, would be kind enough to favour me with the name, through the medium of that interesting publication. I found them both on the upper and under side of the wings, but mostly on the under, adhering so pertinaciously as not to be removed without difficulty, and frequently tearing away the scales from the wing in attempting to retain their station. The moth had a ragged and unhealthy appearance, and was denuded of scales to a considerable extent. I find that in drying the colour has faded considerably. When alive, the body was blood red, with a spot on the disk, and the legs white.—*I. J. Bold; 24, Cloth Market, Newcastle-upon-Tyne, July 17, 1844.*

[These creatures are evidently Acari, and are so minute as scarcely to be observable without the aid of a lens: the colour is now a uniform pale dull yellow; the rostrum is short and very acutely pointed, it has an evident longitudinal groove; the chelicerae are very stout, incurved, acutely pointed, and equal to the rostrum in length; the legs are eight in number, and widely separated at their base, all of them slender, the 1st and 2nd pairs more so than the others, and very much longer. Nothing is more common than for insects to be infested with minute *Acari*: an anecdote on this subject has long been an article of profound faith among entomologists. A brother of the net was *standing up* under a tree, to avoid the pelting of a passing shower. A huge humble bee flew heavily towards him, and alighted on an ant-hill at his feet. The ants being driven in by stress of weather, did not observe the visitor, so he set to and tore up the surface of the hill in fine style; out came the ants in a desperate passion, and soon assailed the leviathan that had so unceremoniously injured their habitation. The entomologist went down on his hands and knees to see the issue, when to his surprise he found that the bee was infested by a multitude of *Acari*, and that the ants were picking them off and carrying them away. This task was speedily accomplished; the bee rose on humming wing, and went about his usual avocations; and the ants again retired within their nest. — *Edward Newman*].

Note on Pontia Metra. I am disposed to consider this insect as merely a variety of *P. Rapæ*, and not a distinct species, which some entomologists have pronounced it to be. From the circumstance of its earlier appearance than *P. Rapæ*; from its being in general smaller, and apparently more delicate; and from its not occurring later in the season, when that insect is so abundant; I, for some time, believed it to be specifically distinct: last autumn, however, I took numerous caterpillars of *P. Rapæ*, evidently belonging to the same brood, and exactly corresponding in appearance one with another in every respect, which shortly after underwent their transformation in the breeding-cage. The perfect insects have now emerged, and from these same caterpillars have been produced every variety of *Rapæ* and *Metra* respectively; some exactly corresponding with the description referrible to each insect, and others presenting an appearance between the two: some have the spot on the upper disk of the anterior wing entirely wanting, others with it obsolete, others with it very distinct, and the tip more or less so; others again are sprinkled all over the largest portion of the upper side of the wings with dark points. These dark points, which occasion a dusky appearance, when subjected to the microscope, are found to be scales, similar to those which compose the spot on the disk and the tip of the anterior wing; and are in shape much longer and narrower, and of a deeper and richer colour than the ordinary scales. I have not found any variation in form and colour between these darker scales taken from the wings of specimens of *P. Rapæ*, and those from individuals usually referrible to *P. Metra*; but some of the commoner scales, taken from the wings of certain specimens, present a very marked difference. I am not, however, aware, whether a variation in the form of the scales on the butterfly's wing has ever been adopted, or is to be considered admissible, as an additional criterion, whereby to judge generally of the specific distinction between insects closely approximating to each other in appearance, of which the larva has not been discovered. From the wings of some, having the spot on the disk very distinct, I have taken numerous scales shaped as in the margin; from examples which would indubitably



Scale from the wing of *P. Metra*? magnified.

come under the denomination of *P. Metra*, scales in general similarly formed; whilst on the more dusky specimens (evident female examples of *P. Rapæ*) I have as yet discovered none at all which assume this peculiar character. The fact above recorded, namely, the production of examples of *P. Rapæ* and *Metra* from caterpillars resembling one another in every respect, together with the corresponding form of the scales of the wings (with two female exceptions), would seem to establish their identity, as mere varieties of the same insect. Perhaps some of your more experienced readers may feel sufficient interest in the subject to make further experiments, and I shall myself be happy to furnish any further information that may be desired.—*J. F. Dawson; Ventnor, I. of Wight.*

Enquiry respecting Colias Edusa and C. Hyale. Have these butterflies been observed during the present autumn? The septennial theory regarding *Hyale*, and the quadrennial one regarding *Edusa*, require that neither should appear in 1844, except accidentally and sparingly.—*Edward Newman.*

Note on a supposed new British Butterfly. I learn from Mr. H. Doubleday, that Mr. Weaver supposes he has taken a butterfly new to this country. It is described by Mr. Weaver as being an *Hipparchia*, and intermediate in size between *H. Blandina* and *H. Cassiope*. Eight specimens only have been captured, the wind being rough, and causing much difficulty in securing them. The locality is at a considerable elevation on one of the Scotch mountains. It may be observed that no entomologist is more thoroughly acquainted with our British butterflies than Mr. Weaver, and therefore he is not likely to be mistaken as to its being a novelty. I hope before the appearance of the October number to have obtained further particulars, and to be able to publish a figure.—*Id.*

Enquiry respecting Polyommatus Artaxerxes. I have today met with a friend, who, about a month since, captured about twenty specimens of this butterfly upon Arthur's Seat, near Edinburgh. All of them possess the white spot in the centre of the upper wing, and all agree in having the eyelets underneath obscured. I possess specimens of *Salmacis* from Castle Eden Dean, which entirely want these distinguishing characters; and also a single specimen from the same locality, captured by a friend, who resides near Newcastle-upon-Tyne, which possesses them. Why should these insects be considered mere varieties? I have heard it advanced that *Agestis*, *Salmacis* and *Artaxerxes* are one and the same insect.—*James B. Hodgkinson; 12, Friday St., Preston.*

[The idea of combining these species originated with myself, as will appear by the following extract from the 'Entomological Magazine,' ii. 515. "From examining specimens of *Polyommatus Agestis* from different localities, I have arrived at a conclusion which will not, I fear, be coincided with by many of our Lepidopterists. On the South Downs of Sussex and Kent, *Agestis* assumes what may be called its typical form. I have taken it at Ramsgate, Dover, Hythe, Hastings, Rye, Brighton, Worthing, Little Hampton, Chichester, Portsmouth, Isle of Wight, Dorsetshire, Somersetshire; and throughout this range it is very similar: then, going upwards, I have met with it at Worcester, Birmingham, Shrewsbury; and here an evident change has taken place, the band of rust-coloured spots has become less bright; at Manchester these spots have left the upper wing almost entirely; at Castle Eden Dean they are scarcely to be traced, and a black spot in the centre of the upper wing becomes fringed with white; the butterfly then changes its name to *Salmacis*. We proceed further northwards, and the black pupil leaves the eyes on the under side, until at Edinburgh they

are quite gone; it is then called Artaxerxes. The conclusion I arrive at is this, that Agestis, Salmacis, and Artaxerxes, are but one species."—*Edward Newman*].

Note on a Variety of Pamphila linea. On the 22nd of July I took a delicate buff variety of *Pamphila linea*. It was the only one I could find out of many hundreds of specimens I saw that day on the wing. The decided black margin, contrasting with the pale ground colour of the wings, makes it a very pretty insect. — *H. W. Bates*; *Leicester, August 15, 1844.*

Note on the occurrence of clear-winged Sphingidæ near Leicester. We have taken in our neighbourhood the two species of *Ægeria*, the *Trochilia*, *tipuliforme* and *formicæforme*, and *Sesia fuciformis*. The differences between the two *Ægeriæ* I think are but obscurely known. I took *Lewin's crabroniformis* in a damp oak wood, flying in July, horizontally over a row of tall Umbelliferous flowers, and the other species has been taken by Mr. Plant in June, on the stems of osiers. *Sesia fuciformis* (the narrow border) I took twice in May, from the flowers of the common bugle, growing in grassy pathways in old woods: and *Trochilium formicæforme* has been added to our list by Mr. Plant, who took it in July from Umbelliferæ, in the snipe-grounds of Grooby-pool.—*Id.*

Note on the capture of Trochilium Ichneumoniforme. A short time since, in an entomological ramble, I took a specimen of *Trochilium Ichneumoniforme*, which I believe is a very rare moth. It proved to be a female, and during her captivity she laid a little batch of eggs. These I am anxious to hatch, and rear the larvæ. Can you inform me on what they feed? Westwood does not mention the food of the caterpillars. If you are not acquainted with what they eat, would you be kind enough to make the enquiry in 'The Zoologist,' as doubtless some of your readers will know.—*John Pemberton Bartlett*; *Kingston, near Canterbury.*

[A great number of the same species has been taken by sweeping the herbage about the pit at Charlton, a very celebrated entomological locality. Messrs. Douglas, Stevens, Ingall and Bedell, have been the fortunate captors. Mr. Ingall observes that it principally frequents the devil's bit scabious, (*Scabiosa succisa*).—*E. Newman*].

Note on the hatching of the Eggs of the Orgyia antiqua which had never been impregnated. Last summer I found a chrysalis of this moth, which I placed in a large pill-box, with a few pin-holes pierced in the top. In due time a female moth appeared, which was never taken out of the box, yet laid a plentiful supply of eggs. I frequently said that the eggs might be thrown away, but it was never done; and much to my astonishment, on opening the box when I returned home a few days since, I found several small caterpillars had already made their appearance, others are still coming out, and all of them are now enjoying themselves with a few rose-leaves with which I supply them.—*J. B. Harrison*; *Barham, near Canterbury.*

[I shall be very glad to hear whether these caterpillars ever arrive at maturity.—*E. Newman*].

Note on the capture of Lasiocampa Trifolii and Agrotis annexa. Mr. Gregson, of Liverpool, captured a male specimen of the former insect on the wing, at New Brighton, in August last: and about the same time he got a shattered specimen of *Agrotis annexa*, in a fisherman's cabin at the rabbit-warren, New Brighton. Both these specimens he liberally added to my collection. — *R. S. Edleston*; *Manchester, April 11, 1844.*

Note on the capture of Mamestra suasa, Ochs. (Dens canis, Haw.) I possess a female specimen of this rare moth, captured under a grass sod, on the 31st of May, 1842,

midway between Cottrell-wood and Altringham. Collectors residing in a favourable situation, would do well to examine the sods that cover bricks when drying, as many species of moths that are rarely met with in any other situation, secrete themselves underneath. *Hadena adusta* is very partial to them, and *Actebia præcox*, *Agrotis Tritici*, *Mamestra Persicariæ* &c. have also been taken.—*Id.*

Note on Nyssia zonaria. This insect has been very scarce this season. After a diligent search for some hours on the 15th of March, we captured eighteen males and five females; since then other collectors have been down to Liverpool in quest of them, but without success. Some years they appear in great abundance.—*Id.*

Note on captures in Dunham-park, &c. On the 11th of March I captured in this locality, *Phigalia pilosaria* (male and female), *Achatia piniperda*, *Cheimatobia rupicapraria*, *Oporabia nubilea*, and *Anisopteryx leucophearia*, very scarce, I have not heard of a female captured this year, the males are generally in great abundance; *Nyssia hispidaria*, not a specimen found, although abundant last year. On the 5th and 8th instant some fine specimens of *Biston Prodomaria*; the best time of the day to capture this insect, is about 4, P.M. *Larentia multistrigaria*, *Orthosia munda*, *O. stabilis* and *O. cruda*, on the oak. On the horse-chesnut some very fine specimens of *Anisopteryx Æscularia*, male, and a single female; the latter sex is excessively rare with us, I am not aware of its capture down here before. I also beat out of the young firs, *Gracilaria hemidactylella*, and an *Argyromyges*, which appears to be a new species.—*Id.*

Note on captures of Moths in one night and the following morning at New Brighton, near Liverpool. Having just received a copy of 'The Entomologist,' together with the 1st volume of 'The Zoologist,' I am highly gratified with the information I have derived from them, in fact they have come like bright gleams of sunshine, dispelling many a cloudy point which I was vainly endeavouring to comprehend or define. You must know that I am isolated from all personal intercourse with other entomologists; simply because I am located in a town, where, although there is ample scope for the most sanguine naturalist, yet I am sorry to say I cannot find one practical entomologist within thirty miles. I therefore hail the appearance of 'The Zoologist' with unexpected pleasure; and as I find its pages are open to authentic notices from practical knights of the net, I shall embrace the opportunity to let others know what is taken in this locality, and commence my contributions with a list of the captures in one night, at New Brighton, near the Black rock, Cheshire, August 12, 1843, commencing at half past 8 o'clock, and concluding about a quarter to 10.

Agrotis valligera. Twelve males and one female, the only one I ever took, although I generally take about ten or twelve males each night from the 9th to the 18th, at which time they are beginning to fade.

———— *cursoria.* Three specimens.

———— *exclamationis.* One only.

———— *aquilina*, *Tritici*, *vitta*, or by whatever name different persons may call it. Forty-six specimens, from which a species-manufacturer might have had a treat, as there was every variety in size, from about 11 to 17 lines in expansion

of wing, and in colour from a light ash to an almost white ground, marked with beautiful black arrows. I might have taken a hundred if I had wished.

Charaxas Graminis. One specimen, very large and black.

Lytæa umbrosa. Five good specimens.

Mythinna conigera. One only.

Segetia xanthographa. It is almost as troublesome to keep this species out of the net, as to get some others into it.

Pyrophila Tragopogonis. One specimen.

Heliophobus Popularis.

Apamea oculea. Very black; common.

Miana literosa. Five specimens, very fine.

— *humeralis*. Captured four specimens and saw a hundred or more.

Actebia præcox. Five specimens, sitting on the flowers of the ragwort (*Senecio Jacobææ*). I take them with the forceps; approaching them very carefully I snap quick, enclosing flower and fly, otherwise they drop down and are lost. I was out again between 3 and 4 o'clock in the morning, and took the following species before 6.

Ennychia cingulata. Plentiful. It is double-brooded with us, appearing in May and June, and again at the end of July and beginning of August.

C. S. Gregson ; 60, Mill St., Toxteth Park, Liverpool, June 7, 1844.

Note on Captures of Lepidopterous Insects at Preston, in Lancashire. Having just had the pleasure of seeing, for the first time, the 1st volume of 'The Zoologist,' I find that work contains a fund of general information respecting captures in different parts of the kingdom. I beg leave to hand you for its pages a list of the rarer Lepidoptera that have been taken by my brother and myself in the neighbourhood of Preston: its insertion will greatly oblige me. I beg also to state, that having duplicates of most of the insects enumerated, I shall be glad to exchange with entomologists in other parts of the kingdom.

Melitæa Selene	Xylophasia sublustris	Geometra canaria
Argynnis Aglaia	epomidion	Ellopia fasciaria
Cyntha Cardui	combusta	Hipparchus Papilionarius
Hipparchia Davus	Hadena remissa	Larentia cervinaria
Thymele Tages	adusta	Aspilates respersaria
Cerura fuscina	Cucubali	Cidaria olivata
Notodonta Ziczac	Capsincola	Harpalyce sylvaticata
Leiocampa dictæa	Heliophobus Popularis	unangulata
Lasiocampa Rubi	Mamestra furva	silaceata
Pœcilocampa Populi	Apamea nictitans	conflata
Nemeophila Plantaginis	secalina	Pol. marmorata
Diaphora mendica	Celæna Haworthi	Electra imbutata
Charæas fusca	Miselia Aprilina	Abraxas Ulmata
Æthiops	Oxyacanthæ	Xerene albicillata
Graphiphora brunnea	compta	plumbata
triangulum	Polia nebulosa	Enc. undulata
candelisequa	Herbida	Eupithecia angustata
punicea	Chi	Bapta punctata
baja	Apatela Leporina	Emmelesia turbaria
Orthosia gracilis	Thyatira batis	rivulata
munda	Ceropacha duplaris	sylvata
Mythimna grisea	Plusia Festucæ	luteata
Glæa rubricosa	Anarta Myrtilli	Blomeri
Pyrophila tetra	Hib. connectaria	andidata

to a certainty. They do not fall, as is generally supposed; but they follow the smaller branches until they come to the main stem, down which they run with a rapidity truly astonishing. I have spent several nights in ascertaining this curious fact.

Leucania pygmæa. Two specimens.

Eupithecia centaureata. Four specimens.

Pyrausta punicealis. Plentiful, in company with *Ennychia cingulata*.

— *ostrinalis*.

— *cæspitalis*.

Hercyna clathrata	Drepana falcataria	Scopula Prunalis
Hyrja auroraria	Hym. hybridalis	Nola strigulalis
Fidonia ericetaria	Margaritia Verbascalis.	

Deilephila celerio and Porcellus, Sphinx Convolvuli, Acherontia Atropos and Vanessa Polychloros have been taken here by other parties.

While in Cumberland I took Hipparchia Cassiope on the 18th of June, at Stehead tarn, and Cidaria latentaria, Emmelesia trigonata, and what I suppose to be *E. bifasciata* in Borrowdale. I beat out of a hazel bush near Rosthwaite, a specimen of *Mamestra splendens*; it is a very different insect from *M. Pisi*. I was shown a specimen of *Calocampa vetusta*, and another of *Lophopteryx carmelita*, both taken near Keswick. On arranging our series of Lepidoptera, I find we possess some which are quite new, at least they are not figured or described in any work on British Lepidoptera. A friend of mine who lately visited the Isle of Skye, observed a great number of the larvæ of a *Geometra*, very similar to those of *Abraxas grossulariata*: they were feeding on the burdock, on the summit of Ben Beckley, where he shot a rock dove (*Columba Livia*), the crop of which was completely gorged with them. A few of these larvæ have since changed into pupæ. — *Jas. B. Hodgkinson*; 12, *Friday St., Preston*, July 28, 1844.

Note of Captures in the New Forest, Hampshire, and Darenth-wood, Kent. On the 4th of June, Mr. Haggard and myself went to the first of the above-named localities, full of hope and preparation to do a great deal in making captures of Lepidoptera and their larvæ; but though we worked hard day and night, the result of our labours was very scanty, as the list will show. For many of the caterpillars we were too late, for others too soon; and moreover, we had to glean after the rooks, which, with their young around them clamorously appealing to their parental feelings, searched every large tree, and the young plantations too, for larvæ. These, I suspect, constituted the chief food of old and young, for the ground was baked hard with the long drought, and could not yield the usual supply of worms &c., so that we beat and beat again, and still found nothing new. At night we put sugar on the trees, in what we considered to be the best places, but nothing but a few common Noctuæ came. The following is a list of the best of our captures.

Fumea nitidella	Alcis consortaria	Anchylopera diminutana
Xylophasia rurea	Minoa Chærophyllata	siculana
combusta	Euphorbiata	obtusana
Apamea secalina, <i>Haw.</i>	Bapta bimaculata	Roxana arcuana
Thyatira batis	Macaria liturata	Pseudotomia puncticostana
Rusina ferruginea	*Cleora Lichenaria	Lampronia rupella
Setina eborina	Ditula sylvana	Anacampsis dodocella
Deilephila Porcellus		Adela Sulzella

And a few others, of the names of which I am not certain; together with larvæ of *Thecla Betulæ* and *Quercûs*, *Psilura monacha*, *Petasia cassinea*, *Lithosia quadra*, *Miselia Oxyacanthæ* and *Aprilina*, *Catocala sponsa*, *C. promissa*, *Ceratopacha ridens*, *Biston Prodromarius*, *Alcis roboraria*, and some others, mostly common.

Disappointed with the produce of the New Forest, we retraced our steps, and on the 10th went to Darenth wood, where we found the Lepidoptera abundant. In one

* The larvæ were also found, about half grown.

night we took seventy noctuæ; on no one night less than forty: and we might have had as many more, only that the species were so common they were not worth taking. Among the species captured were the following.

Polia herbida	Hadena thalassina	Euplexia lucipara
bimaculosa	contigua	Miana strigilis
serena	Xylophasia rurea	Mamestra aliena
Acronycta Ligustri	epomidion	Ptychopoda bisetata
Ceratopacha Or	Rusina ferruginea	Phibalapteryx tersata
fluctuosa	Graphiphora festiva	Incurvaria tripunctella
Thyatira batis	brunnea	&c. &c.

J. W. Douglas; Coburg Road, Kent Road, July, 1844.

Note on the Species of Agrotis. Great confusion having arisen in the nomenclature of the genus *Agrotis*, in consequence of the larvæ of many species being unknown, the following remarks may not be unworthy the attention of entomologists. *A. cursoria*, together with *vitta* and *aquilina*, may be taken abundantly on Yarmouth-denes in the month of August, by pulling down the grass upon the edge of the sand-hills. They have, I believe, been considered varieties of the same species, but from my own observations it would seem that the former is without doubt distinct. On the 19th of last June I found many caterpillars of a species of *Agrotis*, close to the surface of the sand, and which, on being uncovered, quickly buried themselves again. I brought several to Norwich, and for a week or so afterwards they emerged from the sand every night, as if in quest of food; it would therefore appear that they are nocturnal feeders, and not radicivorous. In a short time they changed into the chrysalis state, forming a very brittle cocoon with the sand. On the 31st of July a male and female of *A. cursoria* came out, and since that time several more of both sexes have appeared. The specimens vary a little, but do not in the least approach *vitta* or *aquilina*. — Henry F. Farr; Lower Close, Norwich, August 15, 1844.

Note on the Capture of minute Lepidopterous Insects at Charlton, in Kent. I have recently taken in this locality several rare minute Lepidoptera; amongst them are the following.

Pseudotomia compositella	Xanthosetia Zægana	Homeosoma Gemina. A
Cochylis roseana	Acleris tripunctana	littoral species, and so
Argyrolepis margaritana	Metallosetia spissicornis	near London!
Lozopera Francillana	Phycita binævella	Onocera carnella

Samuel Stevens; 38, King St., Covent Garden, August 10, 1844.

Note on the Capture of Yponomeuta sedella. On the 25th of April last, I caught a specimen of *Yponomeuta sedella* of Treitschke ('Schm. der Eur.' ix. i. 223), flying on Norbury hill, Norwood; an insect hitherto unrecorded as British. It is figured and described by Duponchel ('Lep. du France,' xii. 321, pl. 285, f. 8), but in my copy of his work a most important character is omitted from the figure, although mentioned in the description; namely, the black patch at the base of the fringe of the upper wings, and by which character the insect may be instantly known from *Yp. padella*, which it otherwise strongly resembles. The following short description will enable any person to recognise the insect, should it fall in his way. Entirely of a deep glossy lead-colour; the upper wings with three slightly divergent rows of black dots, extending about two-thirds of the length of the wings, each row consisting of about six or seven dots, the space at the tip of the wing spotless, with an irregular patch of black at the base of the fringe itself, on the hinder margin. The caterpillar is said to feed

upon *Sedum Telephium*, and the insect to appear on the continent in April and July. *J. F. Stephens; Eltham Cottage, Foxley Road, Brixton, August, 1844.*

Note on the early capture of Sarrothripus Ilicinus. Is the capture of *Sarrothripus Ilicinus* on the 25th of March, worth recording? It was a male, and in fine condition. We have always before taken this insect in autumn. This one had most probably hibernated, or perhaps, as the winter was so very mild, may have continued in an active state of existence during that period.—*Robt. C. R. Jordan; Lympstone.*

Note on Conops flavipes. This beautiful little Dipteron was common last week on the flowers of *Senecio Jacobæa*, at Buddon-wood, but I should suppose it is not a rare insect in such situations anywhere. Our neighbourhood, I think, is rich in Dipterous and Hymenopterous insects; but an insuperable bar is opposed to our attaining any knowledge of these creatures, from there being no complete work of specific reference in the English language, and it is scarcely worth while learning German on purpose to plough through Meigen's 'Zweiflugen.' The attention of London entomologists, who have the opportunities, ought to be called to this. A good work on the British Diptera, with a few plates of figures of typical forms, would be a valuable addition to English scientific literature.—*H. W. Bates; Leicester, August 15, 1844.*

Note on a small Grub which attacks Wheat. It has lately been discovered in Scotland, that the failure of the wheat crop in many places is owing to the presence of a small maggot, which appears to make his entrance into the stem of the young wheat, about two inches below the surface of the soil; he then eats his way up the centre of the stem, until he reaches the light. The plant appears to make fresh shoots from the joint beneath the entrance-hole made by the grub; but the remaining vitality seems too weak for these to reach any considerable size. I have found the same grub in our fields, near Garstang, and enclose some for your inspection. The farmers here suppose the damage to be occasioned by the wire-worm, as the ground, in many places, was last year planted with potatoes; but Professor Low, and others who have had an opportunity of examining them, regard them as a new evil to the farmer. I trust that some of your readers will be able to throw some light on the nature and habits of this creature, and point out some way in which its ravages are likely to be arrested.—*M. Saul; Fort Green Cottage, Garstang, Lancashire, July, 1844.*

[The grubs were quite dead and shrivelled before I received them; but from the description of their ravages, I have no doubt that they are the larvæ of a small fly (*Chlorops*?). I have often observed a similar grub in the wheat-fields of Surrey and Herefordshire, causing great destruction to the wheat in the months of April and May. The injury is always attributed to the wireworm; and even those farmers who have taken the trouble to examine it, still call it by that name.—*E. Newman*].

Note on capturing Insects with Sugar. I have received many communications on this subject, several of them complaining of entire want of success, and others as warmly commending the plan recommended by Mr. Douglas (*Zool.* 399), and thanking that gentleman for the information afforded. Mr. S. Stevens informs me that he finds a mixture of sugar and beer more attractive than one of sugar and water. It will be found that not only moths, but wood-lice, earwigs and slugs by night, and flies, bees, wasps and butterflies by day, are attracted by the sweets. The admiral butterfly (*Vanessa Atalanta*) is a constant visitor at this period of the year.—*Edward Newman; Peckham, August 21, 1844.*

Descriptions of the British Species of Leaf-cutter Bees (Megachile of authors); with Observations on their Economy. By FREDERICK SMITH, Esq., Curator to the Entomological Society.

THE species belonging to this interesting genus of bees, are popularly named *leaf-cutters*, from their habit of cutting off pieces of the leaves of the rose, elm, and other trees, and using them in the construction of the cases in which they deposit the pollen and honey necessary for the food of their larvæ. The wonderful mechanical ingenuity exhibited in the construction of their pollen-cases, attracted the notice of the early naturalists; and Mr. Kirby has given detailed accounts of his own, as well as of their observations. Various are the situations in which these bees construct their nests; the same species sometimes choosing trees, posts, or rails in a decaying state, at other times burrowing in banks, or in the mortar of old walls, or availing itself of the interstices from which the mortar has fallen out. A few years ago, *Megachile Willughbiella* abounded in some old willow stumps in Battersea fields, since destroyed; these were perforated in all directions by the bees: and as my observations on the development of this species differ from those of the Rev. Geo. Ashby, given in Mr. Kirby's Monograph, I shall detail them.

The account alluded to states, that the bee in the lowest cell is the first which arrives at maturity, and that it passes through the bottom of its cell, and so escapes at an opening formed by the provident parent; the latter, at least, is the inference to be drawn, since, as the cells exactly fit the tube, no other way of escape is possible. But this is quite at variance with my own observations. On one occasion I split off a large portion of one of the old willow trees mentioned above, and in doing so, laid open to view a channel, about eight inches long, containing seven cells constructed of rose-leaves. These I preserved for some weeks; at length a male bee made its escape, and on examination, it proved to have quitted the upper cell. The rest followed in regular succession, three other males and three females. It certainly is possible that the observations alluded to might have been made on a different species; otherwise the statement is not founded on actual observation. I am not acquainted with any species of this genus which continues its burrow to the outside of the substance in which it is constructed, as a means of escape for its young brood. *M. centuncularis* sometimes burrows underground, and as far as my information extends, *M. circumcincta* always does so.

Mr. Kirby found *M. ligniseca* burrowing into an old putrescent elm ; and he informs us it had constructed its nest in the heart of the tree, which was beginning to decay : but he makes no mention of the channel being continued further. I have bred various species of these bees, but have not yet met with one which burrows through the substance, in order that the lower bee may escape first. I have invariably found that the males are the first to arrive at maturity, and that they invariably occupy the upper cells. An accurate observer, under the name of Delta, has detailed a contrary mode of development in the instance of *Chelostoma maxillosa*, in the 1st vol. of the 'Entomological Magazine.'

The leaf-cutter bees are subject to the intrusion of parasites, belonging to the genus *Cœlioxys*. I have frequently observed *Cœlioxys conica* entering the burrows of *Megachile circumcincta* ; and Mr. Waterhouse has bred this parasite from the cocoons of that species, as detailed in the 'Entomological Magazine,' iii. 498. In the summer of 1842, being on an entomological excursion in Hampshire, I observed a bee enter an old post, bearing a piece of leaf ; and immediately afterwards, a *Cœlioxys* settled on the post, within a few inches of the burrow. She at last approached, but on reaching the entrance she stopped short, as if aware of the presence of the owner, and was about to fly off, when I captured her, and it proved a specimen of *C. Vectis*, figured by Mr. Curtis in his beautiful work on British Entomology. I afterwards caught the leaf-cutter, which proved to be the *Megachile maritima* of Kirby. Both these species are common in the Isle of Wight.

The females of this genus offer no very striking differences for specific distinction, their resemblance to each other being remarkable ; but the males offer striking differences of form, and are easily distinguished. I shall be able to add three species to those described by Mr. Kirby, and to describe the males of two others, the females only of which were known to that eminent author. It will be necessary to bear in mind that all my descriptions are drawn up from recently developed specimens ; for in these insects the pubescence soon changes colour, from exposure even to light, the beautiful light brown or yellow becoming more or less grey or ashy, according to the age of the insect.

Genus. — MEGACHILE, *Latreille, St. Fargeau.*

Anthophora, Fabricius. *Trachusæ*, Jurine. *Apis*, Linnæus, Kirby.

Sp. 1. MEGACHILE WILLUGHBIELLA, *Latreille.*

Apis Willughbiella, Kirby's Mon. *The Willow-Bee*, Ray's Letters.

Female.—Length 6—7 lines. Black. Head as wide as the thorax, the face clothed with a dark brown pubescence, the vertex with black hair, the cheeks with pale yellow hair, the maxillæ large and prominent, quadridentate, the first and second teeth acute, the others obtuse. The thorax is clothed with pale yellow hairs, darker on the disk. The wings have their apical margins clouded. The anterior femora are fringed with pale yellow hairs, and all the tarsi are ferruginous beneath. Abdomen short, broad at the base, somewhat heart-shaped, the three basal segments have a scattered pale fulvous pubescence; the extreme lateral margins of the second, third and fourth, and the fifth segment entirely, fasciated with pale hairs, nearly white; beneath clothed at the base with fulvous, and at the apex with black hairs.

Male.—Length 5—6 lines. Black. Face densely clothed with bright yellow, the vertex with pale ferruginous hair. The antennæ have the apical segment compressed, and when viewed in front broader than the rest. The cheeks and under side of the thorax clothed with an ashy pubescence; above with yellow ferruginous hair. The anterior coxæ are armed with an obtuse tooth, which has a minute acute spine at the apex. The femora are yellow, with three black stripes in front. The tibiæ are black above, yellow at their extreme apex. Tarsi palmated, the first joint is as broad as the tibia, all the joints fringed with white silvery hairs. Abdomen oblong-quadrate, thinly covered above with pale ferruginous hairs, the sixth segment emarginate, the emargination minutely dentate, the ventral segment tridentate.

The male of this species, being the only one having the anterior tarsus dilated with which Mr. Kirby was acquainted, he has made an observation which might lead to some little confusion, namely, that "this sex exhibits a peculiarity, which none of those which are related to it in the form of the anterior tarsus, possesses. The last joint of the antennæ is larger than any of the rest, which gives them some resemblance to those of a *Papilio*." The male of Mr. Kirby's *maritima*, and also of *circumcincta*, both have palmated anterior tarsi, and both have the last joint of the antennæ compressed, as in *M. Willughbiella*. This species, as far as I have observed, always nidificates in wood; it is abundant, and is found all over the country.

Sp. 2. MEGACHILE MARITIMA.

Apis lagopoda, Linn. ? *Apis maritima*, Kirby's Mon.

Female. — Length 7 lines. Black. The face with a patch of yellow ferruginous hair close to the eyes, below the base of the antennæ; the vertex with thinly scattered black hairs; the cheeks thinly covered with pale fulvous hair. The mandibles large and prominent, with obtuse rounded teeth. The thorax also clothed with pale fulvous pubescence, rather darker on the vertex. All the tarsi ferruginous beneath. The abdomen is oblong-ovate, the basal segments above have a thinly scattered pale fulvous pubescence, all the segments are margined with hair of the same colour; beneath, entirely clothed with fulvous hair, rather darkest towards the apex.

Male. — Length $6\frac{1}{2}$ lines. Black. The face clothed with rich yellow hairs; antennæ with the apical segment compressed, and, viewed in front, broader than the rest. The thorax is thinly clothed with pale fulvous hair above, beneath inclining to an ashy colour. The anterior legs have their coxæ armed with an obtuse tooth, which has a minute spine at the apex; femora pale livid in front, a dark ferruginous stripe above, another below, and a broader one between them, black behind at the apex, and fringed below with a long ashy pubescence; the tibiæ pale in front, black behind, and pale at the apex; the tarsi pale, palmated, and fringed with pale hairs; the posterior tibiæ broadly dilated and coarsely punctured. The abdomen oblong-quadrate, the margins of all the segments have a fascia of pale fulvous hairs, sometimes interrupted, the sixth segment is emarginate, and the seventh bidentate, and in some specimens there is a slight indication of a central tooth, the third and fourth segments beneath are fringed with long pale hairs.

The male of this species I have carefully compared with the Linnæan specimen of *Apis lagopoda*, and can detect no difference whatever between them. Mr. Kirby, however, informs us, that the antennæ of *Apis lagopoda* are filiform. Unfortunately, the Linnæan specimen is now destitute of these organs; but the insect, if viewed from above, would not show the broader joint of the antennæ, and Mr. Kirby might not have viewed it in front. Be that as it may, the Linnæan insect agrees in every other particular with the one described; and I have examined European specimens named *lagopoda*, and in all, the apical joint is compressed; nor have I been able to find a species with the anterior tarsi palmated, which has not also the compressed joint of the antennæ.

St. Fargeau has described a species under the name of *M. pyrina*, which he queries being synonymous with the *maritima* of Kirby. His male agrees with *lagopoda*, but the description is probably drawn up from a specimen in which the hairs have become grey from age; the apical joint of the antennæ is compressed. Under these circumstances I have not thought it prudent to change the name.

Sp. 3. MEGACHILE CIRCUMCINCTA.

Apis circumcincta, Kirby's Mon.

Female.—Length 6 lines. Black. Face clothed with dark brown hair, thinly scattered on the vertex; cheeks covered with a similar pubescence. The thorax is clothed with pale fulvous hair, rather darker above. All the tarsi are fulvous beneath. The abdomen has the two basal segments clothed with a pale fulvous pubescence, the remaining segments thinly covered with black hair, beneath densely clothed with dark fulvous hair, becoming black towards the apex.

Var.—The abdomen is sometimes entirely clothed above with black hairs.

Male.—Length 5 lines. The face is clothed with pale fulvous hair; the vertex with dark brown. The thorax above clothed with reddish brown pubescence, the pubescence beneath is an ashy grey. The anterior femora are fringed behind with reddish brown hairs, the intermediate and posterior pairs with a few long ashy hairs, their tarsi have also a few long hairs of a similar colour; the anterior legs have the coxæ armed with an obtuse tooth: the tarsi are nearly white, dilated, and fringed with pale hairs; the first joint is long, broadest at its apex, the second is small and somewhat heart-shaped, the two following minute, the claws rufous. The three basal segments of the abdomen are clothed with a reddish brown pubescence above, the remainder with black; the sixth segment is emarginate, the ventral tridentate.

The male of this species closely resembles the same sex of *Willughbiella*, but the form of the anterior tarsus is different. I have described that of *circumcincta* as exactly as I could, and it will be seen that in *Willughbiella* the first joint is of an equal width with the tibia, and that the joints gradually decrease in size, and have a dense continuous fringe of hair, which is not the case in *circumcincta*, in which species it is much thinner, and the hairs uneven in length, giving the fringe a ragged appearance. These distinctions will easily separate the two males. As far as I have observed, this species always nidificates under ground, sometimes forming large colonies. It

appears early in June, but is more local than either *Willughbiella* or *centuncularis*.

Sp. 4. MEGACHILE LIGNISECA.

Apis ligniseca, Kirby's Mon.

Female.—Length 7—8 lines. Black. The face has a patch of pale yellow hairs at the margin of the eyes, below the base of the antennæ; the cheeks are clothed with hair of the same colour; the vertex with a few scattered brown hairs: the mandibles are large, quadridentate, the two inner teeth obtuse. The thorax is clothed with pale yellowish brown pubescence, darkest above. The abdomen is oblong-ovate, the two basal segments have a thin pale pubescence, there are also at the extreme lateral margins of the segments, a few pale hairs; beneath, the basal segments are clothed with fulvous, and the two apical ones with dark brown pubescence.

Male.—Length 6—7 lines. Black. Face densely clothed with a rich yellow pubescence, black on the vertex; the cheeks are clothed with pale yellow hair; antennæ filiform. The thorax has a pale yellowish brown pubescence, rather darkest above. The anterior coxæ are unarmed. The abdomen is oblong-ovate, a little narrowed towards the base, the two basal segments have a thin pale pubescence, and the extreme lateral margins of the second, third and fourth segments have a narrow fascia of white hairs, the sixth segment is emarginate, the seventh entire; margins of the segments beneath piceous.

This is the largest of the genus; its size will easily distinguish it; the form of the abdomen is the most striking character. The male is easily distinguished by its size and the entire ventral segment. This species appears rather local; I have only met with it in Battersea-fields, but it appears to be plentiful in some districts.

Sp. 5. MEGACHILE FASCIATA, *Smith*.

Female.—Length 6 lines. Black. Face clothed with a rich yellow pubescence, dark brown on the vertex. Thorax also clothed with rich yellow pubescence, as well as the legs. The abdomen has bright rich yellow pubescence, on the first segment forming tufts laterally, and on the second, third and fourth segments a narrow fascia of short hair of the same colour on their margins; clothed beneath with a rich golden pubescence.

The first specimen which I saw of this species, was sent to me by a friend residing at Bristol, who informed me that he believed it was captured near Southampton. This season I had the good fortune to

capture a specimen at Byfleet, near Weybridge: it is totally distinct from any previously known British species. I also captured a male *Megachile* in the same locality; and it also being distinct from those previously known, is very probably the male of the present species. Not being certain of this, I shall describe it under another name; future discovery will probably prove the necessity of uniting them.

Sp. 6. *MEGACHILE RUFITARSIS*, *Smith*.

Male. — Length 5 lines. Black. Face clothed with pale yellow hair, as well as the cheeks; the antennæ filiform. The thorax is clothed with an ashy pubescence, thinly so on the disk. The anterior coxæ are armed with a small somewhat acute spine; the anterior tarsi pale rufous; the intermediate and posterior tarsi rufous, except their first joint, which is black above. The abdomen has a pale narrow fascia on the margins of the second, third and fourth segments; the sixth segment is emarginate, the seventh has a minute tooth in the centre. The abdomen is globose at the apex, and curved under, as in *Chelostoma*.

N. B. — This description is drawn up from a specimen which had evidently been some time disclosed; and doubtless the pubescence would be more rich in recent specimens.

Sp. 7. *MEGACHILE CENTUNCULARIS*.

Apis centuncularis, *Linn.*; Kirby's *Mon.*

Female. — Length 4—6 lines. Black. A few pale yellow hairs close to the inner orbits of the eyes. Maxillæ quadridentate, the two exterior teeth acute. The abdomen thinly clothed with a pale yellow pubescence, darkest on the disk. All the tarsi rufous beneath. The second, third, fourth and fifth segments of the abdomen have a narrow fascia of pale fulvous hair laterally, the fifth fascia frequently entire; beneath, the abdomen is entirely clothed with bright fulvous hairs, the sixth segment is somewhat acute.

Male. — Length 4—4½ lines. Black. The face covered with bright yellow hair; the cheeks with hair of a paler colour. Antennæ filiform. The thorax is clothed above with a pale yellow pubescence, beneath, inclining to ashy. The anterior legs have coxæ unarmed, and the femora fringed beneath with pale yellow hairs. The abdomen has the second, third, fourth and fifth segments margined with yellow hairs, sometimes interrupted, the sixth segment is entire, and the ventral obsoletely tridentate.

The original specimen of this species in the Linnæan cabinet, to

which the label is attached, is undoubtedly our insect, having the marginal fascia of the abdomen obliterated; several other insects are placed near it, belonging to this genus. There is only one known British species of this genus, if captured in a recent state, which has the abdominal segments margined with white hairs, namely, the *Leachella* of Kirby: they doubtless become white with age, but originally are more or less yellow. This species nidificates in wood, in banks, or in the mortar of walls, &c. I have observed it forming its nest in each situation: it is an abundant species, and appears to be generally distributed.

Sp. 8. MEGACHILE ALBIVENTRIS.

Apis albiventris, Panzer. *Apis Leachella*, Kirby, MS.

Female.—Length $4\frac{1}{2}$ —5 lines. Black. Head as broad as the thorax; the face clothed with pale yellow hairs; the cheeks with a thin white pubescence. The thorax thinly clothed with pale yellow hairs, beneath with white hairs. The legs with a scattered white pubescence. The abdomen short, broad at the base, somewhat wedge-shaped, the segments margined with continuous fasciæ of white hairs, beneath entirely clothed with white hairs, excepting a few dark brown hairs on the apical segment.

In recent specimens, the sixth segment has two round patches of white hair, but they are frequently obliterated.

Male.—Length 4 lines. Black. Head wider than the thorax; the face densely clothed with yellow hair, inclining to white towards the mandibles; the antennæ filiform. The anterior legs have their coxæ armed with an obtuse tooth, having a minute spine at their apex: all the legs have a thin ashy pubescence beneath. The abdomen has the first, second, third and fourth segments margined with yellow hair, the sixth segment is entirely clothed with hair of the same colour, and is emarginate, with some irregular dentations on each side of the emarginations; the ventral segment is entire; the second, third and fourth segments beneath have a fascia of pale hair.

This insect I think is undoubtedly the *Apis albiventris* of Panzer. It appears to be a very local species. Until this season I never captured it; I took two males and one female near Byfleet, on an excursion to Weybridge. The late Mr. Bainbridge took it in Essex, and gave me a specimen. I do not know where the species was first taken, or if by Dr. Leach. It is a pretty insect, and easily distinguished.

Sp. 9. MEGACHILE VERSICOLOR, *Smith*.

Female.— Length 5 lines. Black. A patch of bright yellow hairs on each side of the face, close to the eyes, below the base of the antennæ; the cheeks thinly clothed with a pale yellow pubescence, as also is the thorax beneath, rather darker above. The anterior coxæ and femora are fringed with long pale hairs; all the tarsi are fulvous beneath. The abdomen has a few pale hairs at the extreme lateral margins of the segments, on the fifth the fascia is only slightly interrupted, beneath, the second, third and fourth segments are densely clothed with bright fulvous hair, the fifth and sixth with black hair.

This species is very closely allied to *centuncularis*, the colour of the hairs with which the abdomen is clothed beneath, being the only obvious distinction between them; whether the teeth on the maxillæ are different or not, I cannot say. The specimen was obligingly sent to me for description by Mr. Thwaites, who captured it near Bristol. There is also a specimen in the collection of Mr. Desvignes; these I believe are all that have yet been taken. I have no doubt, if the male could be met with, that we should find an abundant distinction between this species and *centuncularis*, but the females, as I before observed, in some instances very closely resemble each other.

FREDERICK SMITH.

High St. Newington Butts,
August, 1844.

Note on captures of Hymenopterous insects at Weybridge. On the 13th of June I made an entomological excursion to Weybridge, a locality which has produced several exceedingly rare species: in Hymenoptera it is particularly rich. Having observed some portion of the habits of an insect of that class, I think it desirable to record the circumstances. I observed a small insect busily engaged in burrowing with astonishing assiduity, in a bare sandy patch on the common. It worked away with ceaseless rapidity for some minutes, throwing the loosened particles from one to two inches from the mouth of its burrow with its hind legs, continually entering and again retreating to perform the same manœuvre. Having at length excavated to the required depth, it ceased its operations a few moments, when it darted off to a short distance into a bunch of heath; it soon reappeared, dragging along something which it held firmly in its mandibles. On its reaching within an inch or two of its burrow, I placed my net over it, into which it flew, still retaining its prey, which proved to be a small white spider, very common in bushes of heath: the insect itself was *Miscophus bicolor*, *Jurine*. A good description of the female will be found in Shuckard's capital book on the Fossores; the male was not known to him, and I am not aware of its having been taken by any one, until last week, when I captured a single specimen, and five females. The male agrees in length (3 lines) with the female, and also in sculpture, but it is totally black: the female has sometimes the first two segments of the abdomen, or the

first and base of the second, red. Thus its habits are similar to those of the Pompilidæ, all of which, as far as I have observed, provision their nests with spiders; whilst the species of the genus *Ammophila*, including *Miscus campestris*, I have always observed preying upon caterpillars; although Mr. Shuckard remarks, that he always observed them to prey upon spiders, which to me is a remarkable fact, as I have seen them in numberless instances, but invariably with caterpillars. I also captured *Pompilus pulcher*, *Miscus campestris*, *Andrena Rosæ* (thirteen specimens), and one male and two females of *Halictus sex-notatus*: I do not know that the latter insect has been previously taken, except by Mr. Kirby, at Barham. — *Frederick Smith; High-street, Newington, June 17, 1844.*

Note on the capture of Coleoptera at Stirling. Perhaps the following list of Coleoptera, selected from captures in the neighbourhood of Stirling, this summer, from May 20 to July 10, may be worthy of insertion in 'The Zoologist.' Great part of the season has been very unfavourable for collecting, or doubtless I should have done better. I have included in the list a few species which are common in most parts of England, but which I have never before taken in plenty in Scotland. I may here mention, that in the neighbourhood of Edinburgh I have noticed easterly winds to have a remarkable effect on the appearance of insects; so much so, that I have rarely taken a species of any value when the wind was in that quarter. This is probably owing to its vicinity to the sea, as in this part of the country, which is more sheltered, I have not observed the weather to have the same influence, or at least to a very small extent. One or two of my best captures this year were taken when there was a strong east wind.

Leiodes humeralis. Under bark of decaying fir-stumps, along with two or three species of *Agathidium*, June 1.

Ips 4-punctata. Nine or ten specimens taken by sweeping, in an oak wood.

— *ferruginea.* Under bark of Scotch fir, rare, June 15.

Rhizophagus ferrugineus and *dispar.* Taken with the last.

Throscus dermestoides. In oak woods, not common, June and July.

Athous niger. In oak woods, July.

Campylus linearis. In oak and fir woods, middle of June.

Telephorus clypeatus? Occasionally taken from May 20 to end of June.

— *obscurus.* In fir-woods, not uncommon. I never met with this species in the Edinburgh district. May and June.

— *cyaneus.* Seven specimens: this species is generally taken flying in very hot sunny weather; it is very active and difficult to capture: June.

Ragonycha pilosa. Most of my specimens

were taken by sweeping in fir-woods: June 27 to July 10.

Malthinus flaveolus. In oak woods, end of June.

Cis Boleti. Occasional: May and June.

Hylastes ater and *obscurus.* Under bark of Scotch fir; June.

Mecinus semicylindricus. Rare; June 27.
Cæliodes Geranii. On *Geranium pratense*, May 30.

Nedyus floralis and *rugulosus.* A single specimen of each.

— *viduatus*, Gyll. Rare and extremely local; only taken at one end of a small oak wood, by the side of the road from Stirling to the Bridge of Allan; June 7 to July 7.

Ceutorhynchus guttula. A single specimen July 1.

Rhinoncus Pericarpus and *4-tuberculatus.* Both species apparently uncommon in this vicinity.

Dorytomus vorax, with one or two other species, on poplars in some abundance, June 15.

Grypoidius Equiseti. No where, I believe, very common: I took about two dozen specimens on *Equisetum arvense*, in May and June.

Pissodes Pini. A fine specimen, June 20; I kept the insect in strong spirits for sixteen hours; two hours after setting I found it moving its legs and antennæ, and apparently quite lively; it had laid two eggs upon the setting-board.

Leiosoma ovatula. Abundant in damp woods during summer.

Brachysomus hirsutulus. Not unfrequent at the beginning of July.

Phyllobius calcaratus and *maculicornis*. Not unfrequent in June.

Magdalis phlegmatica. A fine female specimen, June 7. The first British specimen of this insect was taken about four years ago, on the 28th of May, by my friend the Rev. W. Little. I took

I have also taken about a hundred specimens of various species of *Leiodes*, some very beautiful, and of all shades, from pitchy chesnut to pale testaceous. I never before took so many in the summer months, as most of them are autumnal species. — *R. Northmore Greville*; *Blaloean, near Stirling, July 27, 1844.*

Note on captures of rarer Coleoptera in Leicestershire. The following are among the fruits of a limited research in this neighbourhood. The best places for collecting are the old damp woods, sandy and heathy lanes and waste grounds on the forest or N.W. side of the county. An entomologist would be guilty of a great mistake, if he should think of finding anything on the cold, woodless, pasture lands that accompany the lias formation of the eastern side of Leicestershire.

Leistus fulvibarbus and *rufescens*. Damp woods.

Trimorphus confinis. Damp woods.

Amara tibialis. Rocky hills.

Colymbetes angustior and *vitreus*. Stony ditches.

———— *exoletus*. Weedy ponds.

Hydroporus alpinus. Stony ditches.

Silpha opaca. Moss on ant-hills, April.

Thymalus limbatus. Bark of fir-trees.

Ptomophagus velox. Hedge-bottoms.

Megatoma undata. Old posts.

Melasis buprestoides. Palings at Blake Hays wood in June.

Elater balteatus. Rotten oaks, Bradgate-park, April.

a second, a male, last year, in the same locality, on July 28. I believe these three specimens to be all that have yet occurred in this country.

Rhynchites æneovirens. On oaks; four specimens, June 20 and 24.

Attelabus curculionides. Not common, end of June.

Cassida obsoleta. In damp woods, rare.

Haltica atrocærulea. One specimen.

———— *Pseudacori*. On *Iris Pseudacorus*, very common.

———— *Modeeri*. Rather common, but very local; May and June.

Salpingus ruficollis. June 21.

Sphæriestes ater and *immaculatus*. A single specimen of the former; end of June.

Ceranota Daltoni. One specimen, July 1.

Tachinus elongatus.

Dianoüs cærulescens. Very rare.

Syntonium nigroæneum.

Aplotarsus Quercus. Bark of fir-trees.

Athoüs subfuscus and *vittatus*. Lea-wood, common.

Telephorus clypeatus. Weedy hedges, May

Podabrus alpinus. Lea-wood, July.

Malthinus immaculatus. Oak trees.

Ptinus 6-punctatus. Abundant in an old barn.

Anobium denticolle. Herbage near elms.

———— *molle*. Houses, frequent.

Cis micans &c. Bark of old firs.

Hylastes rufescens. Bark of oak stumps, Stewards Hay wood.

Orchestes Rusci. Blake Hays wood.

Otiorhynchus Ligustici. Under stones, Bradgate-park.

- Tachyerges saliceti*. Osiers, abundant.
- Trox sabulosus*. Rabbit-skins, Bradgate-park.
- Polydrusus undatus*. Hazel-leaves, com.
- Tanymecus palliatus*. Thistles.
- Pogonocherus pilosus*. Flying about oaks.
- Agaphantia Cardui*. Sywell-wood, Northamptonshire, on thistles.
- Saperda populnea*. One aspen, Blake Hays wood, plentiful, May to July.
- Zeugophora subspinosa*. Hazels, Sheet Hedges wood.
- Spheroderma orbiculatum*. Moss in winter
- Adimonia halensis*. Wild sage in September, very abundant.
- Melasoma ænea*. May and June, herbage, Sheet Hedges wood.
- Bryaxis Juncorum*. Moss.
- Atameles paradoxus*. Nests of *Formica flava*, Sheet Hedges wood.
- Staphylinus brunnicipes*. Sandy banks, September.
- Xantholinus tricolor*. Moss on ants' nests.
- Lathrobium multipunctatum*. Rocky hills.
- Coccinella oblongo-guttata*. Fir-plantations
- *globosa*. Moss.

The present season has been nothing like so prolific as the last in insect life, especially in the spring. *Onthophagus cænobita*, *Phædon Raphani*, several *Donaciæ* and *Curculionidæ*, which used to occur in great profusion in certain localities, have this year scarcely appeared at all. *Colymbetes angustior* occurs all the year round in Bradgate park in the situation mentioned, I find it congregated in numbers under stones, in half-dry water-courses, in company with a few of *C. vitreus* and *paludosus*. *Leistus fulvibarbis* and *rufescens* are both abundant in Sheet Hedges wood, but differ in their habits, the one preferring stony situations, and the other coursing about at the roots of thick herbage. I have only taken one of *Trimorphus confinis*. *Athoüs subfuscus*, for which Stephens only mentions one locality, "the New Forest," is found very abundantly, flying over the hazels in the soft, grassy glades of Lea wood; the common *A. hæmorrhoidalis*, which is more a hedge-bank insect, did not accompany it, and *A. vittatus* was common in the damper parts, with *Campylus linearis*, but not flying. *Trox sabulosus* I have taken three times under rabbit-skins on the scorched heathy hills of Bradgate-park, where also *Otiorynchus Ligustici*, and many other insects of similar habitat, have occurred. Sallows and birches in woods are fertile trees for the entomologist. Some scores of different species may be taken from one sallow in a favourable situation, on the mild close days about the beginning of June. *Hylobius Abietis* has occurred this season in great profusion. — *Henry Walter Bates; Leicester, August, 1844.*

Note on the capture of Coleopterous Insects by night. I would strongly urge collectors of Coleoptera to search more by night than they have probably hitherto done, as I am convinced, from the great success I met with myself last season, there are a great many rarities to be found at that time, which are not to be obtained in the day. It is a well known fact, that most of the *Geodephaga* are nocturnal ramblers, hiding themselves under stones &c. in the day-time; but it is not, I believe, generally known that at least two thirds of the British *Curculionidæ* have the same habit, to which I can bear testimony. I found it almost useless, in the hot months of July and August last year, to search after Coleoptera in the day-time. The plan I generally followed was to ramble out into the fields and woods as soon as it was getting dusk, and instead of examining my net, as I should have done in the day-time, throw all the contents into a large bag, and examine it the next morning; and I have always been well rewarded, both in quantity and quality. I have frequently swept till as late as 11 o'clock at night.—*Samuel Stevens; 38, King St., Covent Garden.*

Note on the capture of Dendrophilus Cooperi at Hammersmith. I have occasionally taken a specimen of this very rare little species, out of an old apple-tree in the garden adjoining my own, since the middle of last May.—*Id.*

Notice of the occurrence of the Coleopterous genus Serropalpus in Leicestershire. I have been favoured by Mr. I. Plant, of Leicester, with a specimen of the genus *Serropalpus*, which was captured by his brother in the warehouse of Messrs. Harris & Sons, hosiers, in a bundle of hose, which a countryman had just brought from the neighbourhood of Loughborough, situated near Charnwood-forest, from the vicinity to which Mr. Plant concluded it was to be found on the oaks in the forest. To my further enquiries relative to the capture of the insect, Mr. Plant further informs me (in reply to the suggestion that the insect might have been introduced from the continent in a bale of goods, having been found in a warehouse), that he had been assured by Mr. Harris, that they had no return goods from abroad for at least four months previous to the capture of the insect; and when they receive any, they are *shipwrecked bales*. He thought indeed that it might have arrived in the larva state in wool; but such an idea is inconsistent with the Xylophagous habits of the larva: and moreover, they never receive any raw material, it being a warehouse for home-manufactured goods alone. Besides, Mr. Plant states that he frequently has had brought to him from the same warehouse, *Hylobius Abietis* and other bark-insects, which he had only found in the forest-trees, and that he once had brought to him a specimen of *Sinodendron cylindricum*, taken off a hosier's bag; for these are bags brought in from the country villages round Leicester, where thousands of workmen are employed, and nothing is more common than to see them at work in the open air, and surrounded with trees. The specimen is rather a small one, measuring only 5 lines in length; whereas one of my foreign specimens is 9 lines long. It has the margins of the elytra redder than in my specimens, and the longitudinal impressions on the elytra (whence the specific name) are less distinct than in my individuals. There is indeed a species in Dejean's Catalogue, named *S. Vaudoueri*, *Latr.* from the west of France, but I cannot find that it has ever been described. It may possibly be our insect. This I shall however be able to determine shortly in Paris. I think you will agree with me that the circumstances above mentioned fully warrant us in adding the true genus *Serropalpus* to the British list. I say the *true* genus, because although Samouelle has introduced it and its true characters into his Compendium, it has never before been detected in England; the specimens which he mentioned not agreeing with his characters, but being, in fact, *Phloiotrya rufipes*. Mr. Stephens, in his Catalogue, also introduced *Serropalpus*, with *P. rufipes* as its type; but this impropriety he corrected in his Illustrations, by giving to that species another generic name, although it is perhaps questionable how far it is generically distinct from the true type of *Xilita (Dircæa) discolor*, *Fabr.* Mr. Stephens also in his Catalogue gave *S. Vaudoueri*, *Latr.*, as a doubtful synonyme of *Phl. rufipes*, but Dejean placed them in different genera, the former as a *Serropalpus*, and the latter as a *Dircæa*.—*Jno. O. Westwood; Hammersmith, August 29, 1844.*

Note on the Voracity of Dytiscus marginalis. A very remarkable instance of tenacity of life in the larva of this insect, lately came under my observation, and may perhaps be interesting to some of the readers of 'The Zoologist.' While botanizing in the neighbourhood of Forres, with my friend Dr. Innes of that town, we espied in a ditch, among *Myriophyllum* &c., a larva of *Dytiscus marginalis* dragging through the water and devouring at the same time, a large eel (*Triton aquaticus*), several times larger than itself. Both animals were captured, the eel being nearly dead, and deposited

in the vasculum, where they remained for some hours. On reaching home, the eft and his adversary were plunged in spirits of wine, 60° above proof. This unusual element, to our great astonishment, appeared to have little injurious effect on the general health of the Dytiscus, for he continued to devour his prey, and drag him about in the alcohol, as if he had been regularly accustomed to indulge in ardent spirits; nor did he, for the space of twenty minutes or half an hour, appear at all affected. After that time, however, he became rather less voracious, and speedily died. I have never heard of an instance of an animal being for so long a time regardless of the influence of alcohol; spirit of the same strength almost instantly killed a specimen of *Lacerta agilis* a few days afterwards.—*Thos. Edmonston, jun.*; *Clova, Forfarshire, July 25, 1844.*

Note on the capture of Omias sulcirostris, Schönher. This little insect, which was hitherto supposed to be confined to Scotland, I have great pleasure in adding to the English list, having myself discovered it during the past spring in Devonshire. On the 3rd of May I captured a single specimen at Manadon, near Plymouth; and from the 13th to the 23rd of the same month, I succeeded in taking nineteen more at Mount Edgcombe, the same locality in which I subsequently discovered *Cossonus Tardii*. Although I have visited the same spot repeatedly for the last nine weeks, not a single example has occurred; whether this is owing to the unusually dry season, or whether it is properly a vernal species, I cannot tell. It is however a fact worthy of notice, that two such rare insects as *Cossonus Tardii* and *Omias sulcirostris* should have been found in the same locality;—the former being supposed peculiar to Ireland, the latter exclusively to Scotland.—*T. V. Wollaston*; *Jesus Coll. Cambridge, Aug. 3, 1844.*

Note on an English locality for Cossonus Tardii. This insect, which has hitherto been found only in Ireland, I have great pleasure in adding to the English list, having lately discovered it in tolerable plenty in the Earl of Mount Edgcombe's park, in Devonshire. On the 13th of May last, my attention was attracted to the decayed trunk of an old beech tree, which appeared entirely killed by the devastations of some insect; and on cutting into it with a digger, I discovered two dead and mutilated specimens of what I supposed to be *Cossonus Tardii*. After working at the same stump for upwards of two hours, I had the good luck to take a living pair. On the 20th I recommenced the search, and found that the insect had more or less infested the whole plantation; and, on cutting into the trees, discovered abundance of dead specimens, which appeared exceedingly old, and fell in pieces immediately on my opening the rotten wood; but I still only succeeded in capturing *alive* another pair. On the 27th, however, I had better luck, and managed to secure five: and on the 3rd of June I took two more, making in all eleven perfect specimens, besides several dead ones, which are more or less mutilated. The plantation is composed of beech and sycamore, but I could only find a single specimen, and that a dead one, in the latter tree. From the devastations they have caused, I cannot suppose they have existed there for less than a hundred years, several of the oldest trees having been completely killed. The plantation is situated on the highest point of ground in Mount Edgcombe, overlooking the sea, and commands upon the whole the finest prospect in the west of England: and I hesitate not to say, that any of the London entomologists would find themselves amply repaid by visiting the district.—*Id.*

Note on the capture of Pissodes Pini at Weybridge. Last summer I captured a single specimen of this rare beetle at Weybridge; and last week I took two more on the rails at the margin of the pond in the fir-wood, a short distance from that situated close to the road leading to Byfleet.—*F. Smith*; *5, High St., Newington, June 13, 1844.*

Notes on a Voyage up the Alabama River. By P. H. GOSSE, Esq.

THE first impressions of a country remotely separated from any we have before visited, are always curious and interesting to the traveller himself, however commonplace they may be to others. The novelty of the scene (to *myself* at least) which I am about to describe, must be my apology for offering these sketches to your readers, although they contain no new facts of any importance in science. I had hitherto known and loved Nature only in the inhospitable regions of Newfoundland and Canada; and the desire of seeing her in sunnier lands was one great part of my inducement to visit the South. Accordingly it was with a peculiar feeling of gratulation, and no low-wrought expectation, that in the middle of May I found myself on the shore of the Gulf of Mexico. As I had no acquaintance in Mobile, and as the city presented little to tempt my stay, I hastened to proceed to the mountainous part of the State, to which I had introductions. I immediately therefore took passage on board one of the fine high-pressure steamers that throng the Mobile wharfs, to go up the river Alabama. It was evening when we left the city; from which the course of the river winds for many miles through a flat marshy country, and is bordered on each side by a broad belt of reeds, which grow thick and strong out of the very water. By day I suppose this appearance would be unpleasing, but the gloom of night, limiting the view to a few yards around us, and making visible the beautiful fireflies, which danced and crawled about the reeds in myriads, or made interrupted lines of radiance as they flew like shooting stars through the air, made the scene one of romantic and high gratification. By and bye, we come into more uneven ground, where the high banks reflect a black shadow on the smooth water, seeming to contract the broad river to a brook; the calm mirror-like surface, unruffled by a zephyr, gives back the light of each individual star, and now and then, as we round some point, a bright red glare, with its watery reflection, suddenly and unexpectedly bursts upon our gaze from the beacon-fire of some wood-yard, casting a broad illumination on the opposite bank, which has a startling and poetic effect: while the hoarse and hollow booming of the steam, occurring at regularly measured intervals, seems not out of keeping with the general solemnity of the scene. The busy hum and bustle of the vessel gradually subsided into quietness, but long after all the rest of the passengers had retired to rest, to whom I suppose the scene presented not the charm of novelty, I continued on deck with unabated delight: and even when I retired, it was not to sleep,

for I could not avoid sitting up in bed, and gazing through the open window of my berth, on the placid beauty of the night. At early day, too, I found it delightful to stand alone on the upper deck, and watch the opening morning: it was yet dawn; stillness and quiet prevailed; the decks were yet untrodden; the noise of the day was yet hushed; the bats and whip-poor-Wills were still sweeping over the stream in tortuous flight, both engaged in the same vocation, the pursuit of crepuscular insects: the breadth of wing and rushing flight of the latter, deceived me for some time into the notion that they were large swallows; the bat, though of swift wing, had no chance whatever in a race with them. As the eastern sky began to glow and brighten into fiery red, they gradually disappeared, the bats being the first to retire. Soon the sun, with dilated face, peeped over the horizon in cloudless majesty, and flushed with golden light the hills and cultivated fields that surrounded us; but as yet the air was delightfully cool and refreshing, and perfumed with the breath of flowers, which, after a while was dissipated by the increasing heat. The river was smooth and shone like silver, until its surface was broken and swollen by the rushing steamer: before us we had a polished surface, reflecting a cloudless sky; behind us we left a rolling sea, enshrouded beneath a long sable cloud of dense smoke. Nor was the day without pleasure; though we passed no towns, and very few settlements, at least during day-light: occasionally we stopped to replenish our stock of wood, which is cut, split and corded, at certain stations by negroes residing at them; these stations are called wood-yards. The moment the steamer stops, the crew begin to bring the wood on board on their shoulders, and it is astonishing to observe how quickly the great piles are transferred, and we are again on our roaring and rushing course. Here and there we open on some large cleared estate, and fields planted with corn or cotton, as yet scarcely appearing above ground, and perhaps a single negro-hut; but the planters' houses and the general buildings of the farm do not appear, they being situated at a considerable distance from the bank. Every spring, the river overflows its banks, and inundates the surrounding country to a wide extent. Of this I saw sufficient traces, though the water had now returned to its wonted channel: high up on the trees which overhang the water, the branches were incumbered with rubbish that had been left there by the spring floods, and which showed the great extent to which the river had been swollen. In one tree was the carcass of a cow that had probably been drowned in the freshets, and having become entangled among the forked boughs, had been deposited in the

odd situation in which I saw it. In general the banks are clothed with tall forests to the water's edge, trees clothed in all shades of green, of various height and form, some covered with glorious flowers, suddenly appeared and as swiftly vanished, a constantly shifting panorama. Many trees had their tangled roots all exposed by the washing away of the soil from beneath them, others were prostrate in the stream from the operation of the same cause. Sometimes a pretty wooded island appeared, cleaving the stream with its shore of bright yellow sand: now the river expanded into a silvery lake, then narrowed to a gorge, between beetling precipices of limestone, rising perpendicularly to the height of several hundred feet.

I was surprised to observe so exceedingly little of animal life: scarcely a single insect was to be seen during the whole voyage up, and very few birds. The depth of the forest is not favourable to the development of animal existence; the edges of the woods, or open plains, where light is abundant, where flowers bloom, and herbs seed, are the resorts of birds and insects, and on this account, these charming visitants are found to swarm when man has made a clearing, even in the spot where before scarcely an individual could have been found. A few I saw: the blue heron (*Ardea carulea*), with doubled neck, and stretched-out legs, slowly flapped his great wings, in his heavy flagging flight from shore to shore: the belted kingfisher (*Alcedo Alcyon*) shot along, with a harsh rattling laugh; or, sitting on some low projecting branch, suddenly plunged headlong into the water beneath, and instantly emerged with his prey: the wood-duck (*Anas Sponsa*) flew shyly along the margin, close to the water, beneath the overhanging bushes: now and then we overtook a tortoise, swimming at the surface, his body submerged, poking up his head at intervals, with a timid curiosity, to see what all the noise was about.

There is perhaps no river so winding as the Alabama: the boat's head is turned towards every point of the compass, and that often within the space of a few minutes: sometimes we may make a run of fifty miles, and be then within three miles of where we were at first. Indeed at the place where I afterwards resided, which is about six miles in a direct line from the river, I have been assured that the booming of a steamer's engine will sometimes be heard in the morning, and continue to be audible at intervals for a great part of the day; having been perhaps at no time more than twenty miles distant, in a course of many hours. It is pleasant to meet another boat in the river, especially in a part of the low country, where the course is very tortuous: to catch the faint black line of smoke upon the sky, across

Polyommata. I did not find the *Thecla* numerous anywhere but at that particular spot near King's landing.

Beautiful flowers, of varied colours and fragrant perfume, thronged the edges of the forest, and the road-sides: especially in the corners of the fences, which are almost wholly made of rails set up in the zig-zag fashion so general in the north, commonly called a Virginia fence. In the angles of these fences, there is always a dense and rank mass of vegetation, and many handsome flowers attain a luxuriance there, which is not seen elsewhere. The beautiful scarlet woodbine (*Caprifolium sempervirens*) grew in profuse splendour among the bushes, its flowers being no less remarkable for fragrance than for elegance of form and brilliancy of colour. I found that it possessed attractions, not only for man; for having gathered a spike, it was visited, even while in my hand, by a fine butterfly (*Colias Eubule*, Boisd.), which instantly began probing the deep tubular blossoms with its sucker; so eager was it to gratify its appetite, that without any trouble I caught it in my fingers.

Many romantic little spots occurred in the course of my walk, especially where some little brook crossed the road, making, where it emerged from, and again entered, the forest, pretty shady glens, so sombre with the bushes, whose overarching tops touched each other overhead, and whose verdant and leafy branches seemed like an impenetrable wall, that the rays of an almost vertical sun were effectually shut out. In these cool retreats, and I saw several such, the emerald virgin dragonfly (*Agrion Virginica*) delights to dwell. All the dragonfly tribe, as they are water insects in their first stages, are observed to prefer hawking in the vicinity of water, as affording in abundance the prey which they pursue, but the open pond or broad river is most generally their resort. But he who would see the emerald virgin, must go to some such hidden brook as I have described, over which, as it flows silently in a deep soft bed of moss of the richest green, or brawls over a pebbly bottom, with impotent rage, three or four of these lovely insects may be seen at almost any hour, on any summer day. It is indeed a fly of surpassing elegance and beauty: the male especially, whose long and slender body is of a metallic green, so refulgent that no colour can convey an idea of it. This green hue becomes a deep blue, if held so as to reflect the rays of light falling on it, at a very obtuse angle: a property common to the green hue of many insects and some birds: the eyes are glossy, round and prominent: the wings broad, filmy and minutely netted, of a uniform purplish black. The female might easily be supposed to be of a different species; it

is much duller in colour, the body being nearly black, having little of the bright green reflections; the wings are browner, and they are all marked with a rhomboidal white stigma, near the tip, which is wholly wanting in the male. I have the best evidence of their identity, which I need not particularize. The female is figured in Drury's 'Exotic Insects.' Their mode of flight is graceful, but rather slow, so that they are easily captured; and they will not leave these their favourite haunts, even though pursued. I have no doubt they are born and die within the limited space of a few yards. The refreshing coolness of these wild woodland bowers was so tempting, that I could not resist taking refuge in them from the burning heat without; and thus I contracted an acquaintance with these "*demoiselles*." I encountered a stream however of higher pretensions, Mush-creek, which I crossed by means of a very primitive bridge, the trunk of a tall forest tree, which had been cut down so as to fall across. On this tree, basking in the sun, lay a large snake of a dusky brown, about four feet in length, which, on my disturbing it, instantly plunged into the middle of the stream, and dived to the bottom. As the water was turbid, I saw no more of it. It was, no doubt, the species commonly called the copper-belly (*Coluber porcatus*, Bosc.), which is numerous, but harmless. I afterwards observed a snake, probably of the same species, swimming swiftly in a clear stream, close to the surface, but entirely submerged; occasionally it stopped, protruding its head and neck above the surface to look about.

In these unimportant but pleasing observations, a few only of which I have attempted to record, the day waned away unperceived. When I arrived at the hospitable mansion of my friend, the afternoon was considerably advanced; and I found that I had accomplished the tortoise-pace of one mile per hour; tired *in* my walk, but not *of* it.

P. H. GOSSE.

Gloucester Place, Kentish Town.

Note on a newly-discovered Cave in Westmoreland. This remarkable cave is situated to the south of Arnside Knot, looking upon Morecambe-bay. The entrance to it can only be effected by creeping like a serpent, through a long passage, just capable of receiving a person of ordinary size. In a long gallery, the floor of which is covered with *debris*, have been found a number of bones; some of them are pronounced to be those of the hyæna, the wolf, and other animals now extinct in this country. At the extremity of this gallery is a natural chamber, the roof of which is overhung with stalactites, while the floor is covered with the stalagmitic formation. — *Edward Newman.*

Historical Notices of certain Quadrupeds formerly existing in Great Britain, and the probable periods of their extinction. By SIR OSWALD MOSLEY, BART., F.L.S., &c.

A DEGREE of interest is naturally excited in the human mind, by the investigation of subjects over which antiquity has cast a shade; the very obscurity wherein they are enveloped, tends to increase the ardor with which such a task is undertaken. It will not be, then, I trust, a fruitless occupation, to gather together the scattered notices, which we find in ancient writers, of wild animals formerly existing in this kingdom. There was, indeed, a more primeval race of animals, which lived and died here, before any memorialist was in being to record their existence, but whose history is indelibly marked by their fossil remains in our various geological strata. I am not aware that any publication has yet issued from the press, in which these relics of past ages are arranged in any tolerable order, or are brought, as it were, at one view, within the scope of our imagination, with the single exception of Dr. Buckland's work; and any attempt of the kind upon the present occasion, would far exceed the limits of my researches. In the remarks I am about to make, I shall briefly notice a few of the extinct denizens of our woods and waters, respecting which some historical allusions are to be met with, and endeavour to trace the probable periods when they severally ceased to exist in this island.

There are several collections of historical Triads still extant in the Welsh language, which Mr. York, in his 'Royal Tribes,' supposes to have been compiled about the year 650. One of the most complete of these Triads has been printed in the 'Archæology of Wales,' from a manuscript dated 1601, wherein the writer states that it was taken out of the books of Caradoc of Llancarven, who lived in the 12th century: — the antiquity of these documents is therefore indisputable. From this authority we learn, that the Kymri, a Celtic tribe, first inhabited Britain; and that before them were *no Men* here, but only *bears, wolves, beavers* and *oxen with high prominences*. The fact of the first-mentioned of these animals being indigenous, is fully corroborated by passages in the works of several classical authors. Martial makes mention of the cruel exposure of the robber Laureolus to a Caledonian bear, while hanging on a cross: Claudian, in his praises of Stilicho, alludes to British bears: and Camden refers to Plutarch, as an authority for the same, although I have not been able to find any such passage in his works. The Emperor Claudius, upon his return to Rome from the conquest of Britain, exhibited, among other concomitants of his triumph, combats of British bears. But we have

other data, upon which to form an undeniable conclusion, that bears once inhabited our island. The bones of these animals, which have been discovered in various parts of it, fully prove the fact: and from an examination of these bones, we find that two species of them formerly existed; one of which frequented caverns, was of a large size, and appears to have been nearly allied to the grisly bear (*Ursus horribilis*) of North America; the other was the common brown bear (*Ursus Arctos*) of the North of Europe. It is probable, that those of the first sort became extinct soon after the island was peopled; but that the latter were sufficiently numerous, while it was under the Roman sway, to be exported from hence to Rome, for the public exhibitions in the amphitheatre. After the arrival of the Saxons, much greater attention was paid to the cultivation of the soil, and the bears were found destructive to agricultural products, on which account that people gradually diminished their numbers by cutting down the woods, and chasing them out of their most retired haunts. In the Penitential of Archbishop Egbert, said to have been compiled about the year 750, bears are mentioned as inhabitants of our forests, but the laws of Canute, enacted about two hundred and seventy years afterwards, are silent concerning them, although other beasts of forest and chace are enumerated therein; and before the Norman conquest they became remarkably scarce. In Doomsday, however, this animal is transitorily noticed, as having been annually furnished to Edward the Confessor by the city of Norwich, together with *six dogs* for the *bear*, no doubt for the purpose of baiting it. This cruel amusement continued in fashion many years afterwards; for we find bear-wards, or keepers of bears, often mentioned among the retained servants of our nobility; but the animals consigned to their care were probably of foreign extraction, for there is no record of any native bear being seen subsequently to the Norman conquest.

The next wild animal, the period of whose extinction I will endeavour to ascertain, is the wolf, which was not only more destructive, but less easily extirpated than the bear. After the retirement of the Romans from Britain, the population of the island was much diminished, and the number of wolves appears to have increased to an alarming extent. The flocks of the Saxons, after their firm establishment here, were constantly exposed to their devastations; and it required all the vigilance of the shepherd (*scep-hyrde*, or him that was hired to take care of the sheep) to protect them from their attacks. Wolves are mentioned in the laws of Canute, as neither beasts of forest nor of venery, and therefore their destruction was not subject to

any fine or correction. Edgar, the Saxon king, commuted the punishment of certain offences for a given number of wolves' tongues from each criminal, and he also taxed the Welsh princes at three hundred of their skins per annum; this tribute (we are informed by William of Malmesbury) ceased after three years, because they asserted that there were no more wolves to be found in their territories; and this statement has led to an erroneous conclusion, that wolves were extirpated throughout the island at that early period of our national history. The absurdity of this supposition however is sufficiently evident by a reference to subsequent documents. A grant of the Lordship of Riddesdale, in Northumberland, was made by William the Conqueror to Robert de Umfraville, in the tenth year of his reign, on condition of his defending that part of the country from enemies and *wolves*. In 1281, Edward the First gave a singular commission to Peter Corbet (a copy of which is still preserved in Rymer's *Fœdera*), to destroy the *wolves* in the shires of Gloucester, Worcester, Hereford, Salop and Stafford; and the same king directed John Gifford to hunt them in all the forests of England. In the forty-third year of the reign of Edward the Third, Thomas de Engaine held lands in Pitchley, in the county of Northampton, by service of finding certain dogs for the destruction of *wolves*, foxes, martens, cats and other vermin, within the counties of Northampton, Rutland, Oxford, Essex and Bucks. It is rather remarkable, that the very place in which lands were held by this tenure, is still famous in fox-hunting annals. Sir Robert Plumpton, Knight, was seized of one bovat of land in Mansfield Woodhouse, in the county of Nottingham, called *wolf-hunt* land, which he held by the service of winding a horn, and chasing and frightening away the wolves in the Forest of Shirewood. In a treatise upon Hunting, in the British Museum, written by the Master of the Game to Henry the Fourth, the wolf is mentioned; and in the reign of Henry the Sixth, William de Reynes held lands in Boyton, on condition of finding five *wolf-dogs*. Wolves, according to Hollingshed, committed great havock among the flocks in Scotland, in the year 1577; and the last in that part of the kingdom is said to have been killed by the brave Sir Ewen Cameron of Lochiel, about the year 1680. It is therefore certain that these ferocious animals were not wholly exterminated in Britain until the middle of the seventeenth century.

I purposely omit the wild boar from my list of indigenous animals which are become extinct, because there is every reason to believe, from the authority of ancient records, that the first breed of domesticated pigs descended from this wild stock. And for a similar reason

I shall postpone, upon the present occasion, any observations that suggest themselves upon the sort of wild cattle mentioned in the Triads; for although the high *prominences*, for which they are there said to be remarkable, seem rather to point to a very distinct division of Bovidæ, there are some grounds to suspect exaggeration in the statement, and that these indigenous oxen may have been the remote ancestors of our present stock.

Beavers, the other indigenous animals found in Britain by the original settlers, must have been at all times scarce, though, in all probability, widely dispersed throughout the fenny districts of the country, for their remains have been found in Berkshire, Cambridgeshire, Yorkshire and elsewhere. At the present day they are confined to the northerly climates of Europe, Asia and America, where they frequent places remote from the dwellings of man, and abounding in wood and water. As England at an early period became the most populous part of the British isles, it is natural to suppose that these animals would become extinct there, before any written record of their existence could be taken; but in the thinly inhabited districts of Wales, several memorials of them have been transmitted* to us. The laws of Howel Dha, a Prince of Wales, who died in the year 948, present us with the singular fact of the rarity of the beaver even at that early era; for, whilst he values the skin of the stag, the wolf, the fox and the otter, at only eight pence, that of the white weasel or ermine at twelve pence, and of the marten at twenty-four pence, the skin of the beaver is estimated therein at the high price of one hundred and twenty pence. The Welsh gave it the very appropriate name of *Llostlyddan*, or Broad-tail; and Giraldus, who accompanied Archbishop Baldwin through Wales in 1188, states in his curious Itinerary, which is still preserved to us, that the river Tivy in Cardiganshire, and one other river, in Scotland, were the only places within Great Britain, where beavers were then to be met with. As this is the last authentic account of their existence within our island, we may fairly presume that none survived the thirteenth century.

I have now concluded this imperfect sketch of extinct quadrupeds in the British isles. Before many years shall have elapsed, it is more than probable that some, if not all of the wild animals, which are still to be seen here, such as the marten, the wild cat, the stag and the roe, may share the same fate: and it will in that case require some future chronicler to rescue their memory from a similar oblivion to that, which, without this humble effort, the above-mentioned brute inhabitants of our ancient forests might possibly have been consigned.

Anecdote of a Terrier being apparently poisoned by Vermin infesting a Rat. When staying at Hamilton in Scotland a few years ago, my servant ran to me one day to say there was a large rat in one of the out-houses, and to know where my terrier was. I went with the servant, and the terrier killed the rat as usual; but in a second or two afterwards, her mouth was covered with froth and foam, and she staggered about, and appeared very ill, as if poisoned. This took place the instant she dropped the rat. On giving her water and washing her mouth well, she was soon all right again. On looking at the rat, it proved to be completely alive with vermin, though of what description the insect was I could not tell. I have been at the death of many hundred rats, but never before saw one in such a state, it being covered with the vermin, although very lively before he was killed by the terrier.—*I. W. G. Spicer; Esher Place, Surrey.*

Note on the Otter. This animal is occasionally found on the banks of the Trent, but is a straggler from some distant stream, and never breeds here. A labourer informs me, that about fifteen years ago one was observed upon the Blackwell brook, a small trout-stream that intersects this parish), feeding greedily upon a fish which it had just caught. Being a novelty, he was pursued by dogs, but having recourse to his amphibious acquirements, he dived into the deepest places, and by that stratagem long evaded being taken. He however yielded at last, and was finally killed on Melbourne pool, but not without defending himself to the last with a valour and perseverance worthy a better fate. Another was observed in November, 1841, by the gamekeepers at Donnington park, on the Trent, in search of prey, but was not captured. — *J. J. Briggs; King's Newton, Melbourne.*

Anecdote of a Cat hunting like a Dog. It is not, I believe, generally known, that a cat will chase in pursuit of its prey, the same as a dog. I shot one the other day in full pursuit of a full-grown rabbit, which came bounding by me in covert, the cat coursing it just as a terrier would. Before this, I supposed that cats always sneaked quietly up to their prey, and then sprung upon it. — *I. W. G. Spicer; Esher Place, Surrey, June 12, 1844.*

Note on the Stoat. Nothing can exceed the assiduity with which the nimble little stoat forages for his sustenance. Not content with pillaging farm-yards, and poaching game-preserves, and confining his operations above the ground, he descends into its bowels, and climbs the trees that grow upon its surface. Moles become an easy prey to him, for he hunts them in and out of their subterranean avenues with an agility which must ensure their ultimate capture. Water-rats share the same fate. He also ascends trees, and sports like the squirrel, and almost with its cleverness, along the delicate branches, probably in pursuit of that animal or a bird, a feat which I have witnessed to my astonishment many times. All kinds of mice are favourite food with him.—*J. J. Briggs.*

Note on the Habits of the Hedgehog. Our dyke sides, hedge-rows, copses and thickets, are very favourite localities with the hedgehog, who leads a quiet and unobtrusive life, feeding upon worms, insects, acorns and fallen wild fruits, and is rarely to be observed in the day-time. Towards evening he issues forth from his hiding-place, and may sometimes be descried stealing cautiously along the grass in search of food, stopping occasionally to examine some wild plant or small object that attracts his notice. They breed here every year, but the nest is rarely found, for it is generally very ingeniously hidden, either in the bole of a hollow tree, or amongst some dried herbage or leaves, in a copse or plantation. On June 26, 1840, a small terrier found, amongst

some decayed wood in a rick-yard, a nest of hedgehogs, together with the old dam. The litter consisted of three individuals, about the size of a cricket-ball, and all armed with the usual complement of prickly spears. The nest was nothing more than a few straws, which afforded them but very moderate accommodation. They had at this early period the power of contracting and expanding their spines, and when one individual touched another in the nest, both immediately rolled themselves up, gave a peculiar jerk to their bodies, and made a menacing hissing noise. They were probably at this period about a fortnight old. They coiled themselves up with such precision and firmness, that it was difficult to imagine them to be living animals, and they might have been rolled on a table or floor for hours, apparently without suffering any inconvenience. It is somewhat remarkable that although when in the position just described, they must necessarily be precluded the possibility of hearing and seeing, yet they seem to have the power of ascertaining to a certainty whether danger be near, and will never uncoil themselves so long as an enemy is at hand. At the time of their birth the young have not their prickles, but are covered with a coat of bristly hairs, which grow gradually stronger with the growth of the animal, until they have attained their usual hardness. The skin of the hedgehog emits a strong unpleasant smell, which enables dogs very readily to find them, and numbers are taken in this manner and destroyed.—*Id.*

Note on the Spines of the young Hedgehog. The spines of the young hedgehog are perfectly formed, although soft, even at the time of birth: they almost immediately harden, and in the course of a day or two become as stiff and prickly as those of the adult animal. The observations of White of Selborne, and those of Mr. Bell, in his 'History of British Quadrupeds,' may be consulted with advantage on this subject.—*Edward Newman.*

Facts as to the Habits of the Hedgehog. By W. H. S.

SOME years ago I sent several papers to a sporting periodical, then and still deservedly in much repute, as to the fact of whether hedgehogs, when in their natural state, destroyed and consumed the eggs of game, and were guilty of the acts laid against them by keepers and others, of destroying the young of game also. And as I feel much interest in the sombre habits and retired nature of this little animal, I endeavoured to defend him from many of the prejudiced accusations brought against him; but I was met by the "facts" of an able contributor and correspondent to the periodical alluded to, under the signature of "Laddie," whose facts, I fear, annihilated some, though not all, of my suggestions of the poor urchin's innocence. Finally, our correspondence concluded by my making the following appeal on behalf of the hedgehog, as I could not refute the statements of Laddie, and which I venture to transcribe, in order that the circumstances may be fairly before your readers.

“A LAST WORD FOR THE POOR HEDGEHOG.

“The facts stated by your correspondent, ‘Laddie,’ leave, I fear, but little grounds to enable the poor hedgehog to disprove the charge brought against him, of consuming the eggs of game as food; but let me offer a possible excuse before the unwilling but almost inevitable guilty conclusion is drawn against the hedgehog. Laddie says he caught several urchins, and *when in a state of confinement* (as I understand him), gave them ‘fish, flesh and fowl, and yet they eat the eggs given them in preference.’ Strong evidence this, but not quite conclusive, for in my former notice on this subject, I stated that the hedgehog there mentioned to have been put in a hutch, with the five young rabbits, speedily killed them all, though the keeper could not say whether the hedgehog attempted to eat them afterwards. This destruction of the rabbits might therefore still be contrary to the hedgehog’s usual habits, if at liberty. Now the experiment tried by Laddie (no doubt with the most fair intention of getting at the truth), I think hardly comes up to that intention, for if his words, ‘fish, flesh and fowl,’ are to be taken literally, the first and third kinds of food are out of the question, and ‘flesh’ might not have suited the hedgehog much better than the other two, so that out of a choice of evils the urchin took to eggs, as well as sometimes to the other unusual kinds of food offered it. But to try the matter quite fairly, I think the hedgehog should be turned out in a yard or walled garden, and well supplied with beetles, and other its natural food, and if he takes to devour the eggs which are placed to try him, — then like the condemning judge’s last words, I can only say, Keeper, ‘have mercy on him,’ ’tis his only offence, and the world is wide enough for him and thee.”

In Mr. Waterton’s second series of ‘Essays on Natural History,’ lately published, he takes the same view as the one suggested by me as to the change which takes place in the habits of an animal when kept in confinement, (see his observations in reply to Mr. Wighton’s statement of his squirrel sometimes feeding on birds), which appears to quite bear out the suggestion I had previously ventured to make, as to the hedgehog, when kept in confinement, feeding upon food not its usual sustenance, as stated by Laddie. And here, perhaps, I may be excused for making the following quotation from Mr. Waterton’s amusing work. “I wish we knew more than we do of the carnivorous propensities, or the want of them, in certain animals, we might then be able to account tolerably well for many strange occurrences which every now and then puzzle us so much in the workings of Zoologi-

cal gastronomy. So unaccountable indeed are sometimes the actions both of man and beast, not only in the eating department, but also in domestic arrangements, that we might really fancy the performers not to be quite right in their heads." And Mr. Waterton illustrates this by a story of his Tom cat, Sterne's ass, &c. But candour towards the observations of 'Laddie' before alluded to, and truth itself, require I should admit that the poor hedgehog is guilty of derelictions and actions unbecoming the apparent propriety of its quiet and innocent demeanour.

Although I trust the foregoing appeal may not be entirely lost, on behalf of this shy and retiring little animal, yet I must confess, if it takes habitually to such practices as those I am about to state, it is deserving at least of reprehension, if not of a felon's death. But it should be remembered, as has been observed by a great writer, that (generally) "there is more to admire in the worst of men than to condemn," and perhaps it is so in animals: the good done by the hedgehogs in the destruction of beetles, and a variety of other similar food on which it is known to live, must therefore be put as against the occasional damage done by it to eggs and the young of game. The facts which have recently come to my knowledge are the following. A friend who resides in Yorkshire, had a brood of eleven young turkeys, and when not more than three weeks old, they were placed with the hen bird in a small paddock, not far from a wood, and in a quiet and secluded spot. One night, shortly after being placed there, the bodies of seven of the young turkeys were found with their heads eaten off, and the bodies left unmutilated in other respects. My friend then desired four traps to be set for the mysterious midnight visitor, baited with one of the dead turkeys, and in the trap the next night was caught a large hedgehog!! Still, a hope sprung up that this might have been by accident; but when my friend went on to state, that from the time that that event occurred, and after which the four remaining turkeys were put back in the same place, and all continued to thrive and do well, and were never visited by any further mischance, I felt my hopes of the hedgehog's innocence were crushed, and I am no longer able, after the repeated other accusations brought against it, to class it as an innoxious animal.

Shakspeare mentions the whining of the hedgepig, — "Thrice and once the hedgepig whin'd;" and upon enquiring of a keeper's wife, whose cottage is situate in a retired spot, if she ever heard or saw the hedgehogs about on the tranquil spring or summer evenings, having frequently done so, and caught them myself, she said her son, a boy,

often brought them home, having caught them close by; and she had no doubt they were what she "frequently heard whining about at dusk."

To me there is something particularly grotesque and amusing in the face of a hedgehog; it is somewhat negro-like in form and expression. When taken up quite gently and held in the hand (with a glove on), the hedgehog will frequently open its round ball-like shape, and partially put out its head, either to see what is going on, or to display its own "fair proportion of feature," and then, like a shy and bashful maid, not yet hacknied in fashion's ways, retire from the rude gaze of man, and the world's prying observation, by shutting itself up again till placed on the ground and left alone; it may then be shortly seen to unroll itself and creep quietly away, in no unnecessary hurry or alarm, wondering, no doubt, at man and his curious ways, as he perchance does at those of the hedgepig. I have often thought that this unwillingness of the hedgehog to keep its face concealed and rolled up within itself as it were, for any very long period, arose probably not from pride, or any undue and vainglorious vanity in seeking for admiration, but from the uncomfortable warmth and inability to respire freely; and it therefore becomes anxious, the first moment a due regard to safety will permit, to resume its former form, and once more set out on its destined course. The hedgehog is a very sensitive little creature, and a very slight pressure on its horny spines demonstrates how susceptible it is, though they protect it and baffle the efforts of many a stronger enemy to injure it. But unnecessarily to destroy the poor hedgehog, particularly in those places where it can do little or no harm, bespeaks "a grievous wrong" to that which the goodness of Providence has called into being, to enjoy life like ourselves.

W. H. S.

Hatton Hall, August, 1844.

Corrections to Mr. Bartlett's Paper on the Birds of Kent. I hasten to correct one or two errors which have appeared in my account of Kentish birds. The statement that the gannet breeds on the shingle in Romney Marsh (Zool. 626), was an error which arose from my transcribing from my list of Romney-marsh birds the words that applied to the bird which followed, namely, the tern. I did not observe my mistake until I saw it in print. The statement that it was common in Romney Marsh, is confirmed by the following account, which I have just received from Mr. Plomley. "In westerly winds," he says, "the gannet is very commonly driven on shore. I have had *very many* fine specimens brought to me, one of which I sent to the Zoological Gardens, a year or two since." In saying that the greenshanks (*Totanus glottis*) was not common, I was mistaken. I find from Mr. Plomley, that in spring and autumn these

birds are common in Romney-marsh, Instead of black guillemot (*Uria grylle*), I ought to have put the ringed guillemot (*U. lacrymans*), which, in Romney-marsh, is a much more rare bird than the black. The black-headed gull mentioned in my list, as breeding in great abundance in Romney-marsh, I find is *Larus ridibundus*, and not *L. atricilla*, as stated there. The following additional information has been afforded me by Mr. Plomley, about two or three of our British birds which are in most places rare, but which are not uncommon in Romney-marsh. The wood sandpiper (*Totanus glareola*) is very common in the autumn. It arrives in large flocks, with the green sandpiper, about the middle of July, and departs early in September. Last autumn seven were brought to Mr. P., which had been killed at one shot. The avocet (*Recurvirostra Avocetta*) is not uncommon. Formerly they bred in the marsh in great numbers, but are now less frequently met with. Mr. Plomley has four in his collection, and could have procured many more. A nest of young ones was found in 1842, and last summer Mr. P. killed two young birds on the wing. Of the skua (*Lestris cataractes*) Mr. Plomley says, "I seldom ride along the coast, without seeing one or two specimens. They are the most difficult of all the gulls to kill." Several of the glaucous gulls (*Larus glaucus*) have been seen this summer in Romney-marsh. Hitherto Mr. Plomley has been unable to procure any of them. The following may be added to the list of Kentish birds. Pomarine skua (*Lestris Pomarinus*): not uncommon in Romney-marsh. Lesser black-backed gull (*L. fuscus*): very common in Romney-marsh. In the account of the storm-petrel (Zool. 627), there is a slight misprint:—"spenries" should have been *spencies*: and "by a brother gunner," should have been by a brother of mine.—*J. Pemberton Bartlett; Kingston Rectory, August 15, 1844.*

Note on the Arrival of Summer Birds, in the Vicinity of Barham Downs.

Whinchat	March 22	Sandpipers (or summer snipes)	April 22
Redstart	April 10	Martin.....	May 2
Willow-wren .....	.. 11	Greater whitethroat .....	.. 2
Blackcap .....	.. 11	Swift .....	.. 4
Cuckoo .....	.. 13	Spotted flycatcher .....	.. 7
Swallow .....	.. 18	Goatsucker .....	.. 7
Nightingale .....	.. 18	Red-backed shrike .....	.. 13

I have not marked the date of the arrivals of yellow wagtails, for this reason, that some few always remain with us throughout the winter, and it is difficult to determine the exact time of the arrival of those which do not winter with us; but I have observed that they get more numerous towards the middle of April, about which time I imagine those arrive which have not wintered here. This year, I did not observe any ring ousels at the usual period, which is April; but there was a male ousel that made his appearance in our garden in June, where he continued for some time, roosting in some thick ivy on the church. I was much in hope that he might have a mate in the neighbourhood, and that they would build on the premises, but in this I was disappointed, as I never could discover more than this one bird, whom I watched to roost on the 21st of June, and never saw him afterwards. What could have brought him to the south-east of England in the month of June, I cannot understand. He could scarcely have been on his way westward, where I fancy they breed: and if he was quitting our shores, it is strange that he should have been alone. During his sojourn in our garden, which was more than a week, his habits were very shy and retiring, but he occasionally appeared on the lawn, whence, on the slightest alarm, he speedily retreated into the shrubbery. His manners and attitudes were exactly like those of a

blackbird; and upon being suddenly frightened, he uttered precisely the same notes as a cock blackbird does under similar circumstances. Several of our summer visitors were unusually late in their arrival here this year: among others I may mention swallows, martins and nightingales; of the number I saw one or two on the 18th of April, but it was not till nearly the end of the month that they arrived in any numbers. The first martin I saw was on the 2nd of May, but the majority of these, also, did not arrive till some days afterwards. In some years the male nightingales will arrive in the last week in March, but this is unusually early. I have caught several in the first week in April, but this year the two first weeks passed away, and though night after night I listened for those sounds, "most musical most melancholy," it was not until the night of the 18th, while walking through an avenue adjoining a close copse (one of their most favourite haunts), that I heard their long-expected melody. And what can be more delicious than listening, on a calm night, to the stirring strains of nightingales! where—

"Far and near,
In wood and thicket over the wide grove
They answer and provoke each other's songs,
With skirmish and capricious passagings
And murmurs musical, and swift jug, jug,
And one low piping sound more sweet than all,
Stirring the air with such an harmony,
That should you close your eyes, you might almost
Forget it was not day."—*Id.*

Note on the arrival of some of the Summer Birds of Passage at Pilling, in 1844.

The grey wagtail	Feby. 20	House martin	April 18
Wheatear	March 26	Yellow wagtail .....	... 18
Sea swallow or tern	April 11	Whinchat .....	... 20
Willow-wren .....	... 12	Cuckoo .....	... 22
Common swallow .....	... 13		

Pilling is on the sea-coast of Lancashire, nearly in latitude 54° north; and I would suggest to your other correspondents on this subject, to specify the latitude, as well as situation, whether maritime or inland, of the places where their observations were made.—*J. D. Banister; Pilling, Lancashire, July 26, 1844.*

Note of the arrival of the Summer Birds of Passage at Shooter's Hill, Kent, in the Spring of 1844.

Chiffchaff	April 3	Tree-pipit	April 17
Redstart .....	... 5	Whinchat .....	... 18
Blackcap.....	... 9	Whitethroat .....	... 19
Nightingale .....	... 16	House martin.....	... 21
Swallow .....	... 16	Cuckoo .....	... 22
Willow-wren .....	... 16	Swift	May 2
Lesser whitethroat .....	... 17	Garden warbler .....	... 7

Trouble and sorrow had last year so affected my health, that I was advised to sally out daily in search of the rosy-cheeked Hebe, whom I was sure at last to meet with on a heaven-kissing hill, breathing the pure sweet air of a spring morning. In perseveringly seeking the lovely goddess, I found the sameness of my early rides much relieved, and my mind agreeably occupied, by carefully observing the arrivals and habits of my constant companions, the pretty singing birds that resort to the fields and woods of

our neighbourhood. Assisted with Bewick's unrivalled wood-cuts, Yarrell's accurate descriptions and a good pocket telescope, I soon made the acquaintance of my cheerful associates. The record of facts in 'The Zoologist,' more especially Henry Doubleday's dates of arrivals for twelve years at Epping (Zool. 12), I have found invaluable: and as all careful out-door observations will increase the materials for the history of our birds, I send you the result of my notes this spring. March was cold and foggy; and although I kept a sharp look out, I could not get sight of a single wheatear. The chiffchaff was the first of the absentees whose return I noticed on the 3rd of April: his peculiar and distinct note loudly proclaimed the advent of spring, and readily told me of his whereabouts. On the morning of the 9th of April the merry blackcap announced his arrival. His light-hearted welcome greeted me as I mounted for my morning's ride. Perched on the highest twig of a lofty lime, he sang away cheerily and lustily, that his loving mate might not miss him on her passage. Several successive mornings I saw him singing from the top of the same tree. It is delightful to listen to his varied happy song; he deservedly ranks among our best singers. The early part of April was bleak and cheerless: but on the evening of the 15th the wind changed, and we had a soft steady breeze from the south-west. I felt confident the morrow would bring with it some fresh arrivals. I was not disappointed. As I crossed Woolwich-common under the opening eyelids of the morn of the 16th, I met a pair of swallows steering due west, doubtless making the best of their way for the more genial west of England. Their first appearance was noted the same day at Eltham. As I turned off Woolwich-common into the brushwood that covers the western face of Shooter's Hill, the jocund spring burst on me with all its charms. The woods rang again with the incessant song of the little willow-wrens, given in all the height of excitement, and singing against each other by scores. I could not but contrast the scene and sounds with those of the previous morning, when, save the chirp of the stonechat, and the titty-tit of the dunnock, all was sober and quiet. Now all was life, love and song. For three weeks, morning and evening, I never passed along the Dover road, without observing a willow-wren singing its utmost on the tip top of the same Lombardy poplar. The glorious nightingales revisited their father-land the same night of the 15th, but I did not hear them till the 18th, when I purposely betook myself to their shady haunts. On the morning of the 17th I fell in with the lesser whitethroat, and narrowly watched it with my glass for half an hour, as it kept creeping through the intricacies of a thick thorn hedge. It is a neat, modestly attired bird, and is the clearest, most liquid whistler we have. I also observed the tree pipit this morning; it was amusing to behold him repeatedly spring up towards the sky, spread all his sail, poise himself in the air, and descend in a half turn to the same branch whence he started. For hours and hours during the spring of 1843, I listened with mournful pleasure to the plaintive and melodious strains of a beautiful whinchat. It had many a time soothed my sorrowful heart, and for some days I had been anxiously and constantly watching and hoping for the return of my feathered friend. My heart leaped with joy when I again heard the well-known voice of my pretty whinchat on the morning of the 18th. I soon spied my old favorite; for even among birds the course of true love runs not always smooth. No sooner had a sturdy stonechat, located in the same whins, discovered my whinchat, than, thinking the new-comer's company much too near to be pleasant, he flew at him like a fury, and would not let my little dear have a moment's peace, nor allow him to settle down comfortably, until in a few days the arrival of the whinchat's lawful partner appeared to satisfy him that his cousin really meant no mis-

chief. On the 19th I discovered the fidgetty, saucy, chattering whitethroat. It was not long before up he flew, making in his short flight what that close observer and accurate describer, White of Selborne, quaintly terms, "those odd jerks and gesticulations," which so clearly distinguish the whitethroat from all his compeers. When this bird ceases its chatter, which is but seldom, and really sings, its song is very pleasing. A joyous trio I heard in the castle-wood, by a nightingale, a blackcap, and a whitethroat, far surpassing all the squalling of the opera. At Welwyn, early on Sunday morning, the 21st, I saw a pair of fine house martins, evidently just come over. First one, then the other, and then both together, thrust their heads into and examined the old nest in the window corner under the eaves of a cottage. They were apparently considering and consulting whether it would be safe to trust to the old, or better to set to and build a new nest. I heard the cuckoo for the first time on the 22nd. At Eltham, on the 2nd of May, two days before it was due, I enjoyed the sight of a splendid swift, careering high in the heavens in the full enjoyment of perfect freedom; bold, dashing about, screaming with delight, the very symbol of health and happiness. The lovely, modest, drab-coloured garden warbler arrived on the 7th; his long-continued, flute-like song is the softest and sweetest of all our warblers. On the 8th I caught a glimpse of the wood wren, and nearly stumbled over what I fancied to be the fern owl. *Matthew Hutchinson; Blackheath, June 1, 1844.*

Note on the dates of Nidification of Birds at Elden. Nothing of the kind having yet appeared in 'The Zoologist,' I venture to enclose a list of the dates of nidification of birds in the vicinity of Elden, collected by the Rev. Frank Clifford and myself, for insertion in that periodical.

Rook, first egg laid about	March 13	Greenfinch	April 24
Tawny owl .....	.. 14	Kingfisher .....	.. 24
Song thrush .....	.. 19	Chiffchaff .....	.. 25
Starling .....	.. 24	Creeper .....	.. 25
Long-eared owl .....	.. 25	Long-tailed titmouse .....	.. 26
Missel thrush .....	.. 29	Great plover .....	.. 26
Blackbird .....	.. 29	Blackcap .....	.. 27
Stock dove	April 1	Pied wagtail .....	.. 29
House sparrow .....	.. 2	Lesser whitethroat .....	.. 30
Hedge sparrow .....	.. 6	Yellow hammer .....	.. 30
Robin .....	.. 6	Nightjar	May 1
Pheasant .....	.. 7	Blue titmouse .....	.. 2
Ringdove .....	.. 9	Swift .....	.. 2
Stonechat .....	.. 9	Green woodpecker .....	.. 5
Wren .....	.. 9	Sparrowhawk .....	.. 5
Skylark .....	.. 11	Greater titmouse .....	.. 6
Golden-crested wren .....	.. 13	Meadow pipit .....	.. 6
Dabchick .....	.. 14	Willow wren .....	.. 7
Wheatear .....	.. 15	Redstart .....	.. 8
Jackdaw .....	.. 16	Bullfinch .....	.. 8
Chaffinch .....	.. 21	Short-eared owl .....	.. 9
Red-legged partridge .....	.. 22	Greater whitethroat .....	.. 12
Cole titmouse .....	.. 23	Sand martin .....	.. 14
Moorhen .....	.. 23	Swallow .....	.. 15
Partridge .....	.. 24	Ringed plover .....	.. 16

Garden warblér	May 18	Martin	May 28
Nightingale .....	.. 18	Peewit .....	.. 29
Kestrel .....	.. 19	Cuckoo .....	.. 31
Spotted flycatcher .....	.. 19	Turtle dove.....	June 5
Water rail .....	.. 25	White owl .....	.. 19
Snipe .....	.. 25	Bunting .....	.. 19
Wryneck .....	.. 25		

The short-eared owl's eggs were laid in the fens of Cambridgeshire.—*Alfred Newton* ; *Elden, Essex, July 29, 1844.*

[There is scarcely any subject connected with Natural History, more interesting than the nidification of birds, and a statement of dates upon this subject, from different localities would be highly valuable. The compilation of such lists requires very great care. In Mr. Newton's list, some of the days appear to me very unusual, and rather exceptions to the general rule than indications of that rule. Thus, experience leads me to consider the swift *due* (so to speak) as an arrival about the 3rd of May, and it surely is a rare occurrence to find it *nesting* on the 2nd of that month. The nightjar is equally aberrant in Mr. Newton's list; I have often found its eggs five or six weeks later, and never before June. I cannot consider Mr. Newton's dates in these instances attributable to localities, but rare and noticeable deviations from the usual habits of the birds.—*Edward Newman*].

Anecdote of a Battle between a Hawk and a Weasel. As Mr. Compton, of Southfield, Wilts, was walking through a field in the parish with his gun, his attention was engaged by a hawk hovering over what he imagined to be a mouse. After due deliberation, the bird suddenly made a dart at its intended victim, which proved to be a weasel. The old adage, "Catch a weasel asleep," held good in this instance; the weasel saw his danger, and instantly seized the hawk by the head. A severe struggle here ensued, but at last the hawk succeeded in disengaging himself, and got away. Nothing daunted, however, he returned to the conflict, as game as at first; the struggle then recommenced, and very soon after the weasel was seen dragging the dead hawk towards the hedge, when Mr. Compton shot the weasel, and found the hawk as before described quite dead, and his head bitten entirely through in several places.—*Hampshire Advertiser.*

Note on the Grey Crow. While ascending the Elbe last winter, I observed a rather singular trait in the habits of the grey crow (*Corvus Cornix*), which, although not previously remarked by me, I can scarcely believe to be confined to individuals of Prussian origin. Great numbers of these birds frequent the banks of the river, and, in company with gulls of various species, explore its shores and skim its surface for subsistence. It was the latter circumstance which chiefly excited my surprise and drew my attention. I many times saw these crows, while hovering over the surface of the water, suddenly balance themselves, descend, and while their feet were outstretched to meet the yielding fluid, secure their prey with their bills. These are the birds which in Germany retreat most slowly in the open districts before the rigours of a continental winter, and not before they are driven by its severity into habits of much greater familiarity with man and his dwellings than they ever venture to manifest in this country. For the benefit of your zoological nomenclature I may mention that the local name of this bird in the County Wexford, among the peasantry, is *scald crow*, and it is one which not unaptly describes his appearance, which is as if his back and breast had been scalded, and all the feathers had fallen off. It is, at least, as much to the

purpose as that of *hooded crow*, which seems to me to be altogether meaningless. The grey crow remains with us all the year round; and from its increased numbers in winter, must effect a partial migration, but whether from less favourable districts of this island, or from England, I cannot say.—*Joseph Poole, Grovetown, near Wexford.*

Note on the late departure of the Redwing and Fieldfare from Melbourne, Derbyshire, in the Spring of 1844. The greater number of our redwings and fieldfares left us on April 1. On the 18th I descried a single fieldfare; on May 5, a pair of redwings; and on May 18, a solitary fieldfare arose from a field where it had been feeding. This is the latest period to which I ever knew any of these birds prolong their visits.—*J. J. Briggs.*

Note on the early arrival of the Fieldfare near Godalming in 1844. The fieldfare has made its appearance in this neighbourhood unusually early this year. This morning I observed six or eight of these birds to rise from the tops of some high elm trees, near Teusley, in this parish, and fly off in a south-easterly direction. I took the 'Naturalist's Almanack' from my pocket, and found the 9th of October marked as the usual period of arrival; and since, having consulted White's and Markwick's Calendars, I find that White gives October 12, and Markwick Oct. 13, as the earliest dates of the appearance of the fieldfare at Selborne and at Battle respectively. The well-known note of the fieldfare when disturbed, convinced me that I was not mistaken.—*Henry Bull; Godalming, Surrey, Sept. 13, 1844.*

Note on Fieldfares. About the 12th of May, 1836, I found numerous nests of the fieldfare in an alder-brake near Bergen, in Norway, built in bushy alders, from three to five feet from the ground. Most of the nests contained eggs; five being the largest number. But what to me was peculiarly interesting (having about a fortnight before seen the fieldfares in England extremely wild), was the fearlessness with which they approached me, flying and settling in the bushes close above my head, setting up their feathers and scolding, much as the missel thrush will occasionally do, when her nest, and especially her young, are approached.—*W. H. Wayne; Much Wenlock.*

Note on the Starling. Large flocks of starlings arrive here about March 13, and sometimes earlier; I have observed them by February 27. After remaining some time together, they disperse, spreading themselves over this and the neighbouring parishes, frequenting meadows, pastures, old enclosed ground, and parks, especially those of Calke and Donnington, which abound with ancient and venerable trees; where they feed on worms, insects, slugs &c. About the first week in April they begin to build, choosing for nidification some hollow cavity in an old tree, especially a rude gnarled oak, sometimes a hole in a wall, and not unfrequently a space immediately beneath the rafters of a house. In the latter situation a pair of starlings built their nest, shortly after which they were shot. Next year the spot was again occupied by a pair, and has been every succeeding year, although a pair has been shot annually. The nest is a mass of bents, shreds of cotton, and feathers, and generally contains eggs about the end of April or the beginning of May. The nest is occasionally composed of clean white straw, and when this is the case, the eggs, which are of pale blue and delicately transparent, when contrasted with the light hue of the straw have a beautiful appearance. Some eggs are dotted over with a few well-defined black spots, like those of the song-thrush. The young are hatched about the third week in May, and are fed principally with worms, both male and female assisting in the operation. The nest is kept remarkably clean, the old birds carrying away the mutings or droppings in their bills, as occasion may require. Early in September they begin to collect in flocks, which,

being augmented in numbers, grow gradually larger, until they become of such magnitude as oftentimes to consist of many thousands; and when the whole body settles in a pasture, the ground which they cover seems overspread with one wide, spacious pall (owing to the sable plumage of the birds); and when affrighted, the birds generally rise in a body, and after wheeling through the air for some time, alight upon the top of a broad oak or elm tree, which seems nearly bowed down with the weight of its burden; and when in such situations, it is anything but unpleasant to listen to their chattering voices. About the end of September or beginning of October, the greater part of them disappear, leaving however some small parties of from eight to forty birds behind. These winter here, feeding in meadows and grass lands, in company with rooks, jackdaws or lapwings, and during frosts and snows subsist upon the small particles which drop from the hay with which the farmers fodder their cattle in the field. In spring these small parties increase in numbers by the arrival of other flocks, as we have before described. When attacked by hawks, and other birds of prey, they form themselves into a close compact body, which is in continual motion, and constantly presents some new front to its adversary; in this manner they have been seen upwards of an hour, assuming the shape and exact appearance of a balloon. — *J. J. Briggs.*

Note on the Swift. I observe White in his History of Selborne notes the late appearance of the swift on the 26th of August. I this year saw one swift on the 28th of August; and two together, squealing, on Sunday, September 1.—*F. Wayne; Much Wenlock, Salop., Sept. 12, 1844.*

Anecdote of the Breeding of the Grey Parrot in England. In a former number, (Zool. 104), is recorded an instance of the grey parrot having laid eggs in this country. The circumstances under which this occurred are sufficiently curious, and deserving of notice, but the following particulars are still more curious, relating, as they do, to the completion of the process of incubation, in the production of young birds; and may, I trust, prove interesting to the readers of 'The Zoologist.' Two grey parrots (*Psittacus erithacus*) were purchased in the market of Sierra Leone in 1840, when about six months old. They were brought to England, and then separated, one being domiciled at Hull, the other at Riccall, near York. In February, 1842, they were united at Riccall; and in the July following, the female laid three eggs. She made no nest, and the eggs were taken from her. They were perfectly white, and about the size of a pigeon's egg. On the 10th of June, 1843, she again commenced laying, and laid two eggs. A nest was now made for her of flannel, and placed in a copper near the fire-place, where the old bird sat exactly four weeks, and one bird was hatched. This bird was reared, and is now in London. She again began laying in November last, and produced three eggs; on these she sat four weeks, and two birds were hatched: one of these soon died from cold, but the other is still living, and is a very fine bird. The cock bird occasionally assisted the female in sitting on the eggs. I have not had time to search for similar instances, but it is probable that some might be found, though they certainly are matters of rare occurrence. I have thought it best to give a complete history of the birds down to the present time; and for the power to do so, I am indebted to the kindness of R. Fielding, Esq., the intelligent surgeon of the place where the fact occurred. It is strange that a second brood should have been hatched so late in the year as November: even in birds of our own climate, this would have been considered an extraordinary circumstance, but how much more so in the transplanted inhabitant of a tropical climate. The natural number of eggs appears

to be three, though in the instance to which I have alluded at the beginning of this notice, seven are mentioned as the number. It is probable that this mention of the fact of the grey parrot breeding in this country, may induce others, who have had opportunities of noting similar instances, to give the result of their observations to the pages of 'The Zoologist,' which journal may be considered a scrap-book, and this must be my apology for sending to its pages the above rough and imperfect contribution to the history and habits of the grey parrot.—*Beverley R. Morris, M.D.; York, August 26, 1844.*

Note on the habits of the Great Tit. A communication in the March number, (Zool. 449), describing the hammering propensities of the great tit (*Parus major*), reminded me of a fact which I had observed in its economy, and one which I have never seen noticed in any published account of its habits. I allude to its predilection for hazel nuts, in procuring the kernels of which by smashing them on the branches, it constantly makes the forests resound during the months of autumn, and has often grievously disappointed my expectations, which, excited by the unusual sound, were on tiptoe for the sight of a *Picus major*, a very rare bird with us, but which, however, is occasionally to be met with. A few blows of the bird's powerful bill quickly lay open the contents, when the shell of course is allowed to fall to the ground, whence I have more than once picked it up after the operation, and so satisfied myself of the fact. I may mention that the nuts appeared to be perfectly sound.—*J. Poole.*

Note on Club-footed Canaries. A friend has suggested to me the advisability of communicating to you the following phenomenon, that happened to the brood of a pair of canaries in my possession. I may as well premise, that it was in the north of Leicestershire, near Loughborough, and that the time was near the end of June, the weather warm. Their first brood was unsuccessful, but the second was to all appearance a very handsome brood of four, very well fledged and full coloured. On the most forward of them coming out of the nest, it fell to the bottom of the cage, and on my picking it up to ascertain the cause, I found it was club-footed. There was no claw at all, and but one or two toes formed, both feet being alike, or nearly so. On examining the remaining three nestlings, I found they were all in like plight, not a single claw amongst them all. And this is the singular part of it, for it would be nothing strange for one bird to be deformed, but for a whole brood to be so is very strange. Both the parents are well formed, fine, healthy birds, in every respect. It was suggested that the claws might have got entangled in the material of the nest, and so have been lost; but after a diligent search nothing of the sort could be ascertained. I may add that one bird of a former brood from another pair was hatched and lived with but one claw; its toes, however, being perfect, enabled it to perch. It is yet alive.—*John Morris; Wineswold, near Loughborough, August 1, 1844.*

Note on a singular locality for a Wagtail's Nest. There are at all the stations on the Ayrshire railway, shifts or switches placed between two rails, for the purpose of removing the carriages from one rail to the other. Under the shift of the Lochwinnoch station, a bird of the "wagtail" species has built a nest, and is now sitting on five eggs, although there is scarcely an hour in the day that there is not a train passing over it, and the wheels of the engine and carriages running within two or three inches of the nesting-place of the little bird. It goes in and out as fearlessly as if it were out of the reach of danger.—*Scotch Paper.*

Anecdote of the change of Colour in a domestic Fowl. As a counterpart to the note of Mr. Bond (Zool. 667), I may state that one of my workmen purchased in the spring

of 1843, a fine young cock, of what is generally termed here, the Spanish breed, a very large variety, wholly black, with extremely large wattles, and the ears white and nearly as large as a shilling. He succeeded in rearing it to its full growth; being a very fine bird, a tradesman of the town induced him to sell it, and this season, since it has been in his possession, it has changed to as pure a white as it was before a black. — *James Bladon; Pont-y-Pool.*

Note on a prolific Duck. Mrs. Braithwaite, of the Old Phoenix Inn, at Morpeth, has in her possession a duck, which has laid this season the extraordinary number of one hundred and eighty eggs. During the first seventy days she produced as many eggs; then missed one day; and for thirty following days laid every day. Fifty-seven young ducks may be seen running about, the offspring of this extraordinary bird, and twice that number more may probably be reared in the course of the summer. — *Berwick Advertiser.*

Note on the capture of a Kittiwake near Pontypool. On the morning of the 23rd of August, a young individual of this species, nearly full grown, was caught by the hand on the top of a wall near this town. It made hardly any resistance, seeming to be completely exhausted; and although it was taken alive, it died in the evening of the same day. It is rather strange what could have induced it to wander so far from its usual habitation; the place where it was caught being about fourteen or fifteen miles from the shores of the Bristol Channel, and consequently much more from any cliffs or rocky coast, which it is generally stated to prefer: the whole coast of this county being low and marshy, and of the same description for several miles inland. — *James Bladon; Pont-y-pool, Sept. 9, 1844.*

Note on the British specimens of the Edible Frog. I have received, through the kindness of F. Bond, Esq., some specimens of frogs from Foulmire, in Cambridgeshire, which I am enabled to designate positively as the true *Rana esculenta*. I happen, at the present moment, to have a favourable opportunity of comparing them with French specimens, as I have about forty living in my possession, which were lately brought to me from France. The figure at p. 104, in my work on British Reptiles, is an accurate representation of several of the individuals from Foulmire, excepting that the skin is represented as smooth, instead of being glandulous, and the distinct longitudinal line of glands on each side of the back is also omitted. The *Rana esculenta* may be at once distinguished from *R. temporaria* [the common frog of Britain], by the absence of the large, distinct, black mark, which in the latter species occupies the space extending from the eye to the shoulder, and by the existence in the former, of a light line running the whole length of the middle of the back, and of distinct, rounded, black spots, dispersed over the body. In *R. esculenta* the vocal sacs are very distinct, globular, and large, standing out prominently when the animal croaks, but they do not exist in *R. temporaria*; and the palatine, or rather vomerine teeth, are in the latter placed rather farther back than in the other species. I observe also, in *R. esculenta*, a pair of lumbar glands, which, although less conspicuous, occupy the same position as the more prominent ones in the genus *Pleurodema* of Tchudi. There is a remarkable difference in the croaking of our two species — that of *R. esculenta* being so loud and shrill, as to have obtained for these frogs the name of “Cambridgeshire nightingales,” and “Whaddon organs!” This is accounted for by the construction

of the vocal sacs before mentioned. It now remains to be investigated whether the Scottish frog, named by me provisionally *R. Scotica*, be also distinct from the present species. I suggested in the 'British Reptiles,' the possibility of their being identical. *Thomas Bell ; New Broad Street, Sept. 14, 1844.*

Anecdote of a singular application of a Spider's Thread. I should have hesitated before forwarding the following, if I had not had the account from the young man himself, a respectable watch-maker of this town. When Mr. Brunel and his assistants were at Cardiff, surveying the line of the Taff-vale railway, one of the cross wires in the sight of one of their levelling instruments happened to break by some means or other. It was taken to a shop, where the relator was at the time, to be repaired. Not being able to procure any wire sufficiently fine for the purpose, they endeavoured to fix the hair spring of a watch, but it would not answer. The young man had just been cleaning out one of the store rooms, and in destroying the webs of the spiders, he had observed the strength and tenacity of the lines that held them in their positions. The thought struck him that he would be able to succeed with them, and immediately went in search of some. Having twisted five or six of them together, he fixed them across the instrument, which then performed perfectly well. When the surveyors had examined and were satisfied with it, he informed them what he had used ; they were surprised, and said they should bear it in mind if anything of the sort happened again. *James Bladon.*

[I believe this application of the spider's web is not new. Does not Brewster's volume on Optics in the 'Cabinet Cyclopædia' contain a description of the mode of using it?—*Edward Newman.*]

Note on the capture of Colias Edusa at Winchester. Having seen your enquiry as to whether *Colias Edusa* had been captured this year (Zool. 682), I may perhaps intrude on your attention, by saying that I was fortunate enough to capture one in a meadow near this place, on the 31st of August last. — *Henry Shepherd ; Winchester, September 7, 1844.*

Note on the capture of Colias Edusa in Ireland. Yesterday I observed two individuals of *Colias Edusa*, flying on the high road near Wexford, and succeeded in capturing one of them. As this is the first time the butterfly has occurred to me, and as it is certainly very rare in this country, this account of its appearance may interest the entomological readers of 'The Zoologist.' I may also mention the elephant hawk-moth (*Deilephila Elpenor*) and humming-bird hawk-moth (*Macroglossa stellatarum*), as having been lately taken in this neighbourhood. — *Joseph Poole ; Grovetown, near Wexford, September 10, 1844.*

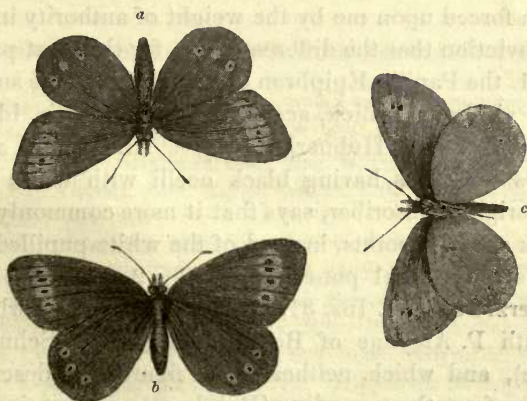
Note on the capture of Colias Edusa at Winchester. Seeing in the last number of your most excellent magazine, 'The Zoologist,' an enquiry if *Colias Edusa* had been seen this year, I take the liberty of informing you that on Friday last I took a specimen of it, and this afternoon I captured another, an uncommonly fine one. Both were males.—*J. Winter ; North Walls, Winchester, September 14, 1844.*

Note on the capture of Colias Edusa. I have taken three of these butterflies in the neighbourhood of Broomfield this summer, on the 10th and 22nd of July, and the 6th of September. Two of them, a male and female, were found near the spot where I have previously met with *C. Hyale*, one in a lucerne-field, the other in a clover-field adjoining; both were rather worn, but not broken. Are we to suppose that these emerged from the chrysalis last autumn and hibernated, or are they the produce of the present summer? An answer to this question would be esteemed a favour. The other specimen, taken a short distance from the same spot, was a male in fine condition, and had evidently just appeared. No others have been observed. — *Alfred Greenwood*; *Chelmsford, September 17, 1844.*

Note on Pontia Metra. Since I forwarded my communication on *P. Metra* (Zool. 681), I have had an opportunity of confirming my belief as to its identity with *P. Rapæ*, by the development of numerous other examples of every variety of the two insects, from the larvæ obtained by me last autumn, so as no longer to leave any doubt on the subject. With respect, however, to the peculiarity in form of some scales taken from the wing, which, in my former note, I remarked to be wanting in two female examples of *P. Rapæ*, I have since discovered that there is nothing remarkable in that circumstance; because, on a careful examination of numerous other female specimens, I find that that peculiarity of form is exclusively confined to the male insect: an arrangement which I understand runs through the whole genus. Dismissing, however, any proof supposed to be derivable from that source, I conceive that the actual production of every variety of *P. Rapæ* and *Metra* respectively, from larvæ, not only exactly resembling one another, but also evidently belonging to the same brood, has set at rest the doubt as to their specific distinction, and unquestionably established their identity as mere varieties of the same insect. — *J. F. Dawson*; *Ventnor, Isle of Wight, August 28, 1844.*

Description of a new British Butterfly, Erebia Melampus, Boisduval.

By EDWARD NEWMAN.



Erebia Melampus, (natural size). *a.* Male. *b.* Female. *c.* Under side.

THE discovery of a new British butterfly is a circumstance of so great rarity, that I feel convinced every entomologist will receive the announcement with feelings of unusual interest. The occurrence of the present insect in some abundance, and in one of the most accessible and most visited of our Scottish counties, must however be considered as a striking proof of the superficial manner in which Scotland has hitherto been investigated by the entomologist, and must lead to the conclusion that other species yet unrecorded may exist among its mountain wilds. The striking paucity, as regards species, of the family Satyridæ in Britain, and their abundance upon the continent of Europe, amid scenery very similar to our own, induces the conclusion that Britain has been less perfectly hunted; and certainly offers great inducement to the collector to devote a portion of his energies to those regions which are still unexplored.

The insect now under consideration, was taken by Mr. Weaver of Birmingham, in the neighbourhood of Rannoch, in Perthshire, at the end of June and beginning of July of the present year. He met with it in considerable abundance, and of the specimens collected, a great majority are males. It belongs to the family Satyridæ, corresponding with the genus *Hipparchia*, as it stands in Stephens' Catalogue; and to Dalman's genus *Erebia*, as restricted by Boisduval (*Icones Historiques de Lep. de l'Europe*, i. 147), which includes two other British species — *blandina* and *Cassiope*.

On the continent of Europe are found four species of *Erebia*, so nearly similar in size, colour, markings and localities, that I might perhaps have hesitated to consider them distinct, had not such a conclusion been forced upon me by the weight of authority in their favor, and by a conviction that the differences are for the most part constant. These are, 1. the *Papilio Epiphron* of Knoch (*Beiträge sur Ins. Stuck. iii. 131, tab. vi. fig. 7*), which, according to Godart, is identical with the *Papilio Ianthè* of Hubner, n. 202. All authors agree in describing this insect as having black ocelli with white pupils; but Knoch, the original describer, says that it more commonly occurs with simple black spots or points, instead of the white-pupilled ocelli, (*sæpius maculis tantum vel punctis nigris*). 2. *Papilio Melampus* of Fuesslin (*Verz. Schweiz. Ins. 31, n. 604, tab. i. fig. 6*), which appears identical with *P. Alcyone* of Borkhausen (*Europ. Schmett. i. 96 et 244, n. 35 c*), and which, neither in the figures nor descriptions, appears to differ from the preceding (*Epiphron*), except in wanting the white pupil of the ocelli, a peculiarity pointed out by Knoch (as above

cited), as commonly occurring in Epiphron. It would therefore appear, if these species be distinct, that their distinction rests on this character alone, and that Knoch thought it insufficient. The 3rd is the Papilio Pharte of Hubner, Nos. 491—494, which differs from both the preceding in wanting both ocelli and spots. The 4th is P. Cassiope of Fabricius (Ent. Syst. iii. i. 238, n. 742), described as P. Memnon by Haworth (Ent. Trans. i. 332), and figured as P. Melampus by Esper, (Schmett. t. 78, cont. 28, fig. 2): this insect has been taken repeatedly on the mountains of Cumberland, and is well known to my English readers.*

With regard to my choice of a name for the species now under consideration, I have felt considerable difficulty. I will therefore explain that, in the first place, from an examination of Fuesslin's original figure and Hubner's later figures (of Ianthe), and Godart's (of Melampus), in his 'Lepidoptères de France,' I feel convinced that these authors intend to represent the species known as Erebia Melampus on the continent of Europe, authentic specimens of which, brought to this country by M. Becker, are in the cabinets of the British Museum and of Mr. H. Doubleday. Secondly: that although I see no reason to doubt that Melampus is that variety of Knoch's Epiphron, which occurs so frequently without the white-pupilled ocelli; yet we have no evidence that the insects possessing and wanting such ocelli, are referrible to a *single* species; and if not, the name must be retained to those which possess the essential character as described, and not to those which want the character, and are, by the original describer, treated as a variety. Therefore, supposing two species confounded under the name of Epiphron, one certainly remained unnamed, and

* I am indebted to the kindness of Mr. E. Doubleday for the following synonymes of species noticed in these observations.

EREBIA Melampus, *Boisd. Icon. Hist. t. 35, f. 5, 6. Ind. Méth. 26, n. 198. P. id. Fuess. Verz. Schweiz. Ins. 31, n. 604, t. 1, f. 6. Esp. Schmett. i. t. 31. Suppl. 7, f. 2. Ochsenh. i. 260, p. 45. P. Satyrus id. Godt. Enc. M. ix. 536, n. 155. Lep. de France, ii. t. 16, f. 5, 6. P. Alcyone, Bork. Europ. Schmett. i. 96 et 244, n. 35, c. P. Ianthe, Hubn. Pap. t. 122, f. 624, 625.*

EREBIA Pharte, *Boisd. Ind. Méth. 26, n. 197. P. id. Esp. Schmett. t. 120, cont. 75, f. 3, 4. Hubn. Pap. f. 491—494. Satyrus id. Godt. Enc. M. ix. 536, n. 156. Lep. de France, ii. Fab. Meth. 26. God.-Dup. Lep. de France. Suppl. i. t. 34, f. 1, 2.*

EREBIA Cassiope, *Boisd. Ind. Méth. 26, n. 195. P. id. Fab. Ent. Syst. iii. i. 238, n. 742. Ochsenh. i. 261, n. 44. Hubn. Pap. f. 626—629. Satyrus id. Godt. Ency. M. ix. 535, n. 154. Lep. de France, ii. t. 15, f. 1, 2. Hipparchia id. Steph. Ill. (Haust.) i. 63, t. 8, f. 1—3. P. Mnemon, Haw. Ent. Trans. i. 332. P. Melampus, Esp. Schmett. t. 78, cont. 28, f. 2.*

this is now *Melampus* of all continental authors. Thirdly : after a long and careful examination of thirty-five specimens of the Scotch insect, and a comparison of them with M. Becker's German specimens, I feel perfectly convinced that both are referrible to the same species : and in this opinion, Messrs. H. and E. Doubleday, who have given me the most kind assistance throughout the enquiry, also concur. It must be admitted that the Scotch and German specimens are not so precisely identical that one would fail in the endeavour to point out some minute discrepancies ; but then it must be borne in mind, that in almost every instance the Satyridæ vary so greatly within the limits of acknowledged species, that without an intermediate series it would often be extremely difficult to connect those which are most dissimilar. Fourthly : from E. Pharte it differs in the presence of the black spots.

I now proceed to describe the Scotch specimens of

EREBIA MELAMPUS, Boisduval.

Male.—The palpi, head, thorax and abdomen are clothed with intensely black hairs, excepting the sides of the abdomen, which incline to grey: the shafts of the antennæ are greyish brown above and nearly white beneath ; the club is intensely black at the tip, its inner or anterior surface is brown above and whitish below, and its outer or posterior surface is dusky brown above and pearly white below. On the upper surface, all the wings are of a rich velvety and somewhat glossy black brown : the fore wings have an irregular transverse fascia, or rather a band-like series of ferruginous markings running parallel to the outer margin of the wing, but situate considerably within the margin ; these markings are five or six in number, of which the second, third and fifth always include a central black spot, the fourth rarely has the spot of equal size with the rest, it is generally reduced to a mere point, and is often entirely wanting : the hind wings have three roundish ferruginous markings, equidistant from the outer margin, and each of these has usually a black central point : there is sometimes the trace of a fourth marking, but this is without the central point. On the under surface the fore wings have a brownish costal and exterior margin ; the disk or central area of the wing is red brown, and between this and the broad brown outer margin is a broad ferruginous band, corresponding with that on the upper surface, but having its limits, as well as the black spots, less distinctly defined : the hind wings are dark brown, thickly interspersed with minute ferruginous points, generally consisting of single scales, and giving the wing

a mixed or greyish hue: there are three ferruginous markings corresponding in situation with those above, and each having a black central dot: the legs in both sexes are nearly white.

The average expansion of the wings is 1·5 inch.

Female. — The female appears to differ but slightly from the male, it is however almost uniformly of larger size, and of less intense and rich colour, a difference often observable among the Satyridæ: the fascia on the upper surface of the fore wings is less brightly ferruginous, but larger and more conspicuous, its four black spots are also more distinct, and I do not observe that the third is ever wanting, as in the male: the markings on the hind wings are also more distinct.

The average expansion of the wings is 1·65 inch, some are larger.

On placing a series of this butterfly between one of *blandina* and another of *Cassiope*, the only two other British species referrible to the genus *Erebia*, a marked difference will at once be observed: it is uniformly smaller than the former, and as uniformly larger than the latter. Contrasted with *blandina*, it altogether wants the ocelli which adorn that highly beautiful insect. Compared with *Cassiope*, its ground colour is much darker, richer and more intense, and the fascia broader and brighter, so that the contrast between the ground colour and the fascia is infinitely more striking. The under sides of the two insects present a difference quite sufficient to enable an observer at once to separate them, the fore wings of *Cassiope* being suffused with an indescribable red tint, which is not observable in *Melampus*, and having many minor characters in contrast, which are more easy to detect than to describe.

Mr. Weaver has obligingly supplied me with the following information respecting this important capture. "I took these butterflies when the sun shone, morning and evening, the first on the 27th of June, and the last on the 27th of July. They appeared confined to a spot of level and rather marshy ground, about 150 yards in length and 50 in breadth; it was grassy, but without heath; and although there was plenty of heath all round the neighbourhood, I did not see a single specimen settle on it. The locality is among rocky mountains, some of which attain an altitude of 4000 feet above the sea, and I think the spot where I found the butterflies is at least 3000 feet. I spent ten days in hunting them, and although I wandered over most of the country for ten or fifteen miles round, I found them nowhere else. The nearest village is Kinloch Rannoch, consisting of a few scattered houses, one of which is a shop for sundries, two are pot-

houses, and the remainder are principally the residences of shepherds. It has no road to any other place !”

I cannot conclude this brief notice without expressing a hope that our brothers of the net will not allow another season to pass over without making more energetic attempts to ascertain the entomological productions of Scotland as well as Ireland. I have heard one of the most acute of the continental lepidopterists speak of the former of these countries as a *terra incognita* as regards entomology, and dwell with joyful anticipation on the rich harvest which he expected to reap there. I hope, indeed, the harvest will be reaped, but I could wish the labourer should be one of ourselves.

EDWARD NEWMAN.

Peckham, September, 1844.

Note on a Variety of Lycæna Phlæas, &c. In a farewell excursion with Mr. Dyson on the 1st inst., previous to his departure for the Bay of Honduras, for the purpose of collecting specimens of Natural History, we alighted from the Leeds railway at Middleton station, and proceeded towards Oldham; about a mile from which place our attention was attracted to a strange-looking butterfly on the wing in the road. We gave chase and Mr. Dyson captured it, when, to our great delight, we found it a remarkably large *Lycæna Phlæas*, female, all the usual coppery markings being *pure white*, with central black spots; the band of the inferior wings is unusually broad, and pure white. At our destination, Wharnton-moor, in Saddleworth, we captured *Charæas Graminis* abundantly, *Celæna Haworthii* on the ragwort, *Polia Chi* on stone walls, and two specimens of *Lithomia Solidaginis* resting on fir trees, — a new locality for this very local insect; on White-moss, *Apamea nictitans* and *Phycita fusca* in beautiful condition; the latter insect must be double-brooded, I took it in the same locality at the end of May.—*R. S. Edleston; Manchester, September 11, 1844.*

Note on the capture of Mamestra suasa (Dens canis, Haw.), and Plusia interrogationis. Three specimens of the former have been captured near Chorlton, at the beginning of June; and one specimen of the latter, resting on a stone wall, at Brushes, August 24.—*Id.*

Note on captures of Lepidopterous Insects near Manchester, in 1844.

- April 21. *Lampronia purpurella*, beat out of fir-trees, Copy-wood, near Middleton.
 April 28. *Saturnia Pavonia-minor*, abundant on White-moss.
 May 12. *Anacampsis longicornis*, and a new species, glossy black, same size as preceding (*aterrima*, Dale); and *Anchylopera derasana*.
 May 20. *Thymele Tages*, *Melitæa Artemis* and *Vanessa C-album*, Cottrel-wood.
 May 25. *Hadena adusta* and *thalassina* and *Macrochila bicostella*, White-moss.
 May 31. *Phragmatobia fuliginosa*, *Bupalus favillacearius*, *Phycita fusca* and *Lasiocampa Rubi*, White-moss.
 June 2. *Acronycta Rumicis* and *Menyanthidis*, *Tortrix coniferana (Ratzburgh)*, *Tinea lappella*, *Cnephasia resinella* very fine, the three latter species on fir-trees;

Hipparchia Davus abundant on the heath, very early for this insect, generally in July.

June 16. Abraxas ulmata, abundant in Pendlebury-wood.

June 22. Mamestra furva, under sods at Stockport.

June 24. Trochilium Bembeciformis, abundant on poplar-trees at Middleton, local to that part in this neighbourhood.

July 2. Anacamptis Malvella (*Curtis*), and Elater balteatus, Chat-moss.

July 15. Pœcilochroma Udmanniana and Acompsia tinctella, Cheetham-hill.

July 20. Scotophila porphyrea, Depressaria Sparmanniana, Orthotænia Turionana, Euplexia lucipara and Amphisa Gerningiana, Rudheath, Cheshire.

August 4. Depressaria costosa, Kersal-moor.

August 11. Orthotænia subsequana, this rare and beautiful species on Wharmton-moor.

August 28. Lithomia Solidaginis, plentiful on stone walls, Brushes, near Staley-bridge.

August 30. Gortyna micacea, Miana literosa, Apamea secalina, on ragwort-flowers; Segetia xanthographa and Hama testacea, in great plenty.—*Id.*

Notes on the capture of Lepidopterous Insects at Charlton sand-pit. I beg to enclose you a list of my captures in the sand-pit at Charlton, between the 28th of June and the 2nd of August; during which period I visited the place about seven times, remaining there for nearly 7 till dusk. I much regret that I was not sooner acquainted with the spot, as I consider the most productive part of the season for the smaller Lepidoptera had expired.

Hipparchia Megæra	Ditula angustiorana	Xanthosetia hamana
Polyommatus Alexis	Antithesia gentianæana	Depressaria heracleana
Pamphila sylvanus	Spilota comitana	costosa
Ægeria Ichneumoniformis	rusticana	Anacamptis lutarea
Hepialus Humuli	Pseudotomia simpliciana	fuscescens
sylvinus	Petiverella	quadripuncta
Fumea muscella	Gundiana	malvella
Callimorpha Jacobææ	strigana	Cleodora silacella
Miana humeralis	Lediana	Acompsia tinctella
Ourapteryx sambucaria	Carpocapsa cana	Ismene pruniella
Cabera exanthemata	pauperana	Argyromyges punctaurella
Larentia chenopodiata	Cnephasia longana	Microsetia nigrella
bipunctaria	ictericana	Porrectaria lineola
Phibalapteryx tersata	Sericoris striana	leucapennella
Chlorissa putataria	*Argyrolepis margaritana	Metallosetia spissicornis
thymiaris	tesserana	Aphelosetia semialbella
Agrotera flamealis	Cochylis roseana	triatonea
Margaritia ochrealis	Eupœcilia angustana	Batia lambdalla
verbascalis	Lozopera alternana	Eudorea pyralella
Pyrausta sordidalis	Francillana	Phycita nebulella
Lozotænia nebulana	Xanthosetia Zægana	Homæosoma gemina

* I also found one specimen of this on the tram-road between Croydon and Purley on the 7th of July.

Oncocera carnellus	Cerostoma xylostella	Pterophorus pterodactylus
Crambus argentellus	Tinea destructor	migadactylus
hortuellus	Pterophorus pentadactylus	microdactylus
cæspitellus	fuscodactylus	&c. &c.
culmellus	pulverodactylus	

Geo. Bedell ; 4, *Waterloo Place, Coburg Road, September, 1844.*

Note on the capture of Deilephila lineata, Fabr., (Livornica, Esper), in Lancashire. A fine male of this rare and beautiful insect, was captured early on Tuesday morning, June 25, at Brundett's Farm, in the adjoining parish of Chorlton, secreted under the straw, covering some extensive beds of cucumber-vines, growing in a field at the back of the house. During the same week another male was taken in Withington, about a mile from the last locality, resting on a high hedge-bank. This specimen is not so fine as the other, having been roughly handled by an agricultural labourer, who captured it. Both specimens came into my possession soon after their capture. — *R. S. Edleston* ; *September 11, 1844.*

Note on the capture of Moths by means of Sugar. I have within these few days been trying the experiment of capturing moths by means of sugar, but without success. Not a single moth of any kind was to be found when I visited the sugared trunks of the trees in the morning, but an abundance of wasps, which perhaps might have driven the moths away, and so occasioned the failure of the experiment. I mean to try again when the wasps are gone.—*W. T. Bree* ; *Allesley Rectory, Sept. 17, 1844.*

Note on the development of Moths by Heat. I left London for the north about the latter end of last December, and brought with me about thirty pupæ of the buff-tip moth, (*Pygæa bucephala*). I kept them in a box with some dry earth, and placed them near a small coke stove, which we had for the purpose of warming the room. Two days after, I was surprised to find a brace of moths outside my box, drying their wings, which I forthwith killed and placed in my drying-box. I did not succeed in rearing more than these two, owing, I suppose, to my having put the box too near the fire, as after waiting three or four days, and no more appearing, I carefully opened the pupæ and found every one of them ready to burst from their prisons, and undoubtedly they would have done so had I not placed them so near the fire. I think it right to state that I collected them in the middle of November, 1843.—*Francis Richardson* ; *Halifax, September 6, 1844.*

Note on the capture of Philanthus triangulum, &c. Having recently added the following rare insects to my cabinet, I send you the dates and places of capture, in order that others may have an inducement to visit such an excellent locality as Weybridge. All were captured on the 30th and 31st of August. *Aporus bicolor*, female, 1 specimen. *Cerapales variegatus*, female, 1 specimen. *Philanthus triangulum*, male 3 specimens. The specimen of *Cerapales* was taken by Mr. Ingall ; those of *Philanthus* were captured by myself, about three miles from the railway station, about a mile to the left of Byfleet, on blossoms of thistles growing by the side of a road which leads to a hill crowned by a wood ; I do not know the name of it. Although I watched patiently three hours or more, I could not meet with a female ; but as I already possessed that sex, I did not regret it, the males being the desiderata, only one having been previously taken in this country, that I am aware of.—*Frederick Smith* ; 5, *High St., Newington, September, 1844.*

Descriptions of the British Mason-bees &c. (genus Osmia of Panzer), being a section of the Dasygastres, or hairy-bellied Bees of Latreille: with details of their Economy. By FREDERICK SMITH, Esq., Curator to the Entomological Society.

PERHAPS the economy of no genus of bees has afforded more ample details than the present. We find in Reaumur a minute and interesting account of one of the species, which constructs its nest of agglutinated sand, fixing it on the sides of walls &c., or availing itself of some cavity or suitable projection for that purpose. This species constructs six or eight cells, placed in irregular proximity; and the female, having deposited an egg, with a suitable supply of pollen and honey in each, makes a common covering to the whole, filling up the spaces between the cells. This is done with the same material as that of which the cells are composed; and having completed her task, its appearance is that of a dab of mud, which accident might have placed there. A curious account is also recorded by Spinola, of a species which constructs its cells in the abandoned galls of the oak, and to which he has given the name of *Osmia gallarum*. Several species select the deserted shells of snails, in the spiral tubes of which they construct their nests. I believe Huber's is the earliest account of this peculiar habit; it is recorded in the second volume of the 'Mémoires de la Société de Physique de Genève.' The species observed was the *Apis aurulenta* of Panzer, which is synonymous with the *Apis tunensis* of Fabricius. A species having similar habits has been since described by M. Robineau des Voidy, and named *Osmia helicicola*, which, as well as *O. bicolor*, was reared by that author from the deserted shells of *Helix nemoralis* and *H. pomatia*. He states that the latter insect lays two eggs in each shell, in separate cells; and above these she constructs three or four cells of sand, separated by a membranous partition; he also states that the female egg is always uppermost. This statement I have no doubt is the result of limited experience in breeding the insect, it being directly at variance, not only with my own experience, but also with the repeated observations of friends of mine, who have bred this species in numbers; for not only did the males appear first, in the instances under their notice, but in a state of nature they may be observed some days before any of the females are to be found. The males of the most abundant species, *Osmia bicornis*, appear at least a fortnight before the females. It is very probable that in the cases recorded by Des Voidy, some parasite had escaped from the empty cells which he observed,

or perhaps the egg deposited had proved unproductive. Repeated observation proves the usual number of eggs deposited by *O. bicolor* to be four, but sometimes as many as six.

Having been furnished with ample details of the habits of three species which construct their nests in shells, I shall proceed to give them at some length. I am indebted to a friend residing at Bristol, who has bred numbers of these bees, and who has kindly furnished me with the result of his observations. I have also received shells, from which I have bred *Osmia tunensis* myself. The species upon which the observations of my friend were made, are *Osmia bicolor* and *O. tunensis*; the shells selected by these bees are those of *Helix hortensis* and *H. nemoralis*: the shells are found partly hidden under furze or dead grass, on the slopes of Durdham-down, near Bristol. The number of cells formed in each shell varies a little; the usual number is four, but instances of six being found occur. I opened a shell myself, containing six cocoons. The bee having found a shell suitable to her purpose, deposits an egg, together with a suitable supply of pollen and honey, at the extremity of the tube; the space occupied thereby being about five lines in length: this space she closes by a thin partition, which is composed of abraded leaves or moss. There is no lining of any kind to the sides of the tube. She repeats this operation until she has constructed the required number of cells, she next closes up the entrance to the tube, for which purpose she collects pellets of earth, small pieces of stick, pebbles &c., which, being mixed with some liquid, probably gluten, secreted by the animal, form a secure and ample protection to her works. The larva having consumed the store laid up by the provident parent, spins a cocoon of a toughish texture and of a dark brown colour; the inner surface is highly polished, and lined with a thin, delicate, membranous pellicle, easily separable from the coarser exterior. About the third week in March, should the weather prove favourable, *Osmia bicolor*, having arrived at its perfect state, makes its appearance; *O. tunensis* is a fortnight or three weeks later. The discovery of this singular variation in the habits of these species was made some years ago; what led to it was watching the female flying about the furze, and eventually alighting on what proved to be a shell containing a nest. A few weeks ago, another species, *Osmia spinulosa*, was discovered in the act of forming its nest in a snail-shell. This was at Swanage; and the discovery was made by Mr. Lighton, who has subsequently found shells in some numbers, containing the nests of this bee. I have

been obligingly furnished with some; they are the shells of *Helix aspersa*.

In the collection of the Rev. F. W. Hope, are a number of specimens of a species of *Osmia*, smaller, but very closely resembling our *O. tunensis*, which were bred from snail-shells collected in Egypt, on the banks of the Nile.

It is very probable that other species of this genus occasionally construct their cells in the tubes of shells. *Osmia cærulescens* and *O. leucomelana* have both been captured on the same slope where the shells containing the nests of the other species were found; the latter in great abundance. Previous to the year 1836, *O. leucomelana* was considered a rare species; at that time I captured both sexes, entering bramble-sticks: this was in Hampshire, in July, as recorded in the 'Magazine of Natural History,' 1837, p. 490, thus establishing the supposed sexes of the species. Last summer, I found in the same locality, some bramble-sticks containing the nests of this bee; the following are the observations made on its operations. The bee does not clear the pith entirely out, but forms a somewhat serpentine tube, between three and four inches in length; here would be the top of the first cell. Each cell is four lines in length, the bee therefore alternately widens and contracts the diameter of the tube every two lines, and thus forms somewhat barrel-shaped receptacles for the provision about to be stored up. Having formed four or five of these spaces, she fills the farthest cell with pollen and honey, and deposits an egg on the mass: the egg is white, and of the shape of a caraway seed, but rather less pointed at the extremities. In about six or eight days the young grub appears, and commences feeding on the provision, which consists almost entirely of honey at the end where the young larva is hatched, but is afterwards of a more firm consistency. In ten or twelve days the food is all devoured, after which the larva remains inactive for a day or two, when it spins a thin silken cocoon, in which it remains in a lethargic state until spring, when it assumes the pupa state, and after again remaining inactive for some weeks, it throws off a thin pellicle, and begins gradually to change colour, and by slow degrees acquires its perfect state in June. The cells have merely a thin partition, formed of some vegetable matter, as abraded leaves &c., easily soluble in water. The parent bee does not line the cells in any way: their number is usually four. Mr. Thwaites, of Bristol, has also, I am told, bred the same species from bramble-sticks.

Osmia spinulosa I have observed entering its burrows in hard sand-

banks. Mr. Kirby has recorded his having captured it in sand and chalk pits.

Osmia hirta I have repeatedly observed at Battersea, entering its burrows in posts and rails, into which I also observed, on more than one occasion, *Stelis aterrима* enter. I have little doubt the latter is parasitic on the *Osmia*. This species also excavates bramble-sticks; a friend has bred it from them, and has furnished me with one of the sticks. The cells are similarly formed to those of *O. leucomelana*, and have similar divisions between them.

Osmia cærulescens burrows in posts and rails, in brick walls,—choosing those bricks which are softest and most easily perforated,—in the mortar of walls, and in hard sand-banks. I have observed *Stelis aterrима* entering its nests.

Osmia tunensis varies in its choice of situations; sometimes, as detailed above, availing itself of the spiral tube of a snail-shell, at others choosing posts, boards, or rails, and not uncommonly the perpendicular side of a hard sand-bank.

Osmia bicornis is a bee of varied habit; it sometimes constructs its burrows in brick walls that are soft and crumbling, or in the mortar of stone walls; at other times in posts, rails, or decaying trees. I have observed it in multitudes entering its burrows in an old decaying willow tree. It sometimes avails itself of ready-formed tubes, as I once found it entering the stems of some reeds used in thatching an out-house on Wimbledon-common. It is commonly found in company with *Anthophora retusa*, constructing its tunnels in the same oak.

Osmia bicolor, as before stated, breeds in shells, but commonly burrows in banks; I have observed it doing so at Purfleet in Essex, and Greenhithe in Kent.

Osmia atricapilla. This species constructs cells of mud, upon the nearly perpendicular sides of banks, where the soil is of a light nature. Last year I found five of these cells on a bank under a tuft of grass, near Birch-wood, Kent. In a previous number (Zool. 403) will be found an excellent description of the nests of this bee, by Mr. G. R. Waterhouse.

The above details show the truly remarkable power possessed by these bees of varying their economy in accordance with accidental circumstances. We may well enquire, By what faculty does the bee ascertain that the spiral tube of a snail-shell is so well adapted to her purpose as to supersede the necessity of laboriously excavating a wall, a rail, or a sand-bank? Truly, in the words of Kirby, it is the teach-

ing of the Almighty, — the manifestation of His eternal Wisdom, infinitely diversified, sustaining, directing, impelling all things, and making all things work together for the good of the whole.

Genus. — OSMIA, Panzer, Latreille.

Anthophora, Fabr. *Trachusa*, Jurine. *Apis*, Linn., Kirby.

Sp. 1. OSMIA LEUCOMELANA.

Apis leucomelana, Kirby's Mon.

Female. — Length $3\frac{1}{2}$ —5 lines. Black, shining and minutely punctured. Head as wide as the thorax, a few white hairs on the face, along the margin of the eyes. Antennæ black, piceous beneath towards the apex. Maxillæ tridentate. Thorax; a thin griseous pubescence on the metathorax, and also beneath. The legs black: the tarsi beneath, and the claws, rufous. Abdomen; the first three segments laterally, and the fourth entirely, margined with white hairs, clothed beneath with cinereous hairs.

Male. — Length 3—4 lines. Brown black, closely punctured. Head: face clothed with bright yellow hairs. Antennæ black, piceous beneath. Thorax thinly clothed with palish yellow hair, more thinly so with darker hairs on the disk. Legs black; the tarsi rufous beneath, the apical joints of the anterior and intermediate tarsi, and all the claws, rufous. Abdomen; the first segments laterally, the second, third and fourth, entirely, narrowly margined with white hairs, all frequently more or less interrupted; the sixth segment produced laterally, forming an obtuse tooth, the seventh is deeply fossulated and dentate at the apex; beneath, the second segment is produced into a large obtuse projection, the third and fourth deeply emarginate and fringed with yellow hairs.

I am not aware that the male of this species has been previously described. It is a remarkable insect in its abdominal appendages; the nearly half-circular projection on the second segment beneath, together with the cavity on the seventh, above, distinguish it from the other males of the genus. The species is very local. I have met a single specimen at Charlton in Kent; at Hawley in Hampshire not uncommon in July, but it is more abundant still in the neighbourhood of Bristol.

Sp. 2. OSMIA SPINULOSA.

Apis spinulosa, Kirby's Mon.

Female. — Length 3— $3\frac{3}{4}$ lines. Black, shining, rather coarsely

punctured. Head; a few pale hairs on the face, below the antennæ, and a few scattered reddish yellow ones on the vertex; the mandibles with three acute teeth. The antennæ short and black. The thorax thinly clothed above with reddish yellow hair, inclining to hoary beneath. The scutellum armed laterally with an acute tooth. Wings fuscous. All the legs have a thin, scattered, griseous pubescence, all the calcaria testaceous: the tarsi beneath clothed with fulvous hair. The abdomen is subglobose; the first, second and third segments have at their extreme lateral, and the fourth, fifth and sixth have, on their entire margin, a fascia of white hairs. The abdomen beneath is densely clothed with fulvous hair.

Male.—Length 3 lines. Black, deeply punctured; the face clothed with longish yellow hair; the vertex thinly so with reddish brown hair: mandibles bidentate. The thorax above thinly clothed with reddish brown hair. Apical margins of the wings fuscous. The legs have a scattered griseous pubescence; the claws rufous. The abdomen is incurved, and the margin of the sixth segment is armed with minute spines; beneath there is a stout acute spine at the base, and a smaller one on the apical segment.

This bee I have met with in Kent, also in Hampshire. It appears to be found generally in chalky districts. It is a local, but in some places an abundant species.

Sp. 3. OSMIA HIRTA.

Apis hirta, Fourcroy. *Osmia fulviventris*, Lat.? *Apis Leaiana*, Kirby.

Female.—Length 4—5½ lines. Black, closely and deeply punctured. Head large, as wide as the thorax: the mandibles large and stout, with two acute teeth at their apex: the face thinly clothed with pale fulvous hairs: the antennæ short. The thorax also thinly clothed with pale fulvous hair. The anterior trochanters and femora have a fringe of hairs of the same colour, and all the legs have a thin short pubescence, also of the same colour; all the tarsi are clothed beneath with fulvous hair. The abdomen is nigro-æneous, shining, oblong and incurved, and the margins of the segments have laterally a few bright fulvous hairs, very frequently obliterated; it is densely clothed beneath with bright fulvous hair.

Male.—Length 4¼—5 lines. Nigro-æneous, closely and deeply punctured. Head as wide as the thorax: the face clothed with fulvous hair becoming paler towards the mandibles. The thorax is also clothed with rather long fulvous hair, paler beneath. The anterior femora have a fringe of longish pale fulvous hairs: all the legs have a

thin pubescence of the same colour. The abdomen is incurved, oblong-ovate, the first segment has a thin fulvous pubescence, and all the margins have a thin fascia of fulvous hair, the sixth is emarginate and the seventh bidentate.

The male of the present species is not described by Mr. Kirby; it somewhat resembles the same sex of *O. cærulescens*, but the abdomen is of a different form, being oblong-ovate, whilst in the latter species it is broadest towards the apex, and considerably narrowed at the base. *O. cærulescens* is also a much smaller insect.

The present is a somewhat local species, but sufficiently abundant in some places; namely, in the neighbourhood of Bristol, and at Sandhurst, Berkshire: but I used to find it most numerous in Battersea-fields some years ago, when there were great numbers of sheds and palings in the market-gardens. It appears in July and August.

Sp. 4. *OSMIA PARIETINA*, *Curtis*.

Female. — Dull æneous green. Head and thorax thickly and minutely punctured. The former having a hoary, and the latter a bright ferruginous pubescence. Abdomen very glossy, obscurely punctured, slightly pubescent, ferruginous at the base, under side clothed with black pubescence. Wings with a fuscous fimbria. The legs have a little hoary pubescence, that of the tarsi fuscous.

This is an insect which I do not possess, never having been fortunate enough to meet with the species. The male is not known; whether that which I shall hereafter describe may be it or not, I have no evidence whereby to determine. My insect I captured in Hampshire. Mr. Curtis captured this species some years ago, in June, flying about walls near Ambleside. Captain Blomer also records his having taken it near Bridgend, Glamorganshire, (*Ent. Mag.* i. 317).

Sp. 5. *OSMIA CÆRULESCENS*.

Female. — *Apis cærulescens*, Linn., Kirby. *Andrena cærulescens*, Fab., Panzer. *Abeille maçonne*, De Geer.

Male. — *Apis ænea*, Linn. *Andrena ænea*, Fab., Panzer.

Female. — Length $3\frac{1}{2}$ — $4\frac{1}{2}$ lines. Deep blue, strongly and closely punctured. Head large, as wide as the thorax: a few white hairs on the face, close to the eyes, below the base of the antennæ; a similar thin pubescence scattered on the vertex: the cheeks are also clothed with similar pubescence. The thorax has a white pubescence inclining to hoary on the disk. The abdomen has a very thin, scattered, white pubescence, most dense at the lateral margins of the basal seg-

ments; the margins of all the segments have a fascia of white hairs, generally obsolete on the first, widely interrupted on the second, and frequently more or less so on the third. The underside of the abdomen is densely clothed with black hair.

Male. — Length $3\frac{3}{4}$ — $4\frac{1}{4}$ lines. Green, deeply and closely punctured. The head as wide as the thorax: the face clothed with fulvous hair. The thorax has a similar pubescence on the disk, inclining to hoary beneath. The legs have also a thin fulvous pubescence. The abdomen is gradually narrowed towards its base, the margins of the first and second segments are depressed, and these, as well as the third, are fringed with fulvous hairs, forming continuous fasciæ on the margins of the fourth and fifth, the sixth is emarginate, and the seventh segment is incurved and bidentate.

This species appears to be very generally distributed. I have bred it from decayed wood, and my descriptions are from such specimens. The bright fulvous hair of the male soon fades from exposure. The colour of the female varies from violet-blue to nearly black.

Sp. 6. OSMIA TUNENSIS.

Apis tunensis, Fab., Kirby. *Apis aurulenta*, Panzer.

Female. — Length 4— $4\frac{3}{4}$ lines. Black, deeply and closely punctured. Head as wide as the thorax: the face with thinly scattered fulvous hairs, extending to the vertex: the mandibles stout, prominent and tridentate, the exterior tooth acute; coated above with short fulvous hair. The thorax clothed with bright fulvous hair. The legs thinly coated with the same: the tarsi beneath clothed with ferruginous hair; the calcaria testaceous; the claws rufous. The abdomen subglobose, laterally clothed with bright fulvous hair, all the margins have a fascia of hair of the same colour, the underside densely clothed with deep ferruginous hair.

Male.—Length 4— $5\frac{1}{2}$ lines. Black. The face clothed with bright pale yellow hairs, those on the vertex ochraceous. The thorax also clothed above with an ochraceous pubescence, and with hoary beneath. All the legs are fringed with a similar pubescence: the tarsi beneath ferruginous; the calcaria are testaceous and the claws rufous. The abdomen gradually widens from its base; the basal segment is thinly clothed with ochraceous hairs; the other segments laterally, and the margins of the third, fourth and fifth, with a fascia of bright ferruginous hair: the sixth segment is emarginate, and its extreme lateral margins deeply notched, forming a somewhat acute tooth; the seventh is incurved, and acutely bidentate.

This species is by no means uncommon in the south of England. I am not aware that the male has been previously described. Both my descriptions are drawn up from specimens bred from a snail-shell. Mr. Kirby has described a male, but did not point out the true one; the original specimen in his cabinet is the male of his *Apis xanthomelana*, or *Osmia atricapilla* of Curtis.

Sp. 7. OSMIA XANTHOMELANA.

Apis xanthomelana, Kirby. *Osmia atricapilla*, Curtis.

Female. — Length $4\frac{1}{2}$ — $6\frac{1}{4}$ lines. Black. Head deeply punctured, the face clothed with black hair, thinly scattered on the vertex; upon the cheeks are some longish black hairs. The thorax deeply punctured, and clothed above with reddish brown hair, beneath with black hair, which also clothes the legs; the tarsi beneath are dark brown. The abdomen is obsoletely punctate, and has the first and base of the second segment clothed with reddish brown hair, the rest thinly clothed with black hair, beneath densely clothed with black hair.

Male. — Length 4— $5\frac{1}{2}$ lines. Closely punctured. Head as wide as the thorax; the face clothed with white hairs, gradually inclining to ochraceous towards the vertex; the cheeks have a thin griseous pubescence. The thorax above is clothed with fulvous hair, beneath with hoary, as well as the legs. The abdomen above is clothed with bright fulvous hair; the sixth segment is emarginate, the seventh incurved and bidentate.

This species was originally discovered by Mr. Kirby, and arranged by him at the end of his division of leaf-cutter bees. It appears to be very local; I have only met with it at Birch-wood, Kent, in May: Mr. Waterhouse took it also at Darenth wood, and in 1835 in tolerable abundance near Liverpool. It also occurs in the neighbourhood of Bristol.

Sp. 8. OSMIA BICORNIS.

Female, *Apis bicornis*, Linn., Kirby. *Apis cornigera*, Panzer.

Male, *Apis rufa*, Linn., Fab.

Female. — Length 4—6 lines. Nigro-æneous. The head closely punctured, as wide as the thorax; the face armed with two incurved horns, which have an obtuse tooth on the outside towards their apex, the face clothed with long black hairs. Thorax deeply punctured, clothed anteriorly with black hair, posteriorly with pale fulvous. Beneath, all the femora are fringed with pale fulvous hair; the tibiæ are thinly clothed with fulvous hairs; all the tarsi beneath clothed

with bright fulvous hair; the claws ferruginous. Abdomen obsoletely punctate, clothed with rufous hair, beneath densely clothed with hair of the same colour.

Var. — The horns on the face not recurved, and without the tooth at the apex.

Male. — Length 4—5¼ lines. Black, finely and closely punctured. The face clothed with long white hairs, as well as the cheeks, the pubescence slightly stained with ochraceous; the antennæ as long as the head and thorax. The thorax above clothed with ochraceous pubescence, paler at the sides and beneath. All the femora are fringed with long white hair; the tibiæ have a thin fulvous pubescence, and the tarsi beneath are clothed with bright ferruginous hair. The abdomen above clothed with bright fulvous hair.

This is doubtless the most abundant species of the genus, and is generally distributed. The difference in the size of individuals of both sexes is remarkable. The colour of the species is very liable to fade, giving them the appearance of distinct species, but a little experience soon detects their identity. The horns on the face of the female vary considerably in form, but I consider them all to be varieties of the same species.

Sp. 9. OSMIA BICOLOR.

Apis bicolor, Schrank, Kirby. *Apis fusca*, Panzer.

Female. — Length 4½—5 lines. Black. Head not quite so wide as the thorax; the face clothed with black hair, thinly so on the vertex. The thorax clothed with black hair, as well as all the femora and tibiæ. The intermediate and posterior tibiæ above have ferruginous hair at their apex; all the tarsi ferruginous. The abdomen has some black hair at the base of the first segment, the rest clothed with ferruginous hair, as well as the under side of the abdomen.

Male. — Length 4½ lines. Fusco-æneous. Head closely punctured, the face clothed with bright pale fulvous hair; the cheeks have a palish fulvous pubescence, which is also thinly scattered on the vertex. Thorax closely punctured, and also clothed with palish fulvous hair, rather darkest on the vertex. The legs have a similar pubescence; the tarsi bright fulvous beneath; the claws ferruginous. The abdomen is obscurely punctate, and oblong ovate; all the segments have a marginal fringe of rather pale fulvous hair, the margin of the sixth segment is entire, the seventh bidentate.

The pubescence of the male of this species soon fades to cinereous, and specimens frequently occur in which the hair is almost all rubbed

off. All the males of the present genus are exceedingly active insects, and sport from flower to flower in the sunshine; consequently their appearance soon changes: but the outer margin of the sixth segment, and the oblong ovate abdomen, will distinguish the male of *O. bicolor* from the other species. This insect appears early in the spring, at the latter end of March, if the weather prove favourable. It is a local species. I have met with it at Purfleet (Essex), and at Gravesend, in April. In the immediate neighbourhood of London it is scarce, but I have taken it at Brompton. It is numerous in the vicinity of Bristol.

Sp. 10. *OSMIA HEDERA*, *Smith*.

Male. — Length 4 lines. Nigro-æneous. The head finely and closely punctured; face clothed with longish white hairs, gradually becoming ochraceous towards the vertex, on which they are thinly scattered; the cheeks clothed with long white hair; the antennæ filiform, as long as the head and thorax. Thorax finely punctured; above, the pubescence is ochraceous, beneath, hoary. The tarsi are fulvous beneath; claws ferruginous; the calcaria testaceous. The abdomen is obscurely punctate, the margins of the first, second and third segments are thinly

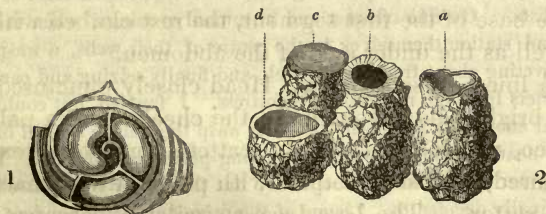


Fig. 1. Represents the section of a Snail-shell, showing the disposition of the cocoons of *Osmia tunensis*.
 Fig. 2. Represents four nests of *Osmia xanthomelana*. *a*. Cell without the lid. *b*. Cell with the concave lid partly constructed. *c*. A cell closed in. *d*. A section showing the smooth interior of a cell; the cells are generally inserted in the ground to about the depth of this figure.

Fig. 3. Represents a bramble stick split open, showing the manner in which *Osmia leucomelana* excavates her tunnel, also the alternate widening and contracting of that portion intended as receptacles of the pollen and honey. Cells *a* and *b* show the egg deposited on the food: *c* *d* and *e*, the larva in progressive states.

fringed with palish fulvous hairs, the fourth and fifth segments have a dense fringe of fulvous hair, the sixth segment is somewhat acute and emarginate, the seventh entire.

I took the solitary specimen from which the above description is drawn up, in Hampshire. It is quite distinct from the males previously described: its antennæ are much longer, and its abdomen gradually widens from its base (as in the male of *O. cærulescens*); otherwise it resembles the male of *O. hirta*. It may hereafter prove to be the male of *O. parietina*, there being a general resemblance between the insects, but I have no other reason for the conjecture.

FREDERICK SMITH.

High Street, Newington, September, 1844.

Note on the Economy of the Bee. The bee will only work in complete darkness. The admission of light into the hive is the signal for the immediate cessation of all labour, and when the flap-door of a glass hive is opened, the bees are seen hurrying and skurrying about in a state of alarm and confusion, while the exhibitor explains to a spectator that the bees are at work. If I could be shown a bee making a cell, I would travel barefoot from Horsham to Windsor to behold the spectacle. It would at once lead to a solution of one of the most important problems in the Natural History of the bee, which is the origin of wax, about which we are almost as ignorant in the nineteenth century as in the time of Virgil or Columella. The actions of the apiarian monarch are enshrined in an almost impenetrable mystery. It is my sincere wish, however, to disabuse the minds of all keepers of bees, that the internal economy of a hive is to be ascertained by looking through a pane of glass; for so tenacious are these wonderful insects of that economy being explored by the eye of man, that supposing the flap of the hive to be left open, the bees will immediately cover the interior side of the glass with a coating of wax, so that no eye can penetrate to their works. — *Huish.*

Note on a remarkable habit of the Wasp and Hornet. I have observed, on more occasions than one, a habit of the common wasp and hornet, which appears to have escaped the notice of naturalists. On fine summer and autumnal evenings, when the spiders usually come out and station themselves in the centre of their webs, a wasp may occasionally be seen hovering about from web to web, and finally seizing and carrying away one of these spiders from the middle of his fortress. I fancied, but could not on any occasion get near enough to ascertain, that the wasp then made a meal of his captive, eating it on the nearest or most convenient resting-place he could find. I observed, too, that every spider did not seem acceptable, but that many were passed over before the victim was finally decided on. Some of the numerous correspondents of 'The Zoologist' can doubtless inform me whether this is a common habit of the wasp; but it strikes me as worth notice and more close observation, for the abstraction of the spider must be a task of no little difficulty, owing to the tenacity with which he would cling to his net, and the absence of anything like a fulcrum on which to rest while pulling him away. The swoop of a hawk, or picking up of a hare by a greyhound, are clumsy evolutions compared to this. Let me add, too, that I never saw an abortive attempt, or a failure.—*W. S. Lewis; Kingsdown, Bristol, October 8, 1844.*

Note on an Australian Hymenopterous Insect. There is a species of bee here that is in the practice of stopping up the key-holes with clay. We have been amused lately by seeing one of them engaged in building in a crevice of our stone chimney. It comes into the room, and goes to the fire-place, as unconcerned as though no one was present, even when we are all in the room. This has given us an opportunity to see the progress of the business. It makes a hollow tube of clay, about the size of one's forefinger, and nearly as long; one side of this adheres to the wall. When it is finished, the bee lays an egg at the end, and then fetches two small green spiders, and puts them in with the egg. It then closes them all in with some clay, allowing just room enough for the spiders and egg. Another egg is then laid, and two more spiders put in, and then clay again; and so on, till the whole tube is filled up, there being six or more partitions, with egg and spiders in each space. I have broken some of these tubes heretofore, and always found them made in this way, and with the same kind of spider, which no doubt is put there for food for the maggot of the bee. I cannot tell whether the spiders are killed or not; I rather think not, because they look so very fresh after having been some time boxed up: but that may be owing to the air being excluded.—*Joseph May; * Mount Barker, South Australia.*

Note on Ichneumons' Eggs on Caterpillars. In the 'Annales de la Société Entomologique de France,' December, 1843, it is recorded, that at a meeting of the Society held on the 29th of August, 1843, M. Pierret stated that M. Bruand had succeeded in rearing a caterpillar of *Dicranura furcula*, which had eggs of an Ichneumon inserted in the skin, he having destroyed the eggs by crushing them with very fine pincers. Some caterpillars of *Notodonta tritropha* similarly attacked, were operated on by cutting the eggs with a penknife, but they all perished. This is a hint that may be useful, when, as is sometimes the case, the larva of a rare moth is found "stung," as the collectors term it. — *J. W. Douglas; 6, Grenville Terrace, Coburg Road, Kent Road, October 8, 1844.*

Note on the capture of Coleopterous Insects at Plumstead. The following Coleoptera were taken by me at Plumstead-wood, two miles beyond Woolwich, in Kent, (a very good locality), in the summers of 1842, 3, and 4. *Lamprias chlorocephalus*, on broom. *Throscus dermestoides*, very common on the birch, in June and July, 1843. *Elater balteatus*. *Anobium rufipes*. *Nedyus melanostictus*, on wild mint. *Acalles ptinoides*, and *A. Roberis* (*Curtis*). *Otiorhynchus fuscirostris* (*Scho.*): I have taken four specimens of this pretty species, which has not been hitherto recorded as British: this insect will be described by Mr. Walton, in the Notes on British Curculionidæ, published in Taylor's Annals. *Trachyphlæus Waltoni* (*Scho.*). The last four insects I found in a gravel-pit on the common. *Balaninus Betulæ*, very common on one occasion on the birch, at other times rare. *B. Elephas*, on oak. *Polydrusus confluens*, on broom. *Apion simile*, on birch. *Oxystoma fuscirostre*, on broom, June and Sept. *Cryptocephalus lineola*, occasionally common on birch and oak. *Hypulus Quercinus*, a single specimen taken by sweeping in a marshy place in the centre of the wood, the 15th of last June. *Aderus Boleti*, a specimen beat off the oak, September, 1842.—*S. Stevens; 38, King St., Covent Garden, August, 1844.*

Note on captures of Coleopterous Insects at Charlton. The following I have also met with at Charlton-pits. *Pœcilus lepidus*. *Rhinusa Linariæ* and *R. Antirrhini*, both found on *Antirrhinum Linaria*, the former in May, the latter in July. A species

of *Nedyus* not yet described. *Tychius Meliloti*, *T. lineatulus*, *Sitona Meliloti*, and *Apion Meliloti*, all on *Trifolium Melilotus* in June and July. *Apion filirostre*.—*Id.*

Note on the capture of Lebia Crux-minor. On the 11th of September last, while on a visit to my friend, the Rev. W. M. W. Call, I had the good fortune to capture a specimen of this rare insect, which I brushed into my net from a moist meadow in the parish of Treneglos, one of the wildest and most uncultivated spots in Cornwall. For a week I visited (often twice a day) the same locality, but could not procure a second; however, the same valley afforded me many rarities, including specimens of *Chrysomela geminata*, *Thyamis holsatica* and *Nastursii*, and a single specimen of the true *Gymnaëtron Veronicae* of Germar, captured at Treglith.—*T. Vernon Wollaston*; *Jesus Coll. Cambridge, Oct. 12, 1844.*

Note on the capture of Cordulia alpestris, a species of Dragonfly new to Britain. I had the good fortune to capture a single male specimen of *Cordulia alpestris*, in the Black forest, Perthshire, in July last. This insect, unique as British, is now in the cabinet of Mr. Dale.—*Richard Weaver*; 63, *Pershore Street, Birmingham, September 18, 1844.*

Note on Halisarca Dujardinii. Dujardin has described a sponge in the 'Annales des Sciences Naturelles,' No. 8, which he has made the type of a new genus, and designated *Halisarca*, from its fleshy character and the supposed absence of spicula; and Dr. Johnston, in his excellent history of the British Sponges, has adopted the genus, which is thus described.—"Substance fleshy or rather gelatinous, semitransparent, unorganized, forming an irregular crust on the object to which it adheres." In the spring of 1843, I had the good fortune to find this curious species of sponge on the coast near Scarborough, coating the under surface of a small detached mass of sandstone; and upon examining a small fragment of it with a microscopic power of 300 linear, I found that instead of being destitute of spicula, they were in abundance, but exceedingly minute. They are imbedded in all parts of the fleshy matter, without any definite mode of arrangement. They are exceedingly long in proportion to their diameter, nearly uniform in thickness throughout the whole of their length, and terminate hemispherically. The surface of the sponge is thickly studded with oscula, which are nearly of a uniform diameter. From these circumstances it would appear that the new genus, *Halisarca*, is in fact but one of the various forms of *Halichondria*. *J. S. Bowerbank*; 45, *Park St., Islington, October, 1844.*

Note on the Habits of the Hedgehog. The habits of the hedgehog are generally strictly nocturnal; but on the 27th of last June, about 3 o'clock P.M., whilst walking with my children in a wood, thinly planted with forest trees, but abounding in low bushes, they called my attention to what they fancied was a large rat coming towards us. I at once saw that it was a hedgehog, proceeding at a moderately fast pace. I secured it, and as it was a female, I regret that I did not examine a bush, thickly matted with grass, towards which it was tending, and into which there was a well padded hole; as it would probably have appeared that family cares had forced it to roam. *Wm. Turner*; *Uppingham, Rutland, October 16, 1844.*

Remarks on Mr. Waterton's Essay on the Oil-gland.

By the REV. C. A. BURY.

ON the receipt of 'The Zoologist' for this month, (September,) I eagerly turned to the table of contents on the fly-leaf, and was much gratified to read 'Notice of Waterton's Essays, second series.' I had heard that the promised volume was out, but had not as yet been able to procure it; I seized my paper-cutter with a degree of avidity, suspending even the operations of the breakfast table, so greedy was I to ascertain what pleasure and instruction I was likely to receive from a second series of Essays from the pen that so pleased and instructed me in the first.

I perused your opening remarks with full acquiescence; I admired the generosity of the author in presenting his volume to Mrs. Loudon; I read your various quotations with much interest; when lo! on reaching the last passage selected from the autobiography, I stumbled on my own name. I felt flattered that what I had contributed to your pages should have attracted the attention, and received the approbation of so distinguished a naturalist. But, if I had been startled at the sight of my own name previously, how was my surprise increased when, on turning the next leaf, I found (Zool. 674) an entire Essay on "The Windhover Hawk, and the Oil-gland," based on the contribution to 'The Zoologist' alluded to above. So unexpected was the compliment that I confess it cost me my breakfast.

The epithets Mr. Waterton has been pleased to apply to me and my observations are indeed sufficiently flattering; and if he can feel himself under obligation because I have mentioned his name with respect—and my pen would have belied my feelings had it written the name of Waterton other than respectfully—how much more deeply indebted should I feel for the honour he has done me in treating with so much courtesy the name and writings of an obscure individual. I, therefore, tender my best thanks to Mr. Waterton; and beg to assure him that, if, as it so chances, I am in "dispute" with him, that dispute shall not be "hot." I am under no temptation to wound his feelings by so much as a hasty expression, or a disrespectful word: and in venturing to differ from a much greater proficient in ornithological science than I either am, or am likely to become, I am only faithfully following the convictions of my own mind; and, in recording those convictions, my sole object is to elicit the truth on an interesting, if not a very important topic. If I shall chance to induce Mr. Waterton to resume his pen, and adorn the pages of 'The Zoologist' with

more Essays on this, or any kindred topic, I shall merit and obtain the full approbation of its readers, without one single exception. That I should not manfully state my own opinions, and deal plainly with his arguments, Mr. Waterton would be the last to wish; but if I write as I feel, I shall do so not less courteously than plainly.

I shall commence by admitting, what Mr. Waterton has shown, that I did not carry my observations far enough to render them conclusive. I confess, not that I "ought to have seen the expressed matter," for it would have been within the bill, not on its "sides;" but, that I ought to have noticed whether the tuft of down on the extremity of the nipple was or was not moistened by the matter. This I omitted to do; thereby betraying a want of sagacity which I have abundant cause to regret.

This tuft is much longer in some birds than in others; and in very small birds, if it exist at all, it is not discernable by the naked eye. I have this day (Sept. 13), examined the state of the oil-gland in four recently killed birds: in two partridges the tuft, though small, was sufficiently large to show that it was saturated with an unctuous matter: in a knot, shot by myself, in the act of preening its feathers, the tuft was nearly half an inch long; and when examined, three hours after death, was completely saturated; while the surrounding feathers were unaffected. The fourth bird was the little willow-warbler, which had been very recently killed: it had no tuft; but very slight pressure, scarcely more than the mere movement of the nipple with a small instrument, sufficed to produce matter from the orifice. Now I cannot help feeling that here is evidence enough, not only of the existence of an unctuous fluid, and of an orifice by which it may be expressed—this, I think, Mr. Waterton does not question—but that this matter does readily flow from the orifice, and moisten the tuft on the apex of the nipple: and may I not fairly ask Mr. Waterton how the kestrel could take the nipple between its mandibles in the manner I witnessed, and not express matter therefrom?

I think the movements of the bird were too deliberate, and the act too frequently repeated, to admit of the interpretation Mr. Waterton would give. The cessation in the process of preening; then the erection of the feathers surrounding the gland by the muscular action of the skin, exposing the nipple to view, as well as to ready access by the bill; then again the deliberate seizure of the nipple, and the three or four nibbles, for so I may call them, though differing from the rapid movement of the mandibles when the bird clears itself of parasites, followed by immediate application to the feathers, too

quickly indeed to allow of my seeing whether matter was actually rubbed on them ; considering also the comparatively small quantity that would be expressed at each application of the bill to the gland ; all this tended to convince me the bird was really doing that which I had previously believed birds did not do. The whole process was exactly that which might have been expected, supposing it to be a fact that birds do lubricate their feathers with matter from the oil-gland.

Mr. Waterton considers that the tuft must prove an "insurmountable obstacle to the transfer of matter from the gland through the medium of the bill." Doctors of ornithology (I am one only by the courtesy of your readers), as of other sciences, must and will differ : for I, for my part, can conceive even an use for the tuft, in distributing the expressed matter over the interior of the bill and the surface of the tongue, in order to its more equal and readier application to the feathers : and therefore, it may be, the tuft is larger in the aquatic birds, because their bill is broader.

I could wish Mr. Waterton would tell us what he thinks is the use of the oil-gland ; and what was the intention of the Creator in imparting it. To suppose that such an organ should have been given but for a specific purpose, would, I think, be impugning the wisdom of the Creator : its existence without an object would be an anomaly among his works. Satisfied from analogy that where such a gland existed for converting blood into a different substance, its use was not less certain than its existence ; I once thought it might possibly be in some way connected with the growth of the plumage : and that the fluid might be conveyed to the roots of the feathers by means of minute vessels traversing the skin : in short, that it might be the matter of which the feather is composed. The size of the gland would lead us to suppose that considerable quantities of the matter were formed ; and so would seem to favour this notion : but the difficulty met me, what then is the use of the nipple ; and of an orifice on the extremity of that nipple ?

But this is not a subject to be decided by theoretic argument. If settled at all, it must be settled by observation of facts. The liability of the most plausible arguments to be overthrown by plain facts, nobody has better shown than Mr. Waterton himself. Reasoning, unless founded on facts, will not decide this, or any other disputed point in natural history : further observation is therefore necessary.

I have not yet succeeded, as has Mr. Hussey (*Zool.* 648), in observing this lubricating process gone through by many birds ;

though I have watched for it many a time and oft. Tame ducks I have detected more than once apparently so engaged : a bantam cock I once observed to take the nipple in his bill : and a Surat dove I fancy I saw do so ; but cannot feel certain : this, however, is certain, that birds in confinement, or in a state of domestication, frequently go through the process of preening, without having recourse to the oil-gland. But this is not at all surprising ; for when an animal has been brought into an unnatural state, many of its natural faculties evidently become impaired. An aviary, well stocked with birds caught after they had left the nest, and wherein they would be exposed to all weathers, would afford admirable opportunity of making the necessary observations. I have obtained another kestrel, with the hope he may prove as confiding as the one alluded to in 'The Zoologist' (Zool. 521).

Mr. Waterton, with his extreme love of accuracy, can hardly be content to let the subject rest before, if possible, the real use of the oil-gland has been clearly ascertained. I certainly did think the kestrel had settled the question for me ; but Mr. Waterton having shown that a link is wanting in the chain of evidence afforded by that saucy rogue, I am prepared to keep it open till decided by the observation of myself, or of others.

With all deference to one who so properly delights in referring all he sees around him in the natural world to the great First Cause, I do not think his argument "Providence never does anything by halves" is quite applicable. To the sentiment itself I most heartily subscribe : but it must be shown what was the design of the Creator before we can reason upon its supposed failure in a particular instance. We often see one bird apparently "put sadly over the head of another," if we are to consider superior endowments in that light. For instance, why do the feathers of the cormorant so soon become wet when the plumage of the red-throated diver is capable of resisting the action of the water for any length of time ? The question admits, perhaps, of this answer :—a check is thus put on the gormandizing propensities of the cormorant. But the difficulty is only shifted : for, why is the poor cormorant endowed with an appetite he has not the power of satisfying ? I procured last spring a specimen of the crested cormorant, which had so exceeded the bounds of temperance as to remain in the water till it was quite unable to rise on the wing, and was shot in the vain attempt. Notwithstanding, I do not think Providence has "acted partially" in this instance ; or that the diver is really put over the head of the cormorant, but that each occupies

its appointed place in the scale of being, and enjoys all the happiness it has capacity for.

Moreover, Mr. Waterton's example is hardly to the point. The only bird to which, I believe, the oil-gland has been denied, is the rumpless fowl: but this is only a variety of the common barn-door species, and is, in short, a monstrosity; arising, most probably, from the removal of the bird from its natural state: for, it would seem to be a law of nature that an animal, once taken under the immediate protection of man, not only loses in a great measure the power of self-maintenance; but also becomes more subject to disease, variation in colour, and malformation. Therefore the imperfection of the poor fowl is to be attributed to the interference of man, and not to the original intention of its Creator.

That the plumage of a rumpless fowl should be "just as brilliant, and in as good condition," as that of a fowl furnished with an oil-gland, certainly tells against my theory that this gland is intended to promote the growth of the feathers by means of vessels pervading the skin, (were that theory not overthrown by the internal anatomy of the gland), but, as it appears to me, it is not so cogent when adduced in opposition to the lubricating process: for no rumpless fowl can cut a more sorry figure after a shower of rain, than do some very smart bantam cocks in my possession, who are furnished with the gland, but make very little, if any, use of it. This, however, as I have already observed, may arise from one and the same cause, viz. domestication, which has deprived the bird, in the one case, of the use of the gland, and in the other, of the gland itself. The plumage of the original bird in its native woods, wherever they may be, may be as capable of repelling the rain as is that of the pheasant and of the partridge in their state of freedom; and this *may be* the effect of the lubricating process.

But I am unwilling to dwell longer on points of difference with one whom I have always admired for his benevolent endeavours at Walton Hall, to promote the happiness of our common favourites; whose writings have done so much for the cause of humanity; and whom I cannot but esteem as the first of our out-door naturalists.

CHAS. A. BURY.

Bonchurch, Isle of Wight.

Further Remarks on the Power of the Moorhens, &c. to keep the body submerged. By the Rev. J. C. ATKINSON, B.A., &c.

IN the last number (Zool. 667) I see some remarks on the power possessed by moorhens and other birds (Id. 668), of placing and keeping themselves in a state of "submergence;" and my statement in a former paper, that the foot of the moorhen is the instrument by means of which this bird is enabled to remain in the state of submergence, is pronounced to be "not satisfactory," because, according to W. H. S., "this (the submergence) often happens in deep water, and where there are no weeds or flags whatever near the surface," by laying hold of which with its feet, the bird could be enabled to keep itself down in spite of the supporting power of the water.

In the first part of the article by W. H. S., he says he has read in the April number of 'The Zoologist' "some observations with reference to the power which the moorhen possesses of 'submergence,' and of keeping its body, and all but its beak or head, concealed under water, when alarmed, &c." (Zool. 667). If W. H. S. had read my paper with attention, he would have seen, that instead of making the moorhen's power of "submergence" to differ from its power of keeping its body, and all but its beak or head, concealed under water, I make it to consist in that very concealment. Moreover, I say nothing about beak or head; for I state that all is concealed (*including the head*) except the beak only. My words are "The moorhen, when disturbed by man or dog, sometimes takes wing, sometimes dives; but after diving, especially if pursued by a dog, it seldom comes to the surface again, but remains *submerged, with merely its beak thrust out*, for the purpose of respiration." And lower down, describing the emergence of a moorhen from its concealment under water, I proceed to say, "The *bill* was first thrust higher out of the water, *then followed the head* as far as the eyes" . . . What I meant then by the phrase "state of submergence," must, I think, be perfectly apparent to any one.* Moreover, if W. H. S. had looked two pages forward, he would have found that when describing the habits of the dabchick, I write as follows: "When very quietly and slowly approached, they (the dabchicks) displayed the first symptom of uneasiness, by gradually sinking themselves, until only the head and rump were above the surface;" and in the next sentence I call this a "partially submerged state."

* I use it in the same sense throughout these notes.

If, then, W. H. S. maintains that moorhens or any other birds can keep themselves in what I call a state of submergence, without the aid of weeds or flags, or other objects external to themselves, I beg leave to differ from him. If he means only that the moorhen, together with various other birds, is capable of maintaining itself in what I call a partially submerged state, I cordially agree with him. But as his remarks at least appear to favour the former supposition, I will state some of my reasons for differing with them.

And first, I would ask, did W. H. S. ever actually detect a moorhen, or any individual of "the various classes of water-fowl," so submerged in "deep water, and where there were no weeds or flags whatever near the surface?" If he has not, and I feel confident he never has, I must take the liberty to remind him that I do not give my "explanation" as a theory, but as the result of close and repeated observation. I have again and again seen the feet of the moorhen holding on by weeds or flags.

I apprehend that no moorhen—that no bird whatever, indeed, could put itself into this posture (of submergence, namely), and retain it, independently of external assistance.* (Zool. 498). I have not seen cause to change the opinion here recorded, albeit I have read and re-read W. H. S.'s communication. For it is obvious that a bird, in order to keep itself submerged without external assistance, must be able to reduce its body, including its feathers, to as nearly as possible the same specific gravity with the water: it must be specifically lighter by the veriest trifle possible. And as to the feathers, it should be observed, that even the downy covering of the young coots and moorhens is not affected by the water, until the little creatures have quite exhausted themselves by repeated efforts to escape danger by diving. W. H. S. himself, without any such buoyant equipment as a suit of feathers, without a frame specially and wonderfully constructed for the purpose of cleaving its way through the liquid air, but with, on the contrary, a framework of bone, for the most part solid, and of great weight, will yet find it impossible to sink in the water, so long as he keeps his chest free from the liquid; and with a vest of waterproof feathers, at all in proportion to the moorhen's covering, would try in vain to get his shoulders, much more his head,

* It should be remembered that the moorhen, when thus concealed, is in a state of profound rest. I do not dispute that a water bird, when in the act of progression under water, may from time to time thrust its beak, or little more than its beak, above the surface, for the purpose of respiration, for it is a well ascertained fact that they do.—Selby Orn. Ill. ii. 380, 395, 408.

concealed by the water. And granting that water-fowl are able to “expel at pleasure the air within the various cavities of the body,” and that the body so exhausted of air is compressible, still I contend that the lungs must be free to play; and that, therefore, the body, as to its principal cavity, can never be exhausted, and consequently not much, if at all, compressed. And hence I infer that the whole body can never be reduced to nearly the same specific gravity with water: and if not, it will be impossible for the bird to maintain itself in a state of submergence.*

So much for the inferential part of the arguments. Let us now turn to the practical ornithologists’ best friend and guide, observation, or rather, to its results. Of course a moorhen, when diving, has freed itself of its “buoyancy and resistance to the water” (Zool. 668), by expelling the air from “within the various cavities of the body;” and consequently, according to W. H. S.’s theory, must be specifically nearly as heavy as water. Well, I will shoot a moorhen in the act of diving, and will add to its specific gravity by depositing within its body some twenty or thirty grains of No. 5 shot. Of course then it will sink; and unless my retriever is a rather uncommon one I lose the bird. But no such thing; the moorhen comes to the surface immediately, and floats almost as buoyantly as ever: and yet whence and how can the air have been procured, which has been applied to the replenishing of the air-vessels, and the restoration of the bird’s buoyancy? I do not ground my argument upon the fact of the moorhen’s coming to the surface when shot in its concealment among weeds: for since it is an incontrovertible fact, that they do make use of the weeds to hold themselves down by, it is thence clear, that even if they are capable of expelling their internal air, as W. H. S. supposes, they are not in the habit of doing so when concealing themselves in the vicinity of weeds.

Again, I have had some experience in shooting birds of the diver and duck kinds on the sea; and yet I never saw any one of them attempt to place itself in a state of submergence in the open sea. As to *diving*, that is another question; as also it is with respect to partial

* I do not wish to except from this reasoning the divers, grebes, and cormorants, all of which swim with their bodies very deep in the water; still less the pochard or dunbird, and allied species, which, from the shape of their bodies, appear to “draw more water” than most others of the duck tribe.—See Selby’s Orn. Ill. vol. ii. *passim*. What system of air-cavities have the divers?

submergence.* To both these modes of escape from danger or alarm, they of course perpetually resorted. I have pursued the great northern diver by the half hour together : myself and a friend being armed with heavy wild-fowl guns, with which we alternately peppered him as he emerged from his dive. At each shot, and indeed much oftener—for it repeatedly happened, that from the time lost in tacking, or some other cause, we were not able to salute him immediately on his reappearance, and he consequently went down again at his convenience; he dived again, but never remained under more than a few seconds (certainly less than two minutes, Yarr. iii. 330) at a time, and never came up near the place at which he had gone down : yet he was wounded in the neck at the very first shot, and had ample reason, and plenty of opportunity, to have saved himself by submergence if he had had the power.† The case is just the same with the red-

* It should be observed that the instance of the wild duck given by W. H. S. affords an example of only partial submergence ; “ the head and a small portion of the upper part of the body ” are left “ visible above the surface ” (Zool. 668), and the same remark is to be made of the subsequent reference (Id.) to “ a teal, wigeon, or any other kind of wild-fowl, which has been winged and has dived ; ” the “ head only ” is raised above the surface. And yet, that the wild duck, which is, I presume, a “ kind of wild-fowl, ” should, during a “ period of cautious concealment, ” leave a small portion of the upper part of its body, as well as its head and neck, visible above the surface, although so well able to hide all but its head (for “ they remain a long time so submerged, ” Id.) appears to me rather a singular circumstance.

† “ I have pursued this bird (the great northern diver) in a Newhaven fishing-boat, with four sturdy rowers, and notwithstanding it was kept almost constantly under water by firing as soon as it appeared, the boat could not succeed in making one yard upon it ” (Yarr. Birds, iii. 324). “ It dives with the utmost facility, can remain a long time under water, and rises again at a great distance, ” (Id. 324). No state of submergence here, surely : and yet, from its swimming so deep in the water, it would be easier to it (and its congeners) than to most other birds. In the same work, a few pages further on, is a quotation from Mr. Selby, on the habits of the black-throated diver, which is too long to extract, but proves almost conclusively that that bird has not more than the power of partial submergence, although possessed of an astonishing capability of diving. Though the old birds mentioned in the quotation were prevented by parental affection from making their own escape by diving, and so leaving their young to their fate, there was nothing to prevent both young and old from submerging themselves if they could : and note the young moorhens and dabchicks both *can and do*, as well as the old ones ; but they did not. And further, it is surely reasonable to suppose that they would partially submerge themselves as far as they could ; but the “ neck and head ” were exposed to shot, and the whole body “ *nearly* submerged, ” (Id. 331). And this, I will observe here, is the condition in which “ winged wild-fowl who have dived ” are most commonly seen according to my experience, and not with the head only above the surface : although I acknowledge that at some little distance,

throated diver, the young of which I have repeatedly shot; and with the various kinds of grebes, excepting the little grebe, which I have never met with in the open sea. I never knew one of them remain under the water longer than about a minute and a half; and I should say forty-five or fifty seconds was the average time of submersion.

I have much the same account to give of the black goose, wigeon, teal, &c. In the partially submerged state they may continually be seen when "crippled," to use Col. Hawker's word. But it was never my lot to see any of them fully submerged. I have heard of a winged teal having been shot at twenty-one times with a flint gun, before it could be killed: if it had the power of submerging itself, it was a fool to be shot at twice. I have known another winged teal shot at six times with a detonator before it could be secured: if it possessed the power of submergence, it might quietly have dived, and after proceeding twenty-five or thirty yards under water, have silently put its bill only above the surface, and so escaped being shot at all; for there was wind enough to work a sailing boat, and consequently ripple enough to ensure the concealment of the teal. It is worth notice, too, that Col. Hawker, when describing the "cripple chase," or adverting to this stratagem, by which wounded birds seek to escape, does not allude to, or enumerate among them, the power of submergence: and yet, had any of the water-fowl possessed the power in the manner and degree W. H. S. seems to maintain, it could hardly have escaped the notice of so experienced a sportsman as Col. Hawker.

I further observe that the testimony of ornithological writers, so far as it goes, favours my hypothesis; inasmuch as whenever they mention that habit of the moorhen and dabchick which leads them to endeavour to avoid danger by submerging themselves, they (the writers) always mention the presence of weeds, &c., among which the submersion takes place. "When disturbed, it (the dabchick) immediately dives, and remains for some time submerged; and should the cause of its apprehension still continue in sight, after a first survey, it retires *to the weeds*, where it remains with its body immersed, and with the bill and part of the head only above the water." — Selby, Ill. ii. 402. "When suddenly surprised in a situation at all

and from a low boat or punt, little is seen but the head. But when you are near, and in a sailing-vessel of some burden, you see a part of the back as well as the neck and head.

exposed, it (the moorhen) usually takes wing, skimming along the surface of the water, but only for a short distance, to the first *bush or cover* that offers, where it conceals itself so effectually, either by submerging its body, and keeping only the bill above water, or in some hole or shelving retreat in the bank, &c.”—Ib. 189. See also Mont. Orn. Dic^t, Art. Dabchick; and Yarr. iii. 284, where the hooded merganser, when wounded and almost exhausted with incessant diving, is said to “immerse its body, raise the point of its bill above the surface, and in this manner make its way *among the plants*, until finding, &c.” By the way, if we take this account literally, the bird’s nostrils are in the *point* of the bill, and the weeds must be very obliging not to make the poor bird undergo a species of semi-strangulation every now and then, in addition to forcing its head backwards, in what would be to “a human” (as the Suffolk people say) a most uncomfortable position.

J. C. ATKINSON.

Note on the capture of the Great Grey Shrike. A birdcatcher whom I occasionally employ has just brought me a specimen of the greater butcher-bird, which he caught in the act of pouncing on one of his lure birds: it was taken alive, and I regret he killed it, as I should like to have studied its habits; it agrees most exactly with Bewick’s wood-cut and description.—*J. B. Spencer; Blackheath, October 12, 1844.*

Anecdote of the Starling. An instance of this bird’s cleverness occurred here this summer, which may be thought worth preserving. A starling had a nest, and reared young ones under the eaves of the roof within the basin of a drain-pipe which receives and carries off the water from the gutters. Here I used to see the mother coming to feed her young ones, which she did frequently. They were very voracious, and as they got stronger, they pushed forward so eagerly to obtain the first supply of food, that they fell out of the basin one after another. Three I know fell out, one of which was killed. The others were taken up unhurt, and I had them placed in a basket, covered over with netting, which was hung up near the nest, in expectation that the mother bird would not fail to supply them. This was done overnight, and next morning I found to my surprise that one had disappeared; so I watched to see what would become of the remaining one. It made a great crying to arrest its parents’ attention, and the parent was not unmindful of it: I saw her fly near the basket with food in her bill. She settled on the roof and gutter within sight of the basket, but went away without trying to feed the prisoner. This was done several times, and at last I discovered her object—what I must believe to have been her object—for the young bird’s hunger becoming more and more pressing, it continued struggling to reach the food, and did contrive to “get out” through the netting, when it fell to the ground without injury. Though unable to fly, it was strong upon its feet, and it ran upon the lawn. The parent now came down to it with food as before, but not yet to feed it. She flew on a little away from it, and so enticed it into the corner of a shrubbery under a wall, where I discovered the missing young one also, and where she

constantly fed them throughout the day. Her parental care was, however, imprudent, and her pains ill-bestowed, for her charges would have been much safer where I had placed them. As bad luck would have it a cat found out the houseless family, and quickly destroyed one of the little ones; and though my servant was in time to rescue the other, it had been so much worried, and possibly injured, that it died the following day.—*Edward H. M. Sladen; Warnford, near Bishop's Waltham.*

Note on the occurrence of the Golden Oriole in Kent. You solicit notes of the occurrence of rarities in Britain. I heard of the specimen of the golden oriole recorded by Mr. Bartlett as shot at Sandwich; and last year I rescued another from the dust of a cottage shelf in the village of Ripple, near Walmer. It had been given to a child by a gentleman's servant, but I was unable to trace its history any further, in consequence of the servant having accompanied his master into Scotland. The plumage was much soiled, but on being placed in the hands of Mr. Leadbeater, and cleaned, the bird turned out a fine male specimen. I allude particularly to this bird, from having been told by a friend in Kent, who gave me the authority of the curator of the Museum, Dover, for his statement, that the golden oriole had a nest in the same neighbourhood, (the Oxney plantations, by Kingsdown), two or three seasons ago. I have not had an opportunity of making inquiries, but perhaps some Kentish ornithologist may be able to furnish information on the subject.—*Id.*

Note on the occurrence of the Waxen Chatterer in Sussex. The only specimen that I ever remember seeing of this native of *Terra Ignota* in private hands, was at the George Inn, Littlehampton, Sussex, where I met with it in 1839, and was informed it had been obtained in the neighbourhood.—*Id.*

Note on the rarity of the Swift at Uppingham during the past season.—This summer the swift has been a mere straggler in this neighbourhood. In a district of villages wherein it is usual to see at least twenty pair, I have observed only one, and that apparently not belonging to the neighbourhood, as they were winging their way across the fields, at some distance from any village.—*Wm. Turner; Uppingham, Rutland, October 16, 1844.*

Note on the late departure of the Swift. On the 1st October last I saw a swift flying near St. Ann's Hill, Chertsey. It was flying about taking its food in the usual manner, not seeming inclined to go to its winter quarters.—*F. A. Chennell; Stoke, Guildford, October 3, 1844.*

Note on the Migration of the Swallow. The following note was made at Catsfield, October 20, 1839.—“In the evening I took a walk, and went as far as Crowhurst, to the hill which overlooks the church. It was a fine evening, and the moon shone merrily. I saw a flight of swallows, which passed me in quite an unusual manner, dashing by, almost like a flash of lightning, and darting ahead without any of their customary wheelings and other evolutions; though they did not move in straight lines, but in a series of curving waves. Were they in the act of departure?” This was the question that occurred to me, and the above phenomenon does seem to bear upon that often discussed topic, as to the time and manner in which swallows take leave of us. You will, perhaps, be able to give some opinion on this subject. On mentioning what I had seen to a gentleman resident in the village, he agreeably surprised me with the information that I was in the parish where formerly lived one of Gilbert White's correspondents, Mr. Markwick, (a name, by the bye, still to be met with among the rural population of that Saxon locality); and I understood him to say that the same phenomenon had been witnessed there before. I may add, that the

swallows were in great numbers, and they flew very near the ground, just skirting the tops of the hedges, and sometimes almost touching the soil in their undulating course. I observe, by a subsequent entry in my diary, that I saw a few swallows in a neighbouring parish on the 22nd October, and again on the 25th, in the same autumn. Catsfield adjoins the town of Battle, and is only a few miles from the sea, the spray from which not unfrequently reaches it.—*Edward H. M. Sladen ; Warnford, near Bishop's Waltham.*

Note on the Martin (Hirundo urbica). April 30th—Saw the martin for the first time. May 8th—Martins beginning to build, but prevented on the south side of our house, by netting which I have had put up under the roof. P.S. These birds made the windows so dirty last year, that I determined to keep them away in future, if possible, and on making inquiries, I was recommended to adopt the above plan. Accordingly, I had all the old nests destroyed on the south side of the house, but not wishing to drive my cheerful guests quite away, I left three sides without netting. At first the netting seemed to alarm the birds very much, and I thought none would attempt to build; however, at length, the west side of the house being tolerably tenanted, and the north and east not pleasing them, (only four nests altogether have been built on these two sides, and the north was taken to before the east), some of the bolder birds, which probably had nests there last summer, commenced operations on the south side, despite of the netting. Five attempts were made, I think; two within the netting, and three below it. One pair began a nest actually upon the netting: the clay was laid upon the string inside and added to, layer upon layer, until at last I had it taken away, and the net tied up more closely, fearful lest others should follow the example. I suppose the birds would have steadied the nest a little before its completion, by cementing the top against the roof, as they must have done, I think, had they been allowed to carry their works high enough. A second pair built within the net, but not upon it; these I sent away at the same time as the last. A third pair began a nest on the top of an outside shutter, as it was folded back against the wall, but the moving of the shutter to close it soon sent them away. The fourth and fifth pairs commenced building against the face of the wall, without any covering over head, or support at the side; but the two foundations being apparently too close together, one pair soon desisted, while the other continued working until I had the nest removed. Determined to succeed in my experiment, I had the place well rubbed with soap, and I have not been troubled any more. I observed that the martins contrived to roost for a night or two at, or close by, the spot where they afterwards built. I trust they have all obtained comfortable homes elsewhere; at all events, there are plenty of them flying merrily around.—*Id.*

Note on the Grey Wagtail (Motacilla Boarula). March 1st, 1844. Not having seen the grey wagtail for a few days, I began to fancy it had migrated to the north, but I saw it again to-day, running along the water by the road-side. There were several here in the winter, but only this one apparently now remains. One came earlier than the rest, last autumn, and paid constant visits to a window in my house all the winter, for what purpose I am still ignorant, notwithstanding much attention [see Zool. 136, 140, 230, 358], and probably it is the same that continues here later than the others, for I observe it in its old haunts, where I never saw any besides it. I have marked Sept. 27th as the time the first M. Boarula made its appearance in the autumn. There is no note of my having seen it after March 1st in the present year.—*Id.*

Note on Wagtails. The pied and grey wagtails (*Motacilla Yarrellii* and *Boarula*) are summer visitants in this neighbourhood, appearing generally in the end of March, or beginning of April, and quitting us at the approach of winter. They prefer the vicinity of water, in general, as their summer quarters, and are seldom to be found far from river sides; but both species sometimes breed in quarries, and such like places, at a distance from any stream or pool. They are early breeders, and must, I think, often produce two broods, as I have seen young birds in full plumage in the month of May. Living wholly on insect food, they are harmless, as well as interesting birds, and often become very familiar. They have a remarkable habit of frequenting roofs of houses, where they seem to obtain a supply of their favourite food. They generally capture their prey by running, but oftentimes make use of their wings to pursue an insect which happens to pass them, or which may have eluded their grasp when on foot. The pied wagtail roosts on trees, and the grey one sometimes perches, especially when alarmed. I remember one evening disturbing a large party of the former, which had taken up their night's quarters on some alders, by the side of a small pool, formed by the backwater of the Teviot. The flight of both species, particularly of the grey one, is exceedingly elegant and graceful, consisting of a series of risings and fallings of considerable length. M'Gillivray praises the beauty of the flight of the yellow wagtail (*Budytes Rayi*), but as far as my experience goes, I am inclined to give the palm to the grey species. The partial migrations of the pied and grey wagtails in this county have not, I think, been well ascertained as yet. The former is stated to be permanently resident in some parts of the county, while in others it is said to be migratory, disappearing in winter, and returning in spring, and the latter is said to be a winter visitant in the south of England, where it is called the "winter wagtail," while in other parts, as in East Lothian, it remains the winter. My own opinion is, that there is a migration of both species southward in autumn, and again northward in spring, but that straggling individuals occasionally spend the winter in their summer haunts. For the last two or three winters I have observed stray birds make their appearance at irregular intervals, frequenting house-tops and sinks, but I have never been able to find any by river-sides, or in their summer quarters.—*Archibald Jordon; Bonjedward, September 28, 1844.*

Anecdote of the singular death of two Canary Birds.—The singular and sudden death of two little pet canary birds, having caused much regret to their kind and affectionate mistress, has induced me to communicate to you an account of it, in order that some of your numerous correspondents may, perhaps, be enabled to point out the cause, and afford a remedy, in case a similar attack should befall other birds under like circumstances. The little birds were named Charley and Josephine, and were brother and sister, the offspring of their fortunate parents, who, as in the beautiful story told by Mrs. Trimmer of the robins, enjoyed the happiness of a kind protector; well skilled in their various wants, she supplied them with every thing requisite for their domestic and cheerful life. At nesting time, their cage was replenished with building materials, and the result was, two, three, and sometimes four and five broods annually, with frequently as many young ones at each brood, though on some occasions late in the season, one young bird only rewarded the parents' care, and their mistress' friendly anxiety. To give names to these various pets was a task requiring some ingenuity; but the Italian Opera, ever fertile in change, afforded an ample store of distinguished names, after which to call these little feathered songsters. Rubinis, Marios, Malabrans, and Persianis were without number, and occasionally

even an English vocalist was honoured by having his name conferred upon some of the soft and melodious little favourites; hence, the name given to little Charley after the talented son of the veteran and not-to-be-forgotten Braham, and that of Josephine, after his daughter, for the hen birds of the canary sing very sweetly, though not with the full tone and power of the male birds. Charley and Josephine had lived together in kindness and friendship two summers, and though separated from their parents, were kept in another cage in the same room, and fed and treated in every way alike. Nothing had hitherto befallen them, but day after day passed away in content and cheerful appreciation of their mistress' uniform kindness. Her voice, as they well knew, bespoke endearment to them as well as to aught else around her, and her entrance into the room in which they lived was always a signal to express their gratitude and thanks for the kindness shown to them; and this they seldom or never failed to do, according "to the fashion of their ways," and well might it afford a useful example to many a thoughtless mind, who receives a benefit, but too soon forgets the giver of it; indeed, the habits of birds and animals, to an observant mind, are full of useful instruction for kindnesses conferred, which might put to shame the so-called nobler animal—man. Singing and chirping merrily all day long seemed the only occupation of Charley and Josephine; but on the 10th of October, after being apparently in excellent health till the close of day, these two little revellers in harmony, whose glad song caused cheerfulness to all around them, and drove from the care-worn mind its gloomy sorrow, bidding it seek for joy from Him who gave to them their "merry note," suddenly both died, within a few minutes of each other; as if the last song of praise and thankfulness of poor little Charley was meant also to serve as the requiem for Josephine, his dead companion, and without whom he could not longer live a mourner, apt lesson of fondness and affection for human beings to study towards each other. The approaching death of these little birds appeared as follows: about the time they were generally put by to roost for the night, Josephine showed symptoms of cold and chill, ruffling up her feathers, and breathing quickly and heavily; she was then placed by the fire in a separate cage, Charley showing similar symptoms, but not to quite the same extent. After a time it was evident little Josephine was getting worse, and not more than a couple of hours elapsed from her first attack before she was heard to fall off her perch, and on being taken out of the cage, her feet were very cold, her feathers distended, and herself shivering all over. The feet were then put in warm water, and after being well lapped up in flannel, she was placed at the bottom of the cage near the fire, where inwardly struggling for life for a short time longer, she died, silently and without a further movement of any kind. On approaching the other bird, he too was found dead at the bottom of his cage. Born together—living together—they thus died together, and by their kind mistress' directions, who had so long nurtured and tended them, they were also buried together.—*W. H. S.; Hatton Hall, Salop, October 15.*

Note on the occurrence of the Hoopoe in Kent. The Hoopoe (*Upupa Epops*) can scarcely be called an uncommon bird now in some parts of England. As Mr. Bartlett says, it generally visits the east of Kent annually. Several have been seen at Ripple Court, and one was shot, and is now possessed by the family there. I know another instance of the occurrence of this bird farther north, viz. at Whitmore, near Newcastle, in Staffordshire, where two were seen together from twelve to fourteen years ago. One of them was shot, and is in the possession of my brother.—*Edward H. M. Sladen; Warnford, near Bishop's Waltham.*

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Note on the Migration of the Kingfisher. I have for some time suspected, from the number of kingfishers which are annually killed here towards the end of August, and beginning of September, that a migration of these birds takes place about this time. The fact of a kingfisher having lately dashed against a floating light placed about twenty miles at sea, off Winterton (the Lemon), seems to confirm this supposition. It seems probable that they come from the more northern parts of Europe, where the waters are frozen in winter, but I have not hitherto observed any indication of their return in spring. The greater number of those which occur are young birds.—*William R. Fisher ; Great Yarmouth, September 28, 1844.*

Anecdote of the Ringdove's Nest having three Eggs. Amongst the anomalies of this summer may be noted two ringdove's nests, which have been taken in this neighbourhood, one with *three* young ones in June, the other with *three* eggs at the end of August. From the proximity of these nests (not being more than a mile apart), one might fancy they belonged to the same birds; were it not that the eggs being small—long diameter 1 inch 7 lines, short diameter, 1 inch 1 line—lead one to suppose they were the first which the bird had deposited.—*William Turner ; Uppingham, Rutland, October 16, 1844.*

Note on the Migration of the Water-rail.—The water-rail appears to be considered by two of your correspondents (Zool. 149 and 669) as a winter visitor to this country. I never remember to have met with it in Norfolk later than November, though it may sometimes occur in the winter months. In summer it is common, and breeds in various parts of the county. With respect to the bird caught on Brighton pier, its exhaustion was, no doubt, caused by its having crossed the channel for the purpose of passing the summer months in this country.—*William R. Fisher ; Great Yarmouth, September 28, 1844.*

Note on the Water-rail. It seems there is some question about the breeding of the water-rail, and also about its spending the winter in this country. A person inclined to jest might ask, then, whether the water-rail were only an accidental visitant; since, according to one party, it does not breed here, and according to the other, does not winter here. It breeds commonly enough in various parts of the kingdom. I have known two nests discovered on the Buckenham (near Brandon) estate alone, in the same season. Nor is its occurrence in the winter very rare. I must add, however, that it *does* appear to suffer severely from cold. One which a friend of mine kept in a cage for some length of time, was brought to him (about December 27, 1836) by some lads, who had picked it up in the road, lying on the snow, and completely benumbed with the cold. Its crop also was empty. When my friend received it (which he did shortly after it had been found) it was placed on a footstool before the fire. The warmth very shortly revived it, and the first symptoms of returning animation were shown by its opening its eyes, and turning its head about very quickly as it lay. Almost immediately after it started off the stool, without signifying its intention of doing so by any preliminary standing up or stretching its limbs, &c., and ran swiftly about the room. It was kept for some time in a basket, and fed with raw meat, cut small, and put into water. When I saw it (Jan. 1837) it would feed readily when held in the hand; and if set at liberty in the room, ran about with inconceivable rapidity, but never attempted to fly. And even when its master proceeded to catch it after one of these airings, it very rarely used its wings, and when it did, it did not fly to the window, as other birds do. It ran so quickly, that it was difficult for the eye to follow its motions.—*J. C. Atkinson ; Hutton, Berwick-on-Tweed, Sept. 28, 1844.*

Note on rare Waders occurring at Kingsbury Reservoir. The pigmy curly (*Tringa subarquata*), and the greenshank (*Totanus Glottis*). Two specimens of each of these birds were shot on the banks of the reservoir, on September 2nd, all birds of the year.—*Frederick Bond, Kingsbury, Middlesex, October 16, 1844.*

Additional Notes on the Moorhen and Dabchick. I will add here two or three additional notes on the habits of the moorhen and dabchick. The latter bird, on having arrived at its place of nidification, is in the habit of piling together a heap of weeds, resembling a good deal its nests, except that it is rather smaller, and its depression less; and on these piles it rests during the night, until its nest has been constructed. In the course of the summer I visited the mere referred to in my notice of the dabchick; there were probably twelve or fifteen nests which came under my notice, and nearly as many "resting-places." Every one of the nests, without exception, was soaked through and through; none were two inches above the surface of the water; most contained an egg, if not eggs, which were invariably covered. The moorhen, though not usually, if at all, constructing a temporary resting-place analogous to the dabchicks, yet occasionally, at least, builds a second nest, to accommodate a moiety of its young when they have attained a size too large to permit the original one to contain them all. And when the colony is sent to the second nest, one of the old birds accompanies it. An instance of this habit occurred in the vicinity of my father's residence when I was last at home. The female moorhen was the architect, and the subsidiary nest she busied herself in constructing was built on a bough overhanging the water. The weight of the structure at last became too great for the bough to bear; it gave way, and the nest was destroyed by its own weight, which caused it to fall to pieces when it lost its horizontal position. The old bird seemed to be much annoyed at the perversity of the bough and nest, or else at her own want of foresight, and pecked among the *debris* with every symptom of rage. She soon, however, renewed her labours after having selected a more favourable site, and this time the structure was successfully finished. Another nest in a pond near my father's garden, was, after two or three eggs had been deposited, beautifully lined with last year's oak leaves, regularly arranged, with their points directed upwards.—*J. C. Atkinson; Hutton, Berwick-on-Tweed, September 28, 1844.*

Note on Ducks nesting in Trees.—When two species of ducks occasionally depart from the usual habits of their kind, by nesting upon trees, it may, I think, be reasonably supposed that they adopt similar methods of bringing their young to the water. The following description, quoted by Mr. Yarrell from a note by Mr. Dann, shows the manner in which this operation is performed by the golden eye, and will probably also be found to apply to the mallard. :—"There have been speculations and opinions as to the mode the golden eye adopts to carry its young down from the holes of the trees in which they are hatched, which are frequently twelve or fifteen feet from the ground, and at some distance from the water. That the bird does transport them is beyond doubt. There is, I believe, but one person who has ever actually witnessed the manner. M. Nilsson was not aware of it. The Laps whom I frequently interrogated were also ignorant beyond the mere fact of the bird carrying them. The clergyman, however, at Quickiock, in Lulean Lapmark, near the source of that chain of vast lakes whence the Lulean river flows, was once a witness. Contrary to the general character of the Lap clergymen in Lapland, this gentleman, with little to employ him, took a great interest in Natural History and Botany. While botanizing by the side of the lake near Quickiock, where golden eyes breed in great numbers, he saw a golden

eye drop into the water, and at the same instant a young one appeared; after watching some time, and seeing the bird fly backwards and forwards from the nest five times, he was enabled to make out that the young bird was held under the bill, but supported by the neck of the parent." Although such a position must be very inconvenient to a duck when flying, it seems to me to be a more satisfactory solution of the difficulty than either of those mentioned in 'The Zoologist' (Zool. 670 and 671). It is very possible, that when the tree selected by the duck for her nest overhangs the water, the young may "drop unhurt," but this is by no means an invariable rule, and evidently was not the case in the instance mentioned by Mr. Selby.—*William R. Fisher; Great Yarmouth, September 28, 1844.*

Anecdote of annual change of Plumage in a Gull. Some winters past a specimen was brought me that had been shot in the wing; he was put in the garden, and was then *la petite Mouette grise*, of Brisson, with a white head; the following year, when the bird moulted, he was the *Larus ridibundus*, with a black head; so he continued changing alternately from white to black as long as the bird lived, which was seven or eight years. This fact does not appear to be noticed by ornithologists, at least as far as my limited observations have gone; but individuals of the same species, assuming different appearances at different seasons of the year, has been well authenticated. This bird, like the rest of the tribe of the gulls, was always a shy and timid bird, and was sure to retreat when any one approached. He was particularly fond of meat, which he preferred to fish and bread, and would catch pieces when thrown to him with surprising dexterity. His chief amusement was to pace up and down for hours together upon a small spot in the garden, until his little feet had padded the earth quite hard. He became quite the pet of the family, and would come to the call of one of its members, a female, to whom he appeared more attached than to any of the others.—*J. Chant; 3, Critchell-place, New North-road.*

Correction of a previous Error. I hasten to correct the errors which have appeared in my notice of the "Nidification of Birds at Elden." I see you have remarked them both immediately after the communication. The first is the swift, to which name has been annexed the date May 1st, whereas it ought to be June 1st; and with respect to the nightjar, the same mistake is made: the month in which that bird laid its eggs ought to be June. There is one other error in the communication: the county in which Elden is situated is Suffolk, and not Essex, as there stated.—*Alfred Newton; Stetchworth, near Newmarket, October 3, 1844.*

Note on a large Viper found in Devonshire. I found a dead viper lying in the road near Holdsworth, in Devonshire, in the last week of August, measuring three feet two inches in length, dimensions which appeared to me gigantic, as my experience of specimens in other parts of England coincided with those given by Mr. Jenyns, "a foot and a half to two feet, rarely more." I was afterwards told that vipers of this size were by no means uncommon there, but none of my informants appeared to have measured the individuals they mentioned. In the specimen above mentioned, the upper parts were of an almost uniform light cinereous, the usual dark markings being nearly obliterated, perhaps from age.—*Fred. Holme; Penzance, October 21, 1844.*

no. 12

Note on Toads found in Blocks of Stone. I quite agree with you that the statements about toads found in solid stone, are mostly very unsatisfactory (Zool. 677). One instance of the kind I have seen, as briefly stated, 'Mag. Nat. Hist.' ix. 316. The toad appeared to me neither more nor less than our common species, although I certainly did not examine it scientifically. The stone was the new red sandstone of geologists; and was brought up, as I was told, some yards from below the surface. I understood the toad, and the two portions of stone in which it was found inclosed, were deposited in some medical museum at Birmingham. The animal would not have been discovered but for an accident: the workmen were carting the stone away, and the block containing the toad happened to be placed on the top of a great load, and accidentally fell from the cart to the ground, and breaking by the fall, brought to light the incarcerated reptile, which, I conclude, was somewhat injured by the fall, as there was a fresh wound on one side of the head, and it appeared to be blind of one eye. The toad died, I was informed, the second day after it was discovered, partly, in all probability, in consequence of the injury. When I say the block of stone was *solid*, this statement requires some qualification: the two parts of the stone fitted together exactly, and quite close, except where the cavity was in which the toad lay; but from this cavity there was evidently a flaw on one side towards the extremity, and a discolouring of the substance of the sandstone, so that although the two portions fitted together, they might not have been (on one side of the cavity) very firmly united. This circumstance, perhaps, may detract much from the value of the example; nevertheless, it is unaccountable how the animal could have got into the position in which it was found: it is not conceivable, I think, that it should have been there ever since the first formation of the rock, and there certainly appeared to be no means by which it could have entered the rock in its present state, even admitting (what we know to be the fact) that toads have the power of getting in and out of a very small orifice.—*W. T. Bree; Allesley Rectory, Sept. 17, 1844.*

Note on the occurrence of the Boar-fish on the Coast of Cornwall. The boar-fish (*Zeus Aper*) continues to be taken in the neighbourhood of the Runnel-stone rock, and along the coast near the Land's End, a tract till of late not much visited by the Mount's Bay fishing-boats. Fresh discoveries will probably be heard of when we arrive at a more extended knowledge of the hidden secrets of the Lethowstow or Lioness, as the expanse of troubled waters between Scilly and the Land's End is here called.—*Frederick Holme; Penzance, October 21, 1844.*

Correction of a previous Error. I write to request the correction of a verbal error in the last number (Zool. 679), where, in my note on the Opah, Eccles is stated to be on the western coast of Norfolk, which is wrong, as it is on the north-eastern part of our coast.—*J. H. Gurney; Norwich, Sept. 7, 1844.*

Note on Duxal's Terebratula. In the September number of your interesting periodical (Zool. 679), there appears a notice accompanied by a figure of what is considered to be a new form among the Terebratulæ. However rarely specimens exhibiting this remarkable character (the central perforation) may find their way into English

collections, figures and descriptions of allied species have long been known to many naturalists. The earliest notice of this form that I am acquainted with, occurs in a work by Fabius Colonna, published at Rome in 1616, entitled 'Ephrasis Stirpium minus cognitarum,' and there called Concha diphya. In the 'Encyclopédie Méthodique,' 1797, Brugière has figured another species, subsequently described by Lamarck in 1819 as *Terebratulæ deltoidea*. To these, Antonius Catullo has added another species, *Ter. Antimonia*, in his 'Zoologia Fossile,' 1826. Von Buch, in his valuable monograph on the *Terebratulæ* (Transactions of the Berlin Academy, 1835), considers the above mentioned three species only as modifications of one form, namely, *Ter. diphya*. Antonius Catullo has however published (Osservazioni Geognostico-Zoologiche &c. Padua, 1840) some careful and interesting observations on this group, partly in reply to Von Buch, considering them all as distinct species, and adding a fourth, under the name of *Ter. mutica*. Other species, closely allied to the above, will shortly be published in a work by M. Zeuschner, on the Geology of a portion of the Carpathian mountains. The true age of the deposits to which these singular species belong, is not, I think, quite definitely settled; they are generally considered to belong to the cretaceous series, and it would therefore have been interesting to have ascertained the locality from which the specimen in the collection of Prof. Duval-Jouve was obtained. *John Morris; Kensington, Oct. 15, 1844.*

Description of Natica intricata, in comparison with Natica glaucina.

By JONATHAN COUCH, Esq., F.L.S., &c.



Natica intricata.

THE only British naturalist to whom I am able to refer, for information concerning *Natica intricata*, is Dr. Fleming; who, in his 'History of British Animals,' gives the authority of Donovan's 'British Shells,' under the name above given, and to Col. Montagu, who terms it *N. Canrena*: but he adds, "this species has occurred only to Mr. Donovan." And when I add that Prof. E. Forbes ('Malacologia Monensis,' 62) supposes it to be the same with *N. nitida*, and that it is not to be distinguished from some other foreign species, it will be allowed to be of rare occurrence; and I am therefore led to hope that a description of it, derived from more than one example, and compared with the kindred species, *N. glaucina*, of about equal size, and both of these with several smaller specimens of each, will be found interesting to the readers of 'The Zoologist.'

The shell termed by Fleming *N. intricata*, has too rarely come

within the observation of British naturalists to have received so many names as the fancies or mistakes of authors have affixed to the more common species. But to avoid all errors in reference, it is necessary to say, that under the name *Natica glaucina* is meant that which by Pennant is denominated *Nerita glaucina*, and, it is believed, also by Montagu; by Fleming, *Natica glaucina*. Professor Edward Forbes, as quoted above, terms it *Natica monilifera*, from a supposition that it may be the shell so called by Lamarck; and the same is adopted by Macgillivray, ('Molluscous Animals of Aberdeen,' &c. 125).

In September of the present year (1844) I obtained a specimen of *Natica intricata*, from Penzance; and this I supposed to be the first I had ever seen. But in the course of the same month I obtained a much larger specimen from Plymouth Sound; and a comparison of this pair with a fine specimen of the more common *N. glaucina*, will enable me to give a measurement and description, sufficiently precise to fix the identity of the rarer species.

The smaller specimen of *N. intricata* here referred to, measures $\frac{1}{2}$ of an inch in its longest diameter; but the larger, which was $\frac{1\frac{1}{2}}$ in its longest diameter, and $\frac{1\frac{3}{4}}$ in its shortest diameter, afforded a closer comparison with *N. glaucina*, my largest specimen of which is $\frac{1\frac{6}{8}}$ by $\frac{1\frac{3}{4}}$ in these diameters. The latter, therefore, is a rounder and more compact shell, the greater comparative length of *N. intricata* being obvious on inspection. They differ also in the arrangement of the whorls, as well as in their number; which, in *N. glaucina*, is clearly six, but in *N. intricata* no more than five can be ascertained. In *N. glaucina* the second and the smaller whorls are more inflated, and form a higher spire, the decreasing line of separation having a regularly circular sweep; whereas in *N. intricata*, besides that the whole is much more depressed, the spire is not placed in the centre of the whorl, but inclined to the superior side. Another distinguishing mark is the form and situation of the umbilicus; which in *N. glaucina* is a simple ascending cavity, in a degree intruded on by a single porcellaneous band, which proceeds from the columella. In *N. intricata* this band is divided so nearly into two, that the connexion is only by a narrow slip; and the cleft or separating gap, which in the smaller specimen is rounded, and in the larger square, exposes the umbilicus above the columella, and therefore passes directly inward, instead of obliquely upward as in *N. glaucina*. The pillar thus becomes exposed, uncovered by the band on one side, and the body-whorl on the other, in a manner to be highly characteristic of the adult state. The inferior portion of the band does not stretch fully across to the

whorl, but is rounded off by a narrow channel, which proceeds circularly, to terminate within a short distance of the aperture, offering, in fact, a broad and smooth porcellaneous separate termination to the pillar.

In colour, *N. intricata* is much the most beautiful of English turbinated shells. The two specimens differ very much in the depth, though not greatly in the distribution of their tints. In the larger, it is far more rich, of a fulvous brown; in the smaller lighter, and of a porcellaneous yellow. The smaller whorls are, in the larger, somewhat livid, yellow at the separating line; in the larger, a pale yellow; and the beauty of the colouring does not begin above the lower half of the second whorl, from which it descends in four regular lines, at nearly uniform distances, to the margin. These lines are in their ground lighter than the other portions of the surface, and their margins are well defined; they are also portioned out and intersected with some regularity, by arrow-shaped marks, of which those in the two middle are the most regular. The two external lines are the widest, and their arrows broader and more separate, but that which is nearest the separating line of the whorl is most irregular. The line nearest the umbilicus (separated from it however by a white space) is, in the smallest specimen, ornamented with regularly formed arrows, but in the larger, one side only of this marking appears. The marks here denominated arrows, are converging lines closing to a point as they descend, and at this part with more of colour; but there is no middle line: and in the larger specimen their form is much less regular than in the smaller. From the line of separation of the whorls run a considerable number of brown lines, encircling the convexity of the whorls, and uniting the longitudinal lines of arrowy marks, but not actually crossing them so as to break in on their continuity. The comparative number of these encircling lines, as well as their irregularity, is much greater in the larger specimen.

A close inspection of these shells, in comparison with a small parcel of *Naticæ*, of about the size of small peas — and which, without enquiry I had believed to be all of the more common species — has impressed me with the belief that the *N. intricata* is not so rare as has been supposed; for I found several among them distinguished by the regular lines of arrow-shaped marks, and thereby easily separated from others of a paler cast, and with only one line of obscure linear marks near the border of the whorl. On further examination, I find also on these prettily marked specimens that the spire is less elevated and possesses the general form already described as belonging to *N.*

intricata. But it is remarkable, that in the umbilicus and band all these specimens are alike, and resemble *N. glaucina*: a circumstance which does not excite in my mind any doubt of their being of different species, and that those having lines of arrow-shaped marks are a young state of *N. intricata*: for I believe that the observation of Prof. E. Forbes may be depended on; that colour in the *Naticæ* is distinctive of species, but at the same time it tends to show that in their younger state they resemble each other in that which subsequently constitutes their most important difference. In their youthful condition, then, the marking of the body-whorl, and the depressed and irregular form of the spire must be regarded as the chief distinctions; to which in the adult state must be added the situation and structure of the band, and the umbilicus intersecting it; but how far this shell is thus separated from the foreign species of *Naticæ* described by authors, I have not the means of knowing.

J. COUCH.

Polperro, Oct. 6, 1844.

Note on Polyommatus Agestis &c. In your last No. (Zool. 682) you gave your opinion that *P. Agestis*, *P. Salmacis* and *P. Artaxerxes* were mere varieties of the same species: the variety being the result of locality. I have in my small collection *P. Salmacis*, which I captured on Durdham-down, Bristol. The cabinet of one of my friends contains a similar specimen taken in the Isle of Wight; and that of another some of your central and northern varieties caught in the vicinity of Clifton, Bristol. This, I think, tends to weaken your theory of climates, while it somewhat confirms the opinion of those who would identify *P. Salmacis* with *P. Agestis*. I have subjoined a few of my captures this year.

<i>Eupithecia strobilata</i> , June 19	<i>Anacamptis diffinis</i> , July 20
<i>rufifasciata</i> , June 20	<i>decorella</i> , June 28
<i>exiguata</i> , July 2	<i>angustella</i> , <i>bifasciella</i> , <i>leucatella</i>
<i>subumbrata</i> , July 11	<i>Aphelosetia marginata</i> , June, September
<i>pusillata</i> , June 1, August 4	<i>fulvescens</i> , <i>rufipennella</i> , June
<i>subfulvata</i> , August 8.	<i>Porrectaria albicosta</i>
<i>venosata</i> , June 27	<i>lutaria</i> , June, August
<i>Triphosa cervinata</i> , April 25, July 15	<i>Harpagus cinctella</i> , May 14
<i>Aventia flexula</i> , July 20	<i>Achmia fusco-viridella</i>
<i>Pæcilochroma nigricostana</i> , June	<i>guttea</i> , May 14
<i>Grapholitha Trauniana</i> , July	<i>Pancalia fusco-ænea</i> , June
<i>Steganoptycha triquetra</i>	<i>Microsetia pygmæella</i> , <i>aurella</i> , May 20
<i>cinerana</i> , <i>rhombifasciana</i> , <i>cuspidana</i> ,	<i>posticella</i> , <i>pulchella</i> , <i>guttella</i>
<i>pavonana</i> , <i>Bæberana</i> , are all one species.	<i>Chætochilus sequellus</i> , July 12
Fifty-one specimens caught on a wall near my house, August 3	<i>Tinea pellionella</i> , May 4, August 12
<i>Anacamptis Mouffetella</i> , July, August	<i>semifulvella</i> , June 27
<i>domestica</i> , July 29	<i>Lepidocera Birdella</i> , June 20, eighteen specimens, caught on a wall near my

Incurvaria masculella and Oehlmanniella,	Lampros minutella, May, June
May 4	atrella, July 3
Lampros oppositella, May, June	tripuncta, June 18
4-punctella, May 6	

From this list you will perceive several species to be double-brooded, which have not, to my knowledge, been mentioned as such before. There are two other species, Xanthosetia Zægana and Roxana Wæberana, that I have taken, the former May 14, June 19 and July 29, the latter in June, July, August and September; and all the specimens equally fine. — *John Sircom, jun.*; *Bridlington, September 13, 1844.*

Note on the capture of a Female of Lithosia muscerda. Although the male of this rare species has frequently been taken in the marshes at Horning, yet from the time of its first discovery by Mr. Sparshall, the female has very rarely been met with. I had the good fortune however to capture the latter sex just before sunset on the 17th of last July, *in copulâ* with a male, resting on a piece of grass, a few inches from the ground. It differs in several respects from the male, the abdomen being larger, and the expansion of the wings greater; but the chief distinction is in the antennæ, those of the male being highly ciliated (under a lens), while those of the female are hardly if at all so.—*Henry F. Farr*; *Lower Close, Norwich, October 2, 1844.*

Note on the parasitism of Scopula prunalis. About the middle of April I found some caterpillars of *Phlogophora meticulosa* in my garden. These I took, and put into a box containing some moss and earth, and supplied them with parsley, which they ate very freely, and were full fed in about ten days. Each spun a slight web among the moss, except one, which, to my surprise, crawled to the top of the box, and spun a fine transparent web across one corner, as a spider would do. In two days it became a brilliant green chrysalis, and in two days after I observed a dingy looking yellowish brown grub, as I thought, issuing from the chrysalis; and concluded it was one of the numerous pests of entomologists. I expected it would spin a cocoon, but it only attached itself by the extremity, and changed into a brown chrysalis, which (as it did not appear like that of a fly) I did not disturb, and towards the end of June, the 23rd I believe, it produced, if I mistake not, *Scopula prunalis*, No. 836 of Wood's Index. This is a simple statement of facts which fell under my own observation, and I thought they might interest some of the readers of 'The Zoologist,' as it is the first instance of the kind which I have seen. — *Wm. Turner*; *Uppingham, Rutland, October 16, 1844.*

Description of Pseudotomia Artemisiæ, a new British Moth. In July, last year, I took a single specimen of this insect, at Margate, but did not at that time know its true habitat. In August last, at the same place, while searching about a species of *Artemisia* for *Spilonota fænella*, I again met with this insect; and wherever I found the plant, I was sure to find the insect also. When disturbed, it would sometimes fly down to the clover or saintfoin growing near the place, but would generally return to the other plant in a very few minutes. I have found an old specimen in my cabinet, which I have had for many years unnamed; and Mr. Chant has another. He also took the insect in July last at Greenhithe, where *Artemisia vulgaris* was growing. Anterior wings deep fuscous at the base, beyond the middle greyish brown, with a slight golden tinge; the costa with four oblique blackish dots; the hinder margin with three small transverse black dots, upon the extreme margin is a slight notch, giving the apex a round appearance; in the middle of the inner margin is an obscure greyish patch: cilia cinereous and glossy, with a slender dark line at the base. Posterior

wings fuscous. Measures 7 to $7\frac{1}{2}$ lines. This obscure species seems to have been overlooked by our authors, or probably taken for a dark variety of *P. simpliciana*. — *William Bentley*; 3, *Critchell Place, New North Road, October, 1844.*

Further Notes on the habits of Cossonus Tardii. In a former note (Zool. 702) I stated that I had been fortunate enough to capture eleven specimens of *Cossonus Tardii*, in the course of three weeks, at Mount Edgumbe in Devonshire, my observations, when it was written, only extending up to the 3rd of June. I also observed that the "beech" was the tree to which they appeared most attached, which, as far as my researches went, was true, inasmuch as in the Mount Edgumbe locality, beech is almost the only tree cultivated. Since that time, however, I have traced their devastations along the southern coast of Cornwall, from Mount Edgumbe on the east to Fovey on the west, — a distance of twenty-two miles; and have, moreover, found them in almost every tree, with the exception of the oak, but most abundant in the sycamore, out of a single trunk of which I took fifty-four specimens. The number of specimens that I captured amounted in all to about a hundred and fifty, varying immensely both in size and colour. The female appears decidedly the rarest of the sexes. In the month of July, when they were out of the wood, I captured them all in the earth which had collected in the decayed stumps, where I found them congregated exceedingly close together, and clinging to the interior of the trunks, generally about five or six at a time. It is curious that during the whole four months, I only observed a single example actually out of the hollow trees, which solitary specimen I found on the 26th of September, crawling upon the bark of a beech tree at Mount Edgumbe. They stick very tight to the wood, and I killed several specimens in trying to disengage them from their hold, many of them allowing themselves to be torn in pieces rather than give up their position. For the first two months of the summer, all the specimens I captured were quite perfect; and it is a remarkable fact, that after that time, until the end of September, they appeared, each consecutive week, more and more imperfect, many of them wanting three, four, or even five legs, and in one instance I discovered a *living trunk*, its antennæ (by which alone it could show its "liveliness") only remaining. How to account for this I cannot say; but it is certainly a fact worthy of notice, for, wherever I observed, it was the same, and therefore could not be the effect of chance in a few solitary specimens, inasmuch as it did not merely hold in one, two or three instances, but in *all*. — *T. Vernon Wollaston*; *Jesus Coll. Cambridge, October 12, 1844.*

Note on the Otter's breeding on the banks of the Trent. Your correspondent Mr. Briggs, of King's Newton, is rather incorrect in stating (Zool. 714) that the otter never breeds on the banks of the Trent. It has been known to breed on that river near Burton, within the memory of many persons now living there. A female was caught in a trap on the river Dove, about three miles from thence, in August last, which was evidently suckling young at the time; the male otter was also traced higher up the same river, but not captured, nor were the young ones found. About ten years ago, my cousin, the present Rector of Rolleston, shot two otters on the Dove, in *this* parish, a male and female, as they were disporting together on the banks of that river; and within my own recollection, several others have been caught in this neighbourhood. — *Oswald Mosley*; *Rolleston Hall, near Burton-on-Trent, October 18, 1844.*

Notes on the Mammalia of the Isle of Wight.

By the Rev. C. A. BURY, B.A.

YOUR readers will not find any thing extraordinary in the Natural History of the Isle of Wight. Considering its limited area, and insular position, its Fauna is, perhaps, as rich both in species and individuals as was reasonably to be expected. Because it may not be more prolific than other districts of equal extent, that is no sufficient reason against my recording in your pages what I may have succeeded in ascertaining of its animal productions. Local Faunas possess an interest perfectly independent of the number of species recorded. It is their nature, rather than their number, which imparts a value to the knowledge of the productions of any given district in the estimation of the scientific naturalist; and in this view, did the Isle of Wight afford not one half of what it does afford, my task would have been equally useful, if useful at all, for the promotion of natural science. I could wish, for my own information, for the benefit of 'The Zoologist,' its readers generally, and its Editor in particular, in short, for all reasons, that more local Faunas were contributed. Those that have appeared, are certainly not among the least interesting of the contributions to its pages. I think they tend to raise the character, as well as increase the interest of the work: and may I venture, without presumption, to caution such, and all other contributors, on the necessity of extreme accuracy in their statements; and to warn them against giving as fact, without personal investigation, what may have been communicated to them by perfectly credible, but not scientific, or well practised observers. The difference resulting from the exercise of great care and discrimination on the one hand, and the want of them on the other, will be just this: that 'The Zoologist' will, or will not, as the case may be, hereafter be looked upon and quoted as an authority; natural science will, or will not be really advanced; and the labours of the Editor and contributors will, or will not, have been in vain. I am, however, very unwilling even to appear to dictate to my fellow-contributors, but I have myself met with so many disappointments, after all but full conviction of the correctness of what had been reported to me, that I could not refrain from giving this caution; and I will only plead, by way of apology, my regard for the reputation of 'The Zoologist,' and that of the "Gilbert White Society."

My account of the *Cheiroptera* will be far from perfect. I have

found it very difficult to procure specimens ; and too little is generally known of this class of animated beings to allow of my obtaining much information from others that could be relied on ; consequently I have succeeded in establishing only five of the fourteen or fifteen British species, though I cannot doubt that more are indigenous.

The Pipistrelle is common.

Of the *Serotine* I have procured several specimens : three from Newchurch, one from Brading, and four from Appledurcombe ; and on June 7th of this year was brought me, caught alive in a hole in a wall at Bonchurch, a specimen about three parts grown ; from which I infer, that the bat, or at least this species, does not attain its full size during the first year.

Daubenton's Bat has been obtained four or five times, but I think it is common. Its habits appear to be more diurnal, and less dormitory than those of most other bats ; one specimen in my possession was shot flying up and down the high road in Bonchurch about three o'clock in the afternoon of January 19th.

The Long-eared Bat I have obtained several times, but do not consider it so abundant as either Daubenton's, or the Pipistrelle. An interesting variety of this bat was brought me by a friend in March last. The fore parts of the back and breast were of so much paler a tint than usual, that I instituted a careful comparison between it and an ordinary specimen : detecting, as I thought, some slight variation of form in different parts, I judged it best to forward both individuals to head quarters, and accordingly despatched them by post (naturalists ought to subscribe liberally to the memorial to the originator of the penny post) to Mr. J. E. Gray, who pronounced the one to be only a variety of *P. auritus*, but considered it worthy of a place in the British Museum.

The larger Horseshoe Bat has come into my possession several times, and I think it is far from uncommon. The width of the flying membrane enables me to distinguish it, when on the wing, from the Serotine. On the 18th of December, 1843, two individuals, male and female, were brought me alive, having been captured in a crevice of the cliff over Bonchurch. There was a peculiarity about them which appears not to have been recorded as belonging to this species : around the throat, and suspended over the chest, was a well defined tippet, the fur of which was much longer, rather paler in colour, and, as appeared to me, of a somewhat finer texture. A remarkably large individual, caught June 5th, had no such tippet, while two others,

captured in September, have the fur of the throat longer than that of the rest of the body, but the tippet is not so well defined as in those taken in December. Query, Is this tippet a provision for the winter? One of the tippeted specimens is in the British Museum.

The Hedgehog abounds. My first introduction to this animal in these parts was in January, 1838, and that under somewhat peculiar circumstances: we were visited by a severer frost, and of longer duration than is usual to this climate, and the ground was decked in a thin coating of snow; the day was beautifully bright, and though I was at that time somewhat of an invalid, having been sent to pass the winter in this best of British climates by my excellent friend, Dr. C. B. Williams, I ventured on a stroll in the neighbourhood of St. Lawrence. On rounding a projecting point of the cliff, I beheld on the ground before me a creature which, at first view, not a little puzzled me. Closer inspection showed me a hedgehog, with the parts where the tail is situated towards me, and one hind leg stretched far beyond what I should have supposed the full extent of a hedgehog's hind leg, over the animal's back, from which it was intently scratching certain nameless parasites; these little sanguinary creatures having, probably like itself, been roused from a state of torpor by the warm sunbeams. After some seconds it discovered the intruder on its privacy, and elevating its snout to an angle of 45° with the plane of the horizon, with a view apparently to ascertain my intentions, and not feeling, I suppose, sufficient confidence in my humanity, it commenced and effected a cool and deliberate retreat to its place of hibernation. I wish I could feel myself warranted by facts to assert the positive harmlessness of the hedgehog. The paper by W. H. S. in this month's 'Zoologist' (Zool. 715), reminded me that in the manuscript I was about to forward you I had said nothing on the subject. Personal observation does not authorise the expression of a very decided opinion. I have had many a hedgehog in my possession; for, when residing in Hertfordshire, I had a setter which was remarkably clever at finding them; and as surely as she found, I carried them home, and turned them loose in my garden. For bread and milk, and earthworms, they evinced a wonderful liking, but with flesh or eggs I never tried them. So many instances of their devouring eggs have, however, been reported to me, that I cannot doubt the fact: but, admitting the fact, let it be also remembered that an animal is not to be condemned because it occasionally does wrong: (who of your readers will be content to bear such a judgment?) Let the amount of good and evil done be fairly weighed, and an equitable

balance struck, and then I shall have no fears for the safety of the hedgehog.

The Mole is as abundant here as everywhere else; and Isle of Wight farmers are, I fear, as fully set on its destruction as other British farmers. Whether they are right or wrong has been often discussed: I think they are wrong; and believe the mole to be the farmer's friend rather than his enemy. That it does mischief in certain places, and at certain times, I am free to admit; but who does not? The gardener may have some quarrel with it when it traverses his newly sown beds, producing thereby an unsightliness of appearance (and tidiness enters into the very essence of a gardener), and causing, perhaps, the destruction of some of the springing plants; but I think even the gardener might spare the little fellow's life, and be content to act on the defensive; for if moles destroy a few plants, worms destroy more; and if the gardener would only stop up the runs across the pathways—and they are never many—and so debar the approach of the mole to fresh beds, and allow it free access to the rest of the garden, methinks he would find his account in it; for the number of earthworms devoured in the course of the year by even a single mole must be very great.

But the farmer, he too loves to see his pastures neat: very well, then let him bid a boy scatter with a shovel the fine earth thrown up by the moles, and neither his labour, nor that of the moles, will be lost: for the earth so scattered will make a capital top-dressing; and, to say nothing of the destruction of the worms, I question whether the herbage be not improved by the admission of air to the roots through the mole-runs. On some lands the drainage is effected wholly or in part by the moles. So far, then, I think the farmer might spare the moles to his own advantage, and save some shillings, perhaps pounds, paid annually to the mole-catcher. Man is too fond of meddling, and often blunders to his own cost. In his attempts at improvement, he only disturbs the balance of creation. Granted that occasionally some species of animal, favoured by circumstances, either the scarcity of its appointed check (occasioned, perhaps, by the meddling hand of man), or a superabundance of its natural food, may increase beyond due bounds, and so require the interposition of human force or skill, let that force and skill be then exerted; but I believe that this would be seldom necessary; things would right themselves. They have been generally found to do so, unless man has carried his meddling propensities to the extent of utterly extirpating the appointed check; for it seems to be a law of creation, that where there

is food, there will be provided that which feeds on it, and that in just proportion. I would not be tedious to your readers, but perhaps they will allow me to adduce an illustration of this principle, in connexion with the little creature of which I am writing.

The mole is evidently an appointed check to the undue increase of the earthworm: it not only devours numbers itself, but by its burrowing drives to the surface many more, which, in their attempt to escape the mole, fall a prey to the robin and the thrush. The earthworm, unquestionably, has its uses, in drawing vegetable substances beneath the surface, and so the gases that are released in the process of decomposition, and which would otherwise be lost, are preserved for the nutriment of the growing plant, while the portion devoured by the worm is again thrown to the surface in the form best adapted for the nutriment of the plant above ground. But worms devour the roots of plants; and were there no checks to their increase, vegetation would be seriously injured, instead of benefited, by their existence: so long, however, as they are kept in check by the mole beneath, and the birds above ground, perhaps even their destruction of some plants is beneficial in preventing a too crowded herbage. Thus, then, all is well arranged by Divine wisdom; but if man steps in, throttles the mole, and shoots or snares the birds, he must, if he carry his interference far, produce a disturbance among God's works, to his own detriment.

Common Shrew is common enough; in proof whereof I may mention, that Mr. Gray, suspecting, as do some other naturalists, the existence of more species in this country than have as yet been described, wished me to procure him a number of specimens for comparison; and I had no difficulty in collecting eight in a very few days. These I forwarded; and Mr. Gray's reply, wherein, while deciding that they all belonged to the common species, he points out the sexual distinctions, may prove interesting to your readers: "The males (of which there are five), like many other insectivorous and marsupial quadrupeds, have much thicker and more hairy tails than the females. The hair of the tail is brown, and forms a pencil at the end; and the whole tail is brown, from the colour of the hair. The females have the teats, three in number, forming a line along the groin on each side. Their tails are cylindrical, slender, and white, from the shortness and spareness of the hairs allowing the skin to be seen between them, and have no terminal pencil." I can throw no light on the autumnal mortality among the shrews.

The Water Shrew I cannot establish; and yet I have frequently tracked on the mud by the river-side (during winter, when there could

hardly be young water voles) some small animal which I cannot help thinking must be the water shrew.

The Badger.—The first intimation I received of the existence of the badger in the island was from R. Loe, who informed me, in February, 1843, that in the preceding spring three young badgers were dug out on Grove Farm, in the parish of Brading. On the 10th of March I visited the spot, and at the mouth of a fresh earth, picked up several bristles, thereby satisfying myself that the parents, or at least one or other of them, was still in the neighbourhood. There were several earths in the adjoining hedgerows. Since that time I have, with the assistance of R. Loe, traced the badger in two different parts of Youngwood copse, in the parish of Newchurch, and found earths evidently still inhabited. I have also ascertained, that about seventeen years back, two old badgers and two young ones were destroyed on the property of Sir R. Simeon, Bart. The story runs, that a few years previously, certain badgers having been imported for the amusement of sundry humane and polite inhabitants of the town of Newport, did then and there effect their escape, preferring the retirement of the woods to the notoriety of a public baiting.

The Otter still exists, I believe, in the island. The only one I have seen was killed at the head of Shanklin Chine, in September, 1839; it was an old female: a boy found it sleeping under a bush, and attacked it with the armed toe of his boot; he ultimately succeeded in killing it, though not before it had inflicted one or two pretty severe bites on his wrist and leg. In the course of his life, R. Loe has killed six, in the Newchurch marshes. One was said to frequent the river Medina, a mile or two above Newport, during the summer of 1839; and the absence of trout was attributed to the presence of the otter; and very correctly, I have no doubt, if the otter was really there; for though it certainly is remarkable that so swift a fish should fall a prey to an amphibious quadruped, it is not less true than remarkable that it does so. As a flyfisher, I owe no love to the otter; and yet, were I the proprietor of a trout stream, I think I could resist the temptation to persecute him, unless I found there was not room for him and me to ply our craft; in that case I should, I believe, give him notice to quit.

The Common Weasel is not so common as its congener

The Stoat, which abounds over the whole island. The number annually trapped at the Hermitage is extraordinary. It is curious that in this southern latitude the stoat sometimes undergoes the winter change of colour. I have seen six or seven specimens whose change

was either partial or entire: one was perfectly white, save the black extremity of the tail, and the yellowish tinge of the under parts; the heads of two others retained the summer brown; and three or four more were mottled. I am disposed to agree with those naturalists who consider this change to take place very rapidly on a sudden fall of temperature. Two individuals which have come into my possession, recently killed, and partly changed, occurred after two nights of severe and sudden frost, the weather previously having been remarkably mild.

The stoat is sometimes grievously annoyed by ticks. Walking one day last winter on the border of Pan Common, I observed a stoat hunting the bank of one of the cuts, or drains. At the distance of between thirty or forty yards, I could distinguish that the head and shoulders of the creature were spotted. This unusual appearance induced me to shoot it, and on examination, I found the head, ears, shoulders, and centre of the back, thickly studded with bloated ticks; and the entire skin was covered with the scars of their bites; so much so, that I doubt whether the animal retained one half of its fur.

Gamekeepers are, doubtless, right in considering the stoat in the light of an enemy; but I question much if the farmers be wise in joining in their destruction. That they are not so in destroying the weasel I feel convinced. It would be wiser in them to preserve it; for it is but seldom that the weasel carries off either chick or duckling, while its daily occupation throughout the year is the keeping down the farmers' real pest, the mouse. I think the gamekeeper might spare it for the farmer's sake, for the mischief done in the preserve by this diminutive fellow cannot be great.

But the cause of the stoat and the weasel has already been ably advocated in 'The Zoologist,' in an interesting paper "On the habits and utility of the Stoat and Weasel," by Sir Oswald Mosley, Bart. The sentiments expressed in that paper, on the ill-judged interference of man in the destruction of animals, have been echoed in my remarks on the mole. In Sir Oswald Mosley's opinion respecting the general utility of both stoat and weasel, I am quite disposed to concur; and much success do I wish him in his laudable attempt to domesticate these courageous little fellows. [See Zool. 490].

I am disposed to think it correct that the stoat hunts in company, but that the company consists only of a family party. On the only occasion I ever witnessed such a hunt, it certainly was so. The chase must have crossed the road before I came up, for I did not see it; but the pack consisted of two old stoats, and four others not full

grown. I stood still; and so intent were they on their game, evidently hunting by scent, that they saw not my six feet of length; and I actually captured one with my umbrella, so close did they pass.

The Polecat, so far as I can learn, has never been found in the island.

The Marten, though evidently very rare, has nevertheless been seen. My friend, the Rev. J. F. Dawson, riding one summer's evening along the Undercliff, approached within a few yards of a marten, sitting at the entrance of a hole: he was too near the animal to be mistaken, and the deep yellow tinge of the throat showed that it was the *pine marten*, if the species be distinct. The track of a marten in the snow has since been seen by a gentleman well qualified to judge, about a mile from the spot where the animal was seen by Mr. Dawson.

Of *Cats* and *Dogs* I shall say nothing. We have enough of each, of all sorts, sizes, and descriptions. Of some of the former I certainly could record instances of personal attachment, far beyond what they usually get credit for. To one now in my possession I am indebted, not only for abundant amusement afforded by the gambols of herself and kitten, but also for an ample supply of voles and shrews, whereby I have been greatly assisted in my endeavours to distinguish the different species. She is certainly a bit of a naturalist, is evidently well acquainted with the habits of several of our smaller mammalia, and pursues the study with great success. I wish I could confine her to this pursuit, for she sometimes tries my patience, and endangers her own existence, by making ornithological excursions.

Cats that have run wild abound. I once saw one that had been trapped in this neighbourhood, which, from its unusual size, the coarseness of its fur, and the ferocity of its expression, would seem to have reverted to the original type, if such there be, or ever was, in a wild state, for I incline to the opinion that the cat, and perhaps the dog, like the camel and the horse, and some others, were created in a state of domestication.

Anecdotes illustrative of the sagacity and fidelity of *dogs* are numerous enough and sufficiently well authenticated; I shall not, therefore, occupy your pages with any that have come under my observation; although a fine fellow of the Newfoundland breed, in my possession, whose form is worthy of the pencil of a Landseer, deserves to have instances, both of his intelligence and of his attachment to his master and mistress, put upon record.

The Fox. It was once the boast of our islanders, that neither

lawyer nor fox was to be found in their happy island. How long that boast has been hushed with respect to the former I know not. There exists a spirited engraving, representing the first lawyer being hunted out of the island by the female portion of its inhabitants. Whether this was right or wrong conduct on the part of the ladies, is a question more delicate than I shall take upon me to decide; for a decision either way must involve me with one party or the other, and I have no wish to quarrel with either the ladies or the lawyers. But with respect to the fox, I shall be less scrupulous in the expression of my sentiments. He certainly, whatever opinion may be entertained touching the introduction of the lawyer, has done us no service, nor is he likely to do us any. He was no doubt introduced, and that not many years since, for the express purpose of being hunted: nobody likes to confess to the fact of his introduction, and where parties of high respectability are thought to be implicated, no one likes to express his mind too freely. I, as the natural historian, have to do only with the fact of his existence in the island. Here he is, beyond all question, and sufficiently rapid has been his increase. Extermination would probably prove impracticable; but, if his increase be not checked, the nuisance will become great. I have myself tracked him where most certainly he was not invited; but foxes love hares and pheasants, and seldom wait for an invitation where such delicacies abound. I, for my part, however, am no enemy to the fox; neither do I profess myself his friend exactly in the same sense as do they who preserve him very carefully for the pleasure of hunting him to death; I admire both his personal and his mental qualities: I do not mean to say that his proverbial cunning has any peculiar charms for me, I hope, at least, it has not; but I admire the exercise of that strong sagacity with which its Creator has endowed this animal; and "live and let live" I believe to be as sound a maxim when applied to the relationship between man and brute, as when used with reference to the reciprocity of good feeling which should exist between man and man. Not, however, that I have it in my power to say much in favour of Reynard: he is a suspicious character, at best; for it is only when there is no hare, rabbit, pheasant, partridge, duck, goose, or fowl for him to steal, that he will live honestly on "rats and mice, and such small deer;" and he who can be honest only when obliged to be so, is not the best member of society. Probably in some countries the services of the fox are more valuable than they are in this; and, after all, it may have been only a wish on the part of some right-minded naturalist to preserve the balance of

creation, that led to his introduction here. I do not say that it was so, but that it *may have been* so. I believe, however, I shall carry with me a pretty large majority of both gentlemen and farmers, when I express my conviction that the services of Reynard might have been dispensed with ; in plain English, so far as the Isle of Wight is concerned, we would rather have had "his room than his company."

I saw, early in this summer, a curious variety, as I judged it to be, which was trapped by Mr. Hodges, gamekeeper at the Hermitage. The animal was below the average size, though its teeth showed it was not a young one ; neither was it aged ; grey hairs were plentifully scattered over the back and sides ; its brush, which was a very shabby one, wanted the white tip ; indeed, the striking peculiarity was the absence of all white hairs, the parts usually white being of a pale slate colour.

The Seal, but what species I am unable to say, has occasionally made its appearance on our southern coast. A rock situated between Bonchurch and Ventnor, goes by the name of "Seal Rock," from the fact of a seal having been seen a few years ago basking on its surface. A fisherman, residing at the foot of Luccombe Chine, noticed two seals passing to the westward in 1841 ; and early in the spring of 1843, a seal appears to have remained some days in our neighbourhood. The animal itself was seen but once, but its tracks were seen repeatedly. A curious encounter took place between this seal and one of the coast-guard. The man, being on night duty, was passing the gorge of Shanklin Chine, when he was suddenly attacked by what he supposed to be a large dog, which emerged from beneath a bathing-machine. In self-defence he drew his cutlass, and laid about him ; and having driven off his assailant, he quietly proceeded on his beat. Daylight, however, disclosed the real nature of both the animal and the combat ; for tracks of blood and of the splay feet on the sand betrayed the retreat of a wounded seal, and showed that the coast-guardman had unwittingly got between the animal and its native element. Curiously enough, the seal took its nap a second time, a few nights after, beneath this self-same machine, but was not again disturbed. The spot where it reposed was plainly indicated, and its track was distinct for many yards on the sands, which had been left dry by the fall of the tide : the machine was, moreover, close to the cottage which stands at the entrance to Shanklin Chine.

The Squirrel is abundant in the woods on the northern side of the island, but has seldom been found in the centre, and along the southern shores.

The Dormouse abounds along the Undercliff, and I believe throughout the island.

The Harvest Mouse. Mr. Simeon has furnished me with a note of his, to the effect that *Mus messorius* has been found in a wheat rick in the neighbourhood of Ryde. I have frequently met with, in the winter time, what I believe to be the old nests of this little animal, but I have not succeeded in obtaining the animal itself.

The long-tailed Field Mouse is plentiful, as is the *common mouse*.

The Brown Rat storms our dwellings as winter approaches, and I could wish we did not see him so frequently in the summer. I cannot bring myself to like the rat. I believe I could pet almost any other creature, quadruped or biped; and certainly I could enumerate some pets with which few, perhaps, of your readers would like to be on terms of familiarity. I remember when at school, a boy who used to carry about in his bosom a tame rat, but I never coveted it; neither can I satisfy myself as to its utility, but this is probably owing to either vulgar prejudice, or natural antipathy. I can pity the weakness of those who dread the spider or the toad; I cannot sympathize in the general dislike of the serpent tribe; for I would rather handle a viper than a rat: nevertheless, I wish the poor rat could meet with a friend: even the benevolent Waterton has not a good word for the Hanoverian rat, though I could almost imagine that he, like myself, may *possibly* be a little prejudiced: and yet, perhaps this friendless creature has many more good qualities than we are disposed to give him credit for. I feel inclined to compel my pen to an act of self-denial, and write something in his favour; for if I cannot be affectionate, perhaps not generous towards him, I ought, at least, to be just. To begin: that he is a very cleanly animal is admitted by all who are intimately acquainted with his habits; for, be it remembered, that an approved recipe for getting quit of a colony that may have taken up their quarters in your house is, to catch one, and souse him in treacle or tar, then give him his liberty; he will naturally make the best of his way to join his companions, and they will as naturally do their utmost to keep out of his way, lest their fur should come in contact with the treacle or tar; and the chase will, it is said, be continued till the whole party are driven by their love of cleanliness out of their quarters.

His sagacity too is unquestioned and unquestionable; who ever detected a want of tact or foresight in a rat? You will as readily find a stupid rat, as a rat with a dirty coat; I, at least, never heard of either one or the other. I remember a solution of a difficult question,

viz.: How do rats carry off hen's eggs? which struck me at the time I heard it as incredible, though the story was told, if I remember aright, by a perfectly credible eye-witness; but when I had grown wiser, and had learned somewhat more of the habits of the animal creation, I believed it, and do still believe it. This person related that he witnessed a party of rats in the exercise of their filching propensities; one of the party grasped the egg with all four paws, and, turning on his back, was dragged away by the tail up a flight of steps by the rest of the party; so much for its sagacity. Again, for its courage: who will venture on a single combat with a rat in a closed room, whence the rat has no means of retreat? I, for my part, would *rather* not. I remember, when at college, a man recounting in the lecture-room, not less to the amusement of the tutor than of the other "men" around him, a desperate conflict in which he had been engaged the previous night; and wherein the rat, for some time, had the best of it, though the man was full six feet high; but then it must be told that the battle was fought by candle light, his only weapon a poker, and himself in his shirt.

Methinks these good qualities should inspire some little respect for this, nevertheless, real bane of the farmer; though probably you and your readers, like myself, will ever be content to like him best at a distance. No human being can be more prudent in making provision for himself and family than is the rat. When I was in Hertfordshire, a few years back, I had, on one occasion, laid in our winter store of walnuts; on the second evening it was discovered by the rats, and though I did suspect that mischief was going on, from certain noises that issued from behind the wainscoting, I had not surmised the extent of the mischief likely to be committed; for, on the following morning, I found, to my chagrin, that the whole stock, amounting to two bushels, had disappeared, excepting only three or four that were bad. I was once paying my first visit to a gentleman of rank in the island, when, after I had rung the bell, I saw, lying dead, a rat that I longed to put in my pocket, but was afraid of detection. I cannot say I was deterred from the commission of petty larceny by conscientious scruples, but I did not feel sure the servant, on opening the door, might not imagine it was some valuable of his master's he had caught me stowing away so hurriedly, or that some of the numerous workmen about might not spread abroad reports not quite favourable to my good name, should they have seen me pocket they knew not what; or to my state of mind, had they discerned the real object of depredation. But it was a weakness unworthy of a

naturalist, and the consequence was, I lost the opportunity of more closely examining a curious variety of the brown rat, having a white spot immediately over each eye, and a band of like colour, about a line in breadth, extending from the eyes to the ears.

The Water Vole is common enough in places adapted to its habits.

The Field Vole is equally abundant: I once flattered myself I had obtained, by the aid of my good cat, the *Bank Vole* (*Arvicola riparia*) of Yarrell. I showed my specimen to Mr. J. E. Gray; he shook his head: I pointed to the elongated hairs at the extremity of the tail; another shake: I directed his attention to the length of the tail itself; shake the third: there is no satisfying some persons, thought I. "Send me up a good many specimens, a bottle full," said Mr. Gray. I sent him eight or nine, and in due time he writes me word, "The voles are all one species," meaning thereby that they were all the common field vole; and I had to console myself, under my disappointment, with a polite letter of thanks from the authorities at the British Museum, for my "valuable addition to the collection of British Mammalia." Still I have no real quarrel with the incredulity of Mr. Gray, for those same incredulous men, who will believe nothing that is not more than demonstrated, are the very men for naturalists. It is a common saying of mine, that no man with a grain of poetry in his composition can be trusted as an authority in natural history. Imagination works too freely to allow a poet to observe with sufficient accuracy. Others, however, and myself among the number, are liable to make mistakes; and if I might do so without seeming presumptuous, I would suggest whether Mr. Jenyns, in his most excellent 'Manual,' has not fallen into error in giving as a specific distinction of *Arvicola riparia*, "the hairs at the tip of the tail a little elongated." For some examples of both our other species of vole most certainly have the hairs at the extremity of the tail so elongated. Professor Bell has figured *A. amphibia* with the point of the tail pencilled; and in the only specimen in my possession the hairs extend beyond the skin just one quarter of an inch. But *A. agrestis*, in the 'British Quadrupeds,' has its tail as bald as bald can be; and yet I have seen many examples this summer, as Mr. Gray can testify, with the hairs as much elongated as they are represented in the figure of *A. riparia* in the same valuable work. I think, then, this elongation cannot constitute a specific distinction. I hardly know whether it is admissible to distinguish the genus, since some individuals of *A. agrestis* have tails as bald as those figured in the 'British Quadrupeds.' I cannot say whether it is the same with

amphibia and riparia, for I have never seen an example of the latter; and my attention not having been directed to the subject till very lately, I have not had an opportunity of examining specimens of the former. I strongly suspect that, as with the common shrew, it is a sexual distinction, and will be found to hold good with all three British voles. Further examination is desirable. I am indebted to Mr. Gray's incredulity respecting my supposed example of *A. riparia* for directing my attention to this point, as well as to another, viz. the variation in the length of the tail itself in the common field vole (*A. agrestis*), which Professor Bell has stated to be "not more than one-third the length of the body," whereas in some of the specimens I forwarded to Mr. Gray the tail was nearly, if not quite, half its length. I propose it, then, for the examination of the *prosaic* students of the works of Nature, whether the gentlemen of the genus *Arvicola* have not longer and more hairy tails than the ladies of the same genus.

The Hare is seldom met with in the Undercliff, though numerous enough throughout the rest of the island. I was not aware till this year that the hare, in its natural state, is subject to variation in colour. I obtained from R. Loe, in the month of September, the skin of a leveret, which he denominated "a white hare." The peculiarity consists in those hairs and portions of hairs which, in the ordinary example, are of a rich yellow brown, being in the variety nearly white, slightly tinged with ochreous yellow, giving to the entire animal a pale, faded appearance. This variety is no rarity at Newchurch; R. Loe has seen one or two "most years;" and there are two or three about this season. He has seen them of all sizes, from a month old to full growth. Loe has also killed one or two hares with the face pure white, the rest of the animal of the usual colour.

The Rabbit abounds, and, as might be expected, breeds very early in the season. I have more than once seen half-grown young ones in the month of March.

At Swainston, the seat of Sir R. Simeon, Bart., a black variety exists in considerable numbers; and at Wacklands, the property of W. Thatcher, Esq., numbers of nearly white rabbits may be seen. These were originally turned out; but I am disposed to think that both black and white varieties sometimes occur among those that are strictly wild. I have seen both where it was the wish of the proprietor to destroy every rabbit on his estate; and on St. Boniface Down also, where it was hardly likely to have been turned out.

The fishermen of Bembridge employ an ingenious method of *ferreting* rabbits. On the back of one of the small species of crab,

commonly called king-crab, they fix the end of a tallow candle : this is lighted, and the crab is thrust, by means of a stick, as far as possible in the burrow of the rabbit ; it is then urged to penetrate deeper by gently pulling a string attached to one of its legs, and the rabbit, alarmed at the approach of the lighted candle, rushes to the entrance of the burrow, and is secured in a net.

The Red Deer. Bones and large portions of horns have been found in this immediate neighbourhood some few feet beneath the surface. Appearances were such as to render it probable that the animal was overwhelmed by a landslip. It must have been considerably above the ordinary size attained by the red deer ; but Professor Owen has pronounced it, from examination of the bones, to have been specifically identical. Loe also once possessed part of the antler of a red deer, said to have been dug up in the Undercliff.

The common Porpoise occasionally passes close in shore in small schuls, and now and then one is landed from the Shoreham mackerel boats, and eagerly purchased by our fishermen as bait for their crab-pots.

Northern Rorqual. The skeleton of an animal of, I imagine, the species thus designated by Professor Bell, is now exhibited at Black Gang Chine. This whale was stranded in Alum Bay, April 5, 1842 : it measured upwards of eighty feet in length. Another is said to have shared the same fate a few years previously, near Hurst Castle.

Bonchurch, Isle of Wight.

C. A. BURY.

Anecdotes of Foxes. While an old man was wandering by the side of one of the largest tributaries of the Almand, he observed a badger moving leisurely along the ledge of a rock on the opposite bank. After a little time a fox came up, and after walking for some distance close in the rear of the poor badger, he leaped into the water. Immediately afterwards came a pack of hounds, at full speed, in pursuit of the fox, who by this time was far enough off, floating down the stream ; but the luckless badger was instantly torn to pieces by the dogs.

An instance of still greater sagacity in the fox occurred a few years ago, also in this neighbourhood. As a farm-servant was preparing a small piece of land for the reception of wheat, near to Pumpherstons Mains, he was not a little surprised on seeing a fox slowly running in the furrow immediately before the plough. While wondering why the sly creature was so confident, he heard behind him the cry of the dogs ; and turning round, he saw the whole pack at a dead stand near the other end of the field, at the very spot where Reynard had entered the newly enclosed trench. The idea struck him that the fox had taken this ingenious way of eluding pursuit, and through deference to the sagacity of the animal, he allowed it to escape.—*R. Dick Duncan ; Vale of Almand, Mid Calder, October 29, 1844.*

Anecdote of a Cat's Nest on a Tree Mr. Nichol tells me that three weeks ago he saw a cat leap from a dark bushy tree into a pond near Mid Calder, where it was drowned. Not long afterwards, some individuals passing by the same place, heard the mewing of cats or kittens, and no doubt they wondered much. On listening attentively, they ascertained that the sound proceeded from a tree, the branches of which overhung the water. On climbing the tree, they found, at the height of about a storey and a half, four or five kittens, snugly reclining on a nest, placed upon an extended branch, which was covered with the densest foliage. On examination, it was found that Pussy had monopolized the nest of a wood pigeon, after making it, perhaps, a little more suitable to the education of her young and luxurious family, than it was when she first set foot upon it. Around the nest were deposited many dainty morsels; besides pigeons and smaller birds, hares, rabbits, and other game lay there in profusion, ready for the use of the juvenile poachers. Strange as this anecdote may appear, it is not more astonishing than true.—*Id.*

Notes on the Hedgehog. In the course of the autumn of 1841, in one of my evening walks, I stumbled over a hedgehog, and on finding, by the sense of feeling—it was too dark to see—what it was, I took it up and conveyed it home. I kept it for several weeks, partly with a view to ascertain what it would or would not eat. The first kind of food I offered it was raw mutton, and when I offered the meat the animal had been in confinement about twenty-two hours; yet, notwithstanding it was in a perfectly strange scene, and had fasted only a part of the preceding night—at least I presumed so from the hour at which I found it—it took the mutton into a corner of the room, and ate it greedily, making, at the same time, a singularly harsh sound in the process of eating. I placed apples, pears, potatoes, both cooked and uncooked, eggs, beef, mutton, mice, sparrows, &c. in its place, and plenty of milk. Neither apple, pear, nor potato was ever touched. The eggs were unmanageable by the poor captive, but when I gave them a slight crack, their contents were speedily abstracted. The mouse or sparrow was devoured at the first convenient opportunity, and at any hour of the day, while the beef and mutton always disappeared eventually. The fat was invariably left. So much for the food of the hedgehog. As to its habits I have little to say: I kept it all through the winter; its longest nap was for about two, at the most, three days. If I set it free in the room, or it made its escape from its box, it was very soon to be found among the ashes under the grate, attracted thither, I thought, by the warmth. If placed on a table, it never hesitated about running over the edge, rolling itself up in an instant (as noticed by Mr. Jesse, I think), and sustaining no harm from its fall. The gamekeeper tells me he catches many hedgehogs in his traps, which are invariably baited with flesh (Zool. 716), and generally that of the rabbit; and when defending the poor hedgehog one day, on the score of its harmlessness in respect of the game, he replied by saying he thought it very curious they should show such a strong *penchant* for rabbit meat, if really averse or indifferent to a game diet; and that he feared a tender young leveret in its seat would prove quite as tempting as half a young rabbit suspended over a trap. His reasoning was unanswerable: what could I reply? and as for the eggs of game, when he accused the hedgehog of that kind of poaching also, I could not say “Oh no, you are prejudiced there, you have never seen a hedgehog so engaged, and therefore you may be accusing him of other people’s crimes; indeed, I don’t think he likes, or will eat eggs:” because I had had ample proof that if he spared an egg for three days, it was only because he was unable to get at its contents, and for no other

reason whatever; and because I have no doubt that a partridge's egg would be more manageable than a fowl's egg; and that if the hen partridge should by chance be near, and endeavour to defend her nest, she would be herself demolished by the plunderer, as easily as a ringdove or a young turkey.—*J. C. Atkinson; Hutton, Berwick-on-Tweed, October 26, 1844.*

Proceedings of the British Association for the advancement of Science. York, September 25, 1844. From the "Athenæum" of September 28.

THE Secretary, Dr. Lankester, commenced proceedings by reading a paper "On the Periodical Birds observed in the years 1843 and 1844, near Llanrwst, Denbighshire, North Wales," by John Blackwall, Esq., F.L.S.—This was a continuation of the author's former observations on the same subject, which were commenced at the suggestion of the British Association, in order that extensive tables of the period of the arrival and disappearance of animals, and other periodic phenomena in the organic kingdom, might be obtained.

Mr Arthur Strickland, of Burlington, observed that a single paper could not afford matter for inference. The period of appearance and disappearance of birds is very uncertain.

A paper was read by Mr. J. Hogg, on the Ornithology of a portion of the North of England, entitled "A Catalogue of the Birds observed in South-East Durham and North-West Cleveland."—The author entered into an extended view of the habits of many of the species, and made remarks upon the nomenclature of some of our British authors. He also proposed some modification in the classification of birds, adopting some of the *families* of Cuvier as additional tribes, incorporating at the same time with them the greater part of the families adopted by our English ornithologists. The number of species contained in the catalogue amounted to 210.

The President, the Very Rev. the Dean of Manchester, observed, that as the author had referred to some remarks of his on the Willow-wrens, he could state that he believed that there were four British species, two of which were well known, and two more obscure. There was first the *Sylvia Trochilus*, which breeds on the ground, and builds its nest on heaths, and even in strawberry beds; secondly, wood-wrens, which were found in woods; thirdly, the *Sylvia rufa*, which occurred in his own parish, in Yorkshire; fourthly, a bird called the chiffchaff, but confounded with the last, but which he called the *Sylvia loquax*. This is very common in Yorkshire. Why they are not distinguished is, that the young birds have a brighter plumage than the old ones. Another bird mentioned by Mr. Hogg, the whinchat, was frequently called grasschat in Yorkshire, and followed the mowers during haymaking. The godwit had been mentioned: it had a long bill, and it was generally supposed that birds with long bills lived by suction; but this was not the case with the godwit, as it fed voraciously and flourished upon barley. It could not drink in deep water, but was always obliged to have recourse to the edge of a stream to drink.

Abstract of a paper "On the Flight of Birds," by T. Allis.—Birds require the centre of gravity to be placed immediately over the axis of motion for walking, and beneath it when flying; when suspended in the air, their bodies naturally fall into that position which throws the centre of gravity beneath the wings. The axis of motion being situated in a different place in the line of the body when walking, from that which is

used when flying, the discrepancy requires to be compensated by some means in all birds, in order to enable them to perform flight with ease. Raptorial birds take a horizontal position when suspended in the air, and the compensating power consists in their taking a more or less erect position when at rest. Another class, including the woodpeckers, wagtails, &c., take an oblique position in the air: with these the compensating power consists in their cleaving and passing through the air at an angle coincident with the position of the body, and performing flight by a series of curves or saltations. Natatorial birds sometimes need very extended flight; they take a very oblique position in the air; they have the ribs greatly lengthened, the integuments of the abdomen are long and flexible, which enables them greatly to enlarge the abdominal portion of their body by inflating it with air; this causes a decrease in the specific gravity of that part, and raises it to a horizontal position. The compensating power consists in the posterior half of the body becoming specifically lighter, while the specific gravity of the anterior half remains unaltered.

This paper was illustrated by the skeletons of several birds.

Mr. A. Strickland, observing the guillemot upon the table, stated, that, although this bird had the power of flying over the sea, it could not over the land.—Mr. H. E. Strickland had, originally, doubted this fact, but, from experiments he had made on the east coast of Yorkshire, he could confirm the statement of Mr. A. Strickland. He believed this fact had never been noticed by ornithologists.—Mr. R. Ball, of Dublin, stated that he had appended a note, to the effect that the guillemot could not fly on land, in a paper which had been published about eight days, by the Irish Archæological Society.

Note on the Honey Buzzard. I beg to send you notice of a Honey Buzzard (fig. 7), killed near Yarmouth, towards the end of last month. It appears to form a link



between Nos. 1 and 2 of those figured at page 375 of 'The Zoologist.' The predominating colour of this bird is a light brown, rather darker on the back. The feathers

round the neck, and also on the breast and thighs, have dark margins. The quill feathers are black, the secondaries dark brown, the tertials rather lighter, and in both of these last, as well as on the wing-coverts, may be seen in the lighter tint of the tips of the feathers, the commencement of the change which gives the bird the appearance of figure 2. These parts of the bird also exhibit, on being turned to the light, a beautiful purple gloss. The feathers of the back have black shafts, and are darker in the centre than at the margins. The tail of this specimen has acquired the tip of light yellow, which therefore appears to be assumed very shortly after the bird loses the dark hue of figure 1. It is also barred like the others. The cere and legs were of a pale yellow, the irides grey. The stomach contained the remains of bees, and a quantity of moss, which probably formed part of the bees' nest.—*William R. Fisher ; Great Yarmouth, October 24, 1844.*

Note on the Hooting of the Barn Owl. I see that Mr. Waterton, in the continuation of his Autobiography, prefixed to the second series of his Essays, is again facetious at the expense of Sir William Jardine, for asserting that the barn owl hoots. "In Scotland Sir William Jardine's barn owl is known to hoot; but here, in Yorkshire, this species of owl can do no such thing." Now, if "hearing be believing," I must claim for the Oxford owls, even at the risk of drawing on myself the shafts of Mr. Waterton's wit, the possession of the same accomplishment as their brethren of the modern Athens. It is not frequently heard, nor is it a long, loud, continued hoot, like that of the brown owl; but occasionally, the usual screech is suddenly interrupted, and succeeded by a single short, croaking, half-choked hoot, as if the barn owl was making an abortive attempt to imitate the note of its congener. Mr. Yarrell cautiously states that "the barn owl screeches, but does not *generally* hoot," and so far I agree with him; but that it does *occasionally* hoot, I will maintain even against so redoubted a champion as the Squire of Walton Hall.—*F. Holme ; Penzance, October 21, 1844.*

Note on the occurrence of the Roller in Cornwall. A female specimen of the Roller was shot between the Land's End and St. Sevan's, on the 8th of the present month, the day preceding the late severe gale, and is now in the possession of E. H. Rodd, Esq., of Penzance. It is apparently a bird of the second year, as some of the tail feathers were imperfectly developed, and it presented other marks of the adult plumage not being complete. It was extremely fat, and in good condition: the stomach was filled with the remains of *Geotrupes stercorarius*. The countryman who shot it could give no account of its manners, note &c.—*Id.*

Note on the Occurrence of the Black Grouse at Elvedon. On Saturday, October 12, a female of the black grouse (*Tetrao tetrix*), was picked up dead, at Elvedon, in the mouth of a rabbit-hole. A male bird of this species was seen in an adjoining parish, in the first week of September. I believe this is the first instance of this bird being found in Suffolk.—*Alfred Newton ; Stetchworth Vicarage, October 22, 1844.*

Note on the Water-rail. I observe in your September number two articles on the habits of the Water-rail, the one (Zool. 669), expressing a doubt as to whether they breed here, the other (Zool. 669), as to whether they remain here during the winter. With regard to the first, I had the eggs brought to me last May; they had been found, I believe, on Luy fen, at any rate, not far from this town. With regard to the second, I have, in different years, killed as many as a dozen. On one occasion, I observed one on the only unfrozen patch of water on the fen, which was about double the size of this sheet of paper. I was about ten yards off, concealed by a turfstack, and observed its motions, (which were those of a moorhen,) for some time, and at last left it

undisturbed, thinking that to shoot it would be a poor return for my lesson in Ornithology.—*Henry T. Frere ; Corpus Christi College, Cambridge, October 24, 1844.*

Note on the Great Northern Diver. An example of this bird was brought to me this afternoon, in its adult summer plumage, and previous to the assumption, or rather development of any portion of its winter plumage. In the former state of plumage this bird is seldom met with on our southern shores, but in its winter plumage, it is of much more frequent occurrence: this remark applies to the two other species of *Colymbus*, especially the *C. septentrionalis*. I am much inclined to think that the various authors who designate the summer livery of this bird as the adult, without reference to the *season*, have come to their conclusion, from the circumstance of the birds not having changed their plumage at a period of the autumn when most birds have completed their moult, and have consequently, and very naturally concluded, that the summer adult plumage is retained by the old birds perennially. It may be worth recording, that on examining the under plumage of the above specimen throughout, a mass of new feathers presented themselves from the head to the tail, which would, in all probability, have eclipsed its present plumage in one week. All these feathers presented the same cinereous hue as characterizes the young and the winter plumage, and not a single white tip or spot was discernible on any of the new feathers. Thus, it appears most probable, that in this, as well as in the other two *Colymbi*, the general moult takes place at a late period of the autumn. The birds that I have repeatedly had occasion to examine in the early part of the autumn, and which were without the white dorsal spots, have always shown unequivocal marks of their being young birds of the year. On dissection, the specimen above described proved to be a female; the ovary was full of eggs, from the size of a pin's head downwards.—*Edward Hearle Rodd ; Penzance, October 21, 1844.*

Note on the occurrence of Richardson's Skua at Great Yarmouth. A specimen of this bird, in that state of immature plumage in which it is known as the black-toed gull, has just occurred here.—*William R. Fisher ; Great Yarmouth, October 24, 1844.*

Notes on the Nidification of Fishes.

By R. Q. COUCH, Esq., M.R.C.S.L.

THE subject of the following communication, though not of great importance, may be regarded as at least remarkably curious, being in a great measure hitherto unsuspected. We have been accustomed to look on the inhabitants of the deep as devoid of any thing like intelligence or affection; as beings guided solely by insatiable appetites, which lead them indiscriminately to prey on each other, and to abandon their offspring to the mercy of the sea and their predatory companions, from the instant that the ova are shed. Any attempt to dispel this opinion will probably be received with distrust; for taken as a whole, fish are certainly the most universally predacious of any class of animals in existence; being checked only by want of power. But notwithstanding this, some, at least, have a redeeming quality,

and show a remarkable care and anxiety for their young. Nests are built in which the ova are deposited, and over which the adult fish will watch till the young make their escape. And where circumstances will not allow of this continued care, as from the reflux of the sea, the old fish will return with the return of the tide, and remain as long as the water will permit.

During the summers of 1842 and 1843, while searching for the naked mollusks of the county, I occasionally discovered portions of sea-weed, and the common coralline (*C. officinalis*), hanging from the rocks in pear-shaped masses, variously intermingled with each other. On one occasion, having observed that the mass was very curiously bound together by a slender silky-looking thread, it was torn open, and the centre was found to be occupied by a mass of transparent amber-coloured ova, each being about the tenth of an inch in diameter. Though examined on the spot with a lens, nothing could be discovered to indicate their character. They were, however, kept in a basin, and daily supplied with sea-water, and eventually proved to be the young of some fish. The nest varies a great deal in size, but rarely exceeds six inches in length, or four inches in breadth. It is pear-shaped, and composed of sea-weed, or the common coralline, as they hang suspended from the rock. They are brought together, without being detached from their places of growth, by a delicate opaque white thread. This thread is highly elastic, and very much resembles silk, both in appearance and texture; this is brought round the plants, and tightly binds them together, plant after plant, till the ova, which are deposited early, are completely hid from view. This silk-like thread is passed in all directions through and around the mass in a very complicated manner. At first the thread is semi-fluid but by exposure it solidifies; and hence contracts and binds the substances, forming the nest so closely together, that it is able to withstand the violence of the sea, and may be thrown carelessly about without derangement. In the centre are deposited the ova, very similar to the masses of frog-spawn in ditches.

It is not necessary to enter into the minute particulars of the development of the young, any further than by observing that they were the subject of observation, till they became excluded from the egg, and that they belonged to the fifteen-spined stickleback (*Gasterosteus Spinachia*). Some of these nests are formed in pools, and are consequently always in water; others are frequently to be found between tide marks, in situations where they hang dry for several hours during the day; but whether in the water, or liable to hang

dry, they are always carefully watched by the adult animal. On one occasion I repeatedly visited one every day for three weeks, and invariably found it guarded. The old fish would examine it on all sides, and then retire for a short time; but soon return to renew the examination. On several occasions I laid the eggs bare, by removing a portion of the nest, but when this was discovered, great exertions were instantly made to recover them. By the mouth of the fish the edges of the opening were again drawn together, and other portions torn from their attachments, and brought over the orifice till the ova were again hid from view. And as great force was sometimes necessary to effect this, the fish would force its snout into the nest as far as the eyes, and then jerk backwards till the object was effected. While thus engaged, it would suffer itself to be taken in the hand, but repelled any attack made on the nest, and quitted not its post so long as I remained. And to those nests that were left dry between tide-marks, the guarding fish always returned with the returning tide, nor did they quit the post to any great distance till again carried away by receding tide.

The next nest with which my rambles have brought me acquainted, is of a different character, showing considerably less skill in the fabrication, but more perseverance and continued energy. In the last-mentioned case, the nest was formed indiscriminately of various kinds of sea-weed, or the common coralline, whichever happened to grow on the spot selected. In the present case it is invariably formed of the common coralline put together without skill or arrangement.

This nest is to be found about low-water-mark, on rocky ground. It is formed of large quantities of the common coralline, forced into some cavity or crevice of a rock; and is maintained there by no other bond than that of compression. And as the coralline of which it is composed is sometimes not to be found within one or two hundred feet, it must be gradually gathered and brought from a distance, and as the quantity is large, it shows an intelligence and perseverance truly remarkable. But perhaps the most extraordinary part of it is to conceive how the materials can be so closely compacted by the force of any fish. The ova are small, being about the fifteenth of an inch in diameter, and of a semi-transparent yellow colour. They are not contained in a cavity like those of the stickleback, but are deposited irregularly throughout the mass, sometimes in clumps, and at others placed irregularly on the coralline. From the compact character of the nest, and the ova being found in all parts of its structure, it is evident that the eggs must be deposited while the nest is in pro-

cess of formation. Having preserved the ova, till the young had effected their escape, to detect the species of fish to which they belonged, judging from their shape and spotted appearance, they seemed to be the young of the rock-ling (*Motella vulgaris*). On this point, however, there is no certainty, as from the inaccessible places in which the nests are placed, they cannot be conveniently watched after the tide has flowed sufficiently to cover them; for they are always left dry, for a longer or shorter period, during the rise and fall of the tide.

The next to which I shall refer differs from both the preceding, and it may, perhaps, be doubted whether the term *nest* is strictly applicable to it, as the fish merely makes use of a natural cavity in the rock, in which the ova are deposited and remain adherent. But as it shows a deviation from what has been considered the usual mode of spawning in fish, it may be briefly noticed. The cavities selected are almost always nearer low than high-water mark; they have generally rather narrow openings, and the roofs are smooth, or at least not much broken by fissures. On the roofs and sides of such cavities the ova are deposited and thickly arranged; looking as if they were vaulted with a pavement of round stones. As the ova are of a beautiful and bright amber colour, with a highly-polished surface, they have a very brilliant appearance as the light falls upon them in their dark recess. They are semicircular in form, and about one-tenth of an inch in diameter. Having succeeded in hatching them, they prove to belong to the common shanny (*Blennius pholis*). This opinion of their character has been repeatedly confirmed, as it is the habit of this fish to retire beneath stones, or to crevices of the rock, during the recess of the tide, where they remain dry till the sea returns. By enlarging the openings of the cavities, I have generally succeeded in capturing the adult animal at the furthest part of the chamber, and on one occasion found it depositing the ova.

But fish vary a great deal in the modes of what may be called their incubation, as much as any other class of animals. Thus, some of the sharks produce their young alive, and in a state quite ready for active life, while others, with the rays, deposit eggs very similar, physiologically, to birds' eggs, which are known as mermaid's purses, being frequently to be found cast on shore on most beaches. Also, among the pipe fishes (*Syngnathi*) of our own seas, we have instances of marsupial fish, as perfect as the kangaroo is marsupial among quadrupeds. But the formation of nests and the watchful attention of fish over their young, which I have repeatedly seen, are unsuspected points of great beauty in their history, and give to them a higher de-

gree of intelligence and interest than we have been accustomed to award. But, from their living in the almost boundless ocean, and wandering where they cannot be observed by man, their habits and economy have been but slightly studied, and they have suffered in reputation accordingly. But those finer traits of character, which we are so much accustomed to admire in the higher animals, from their being constantly before our eyes, are not found wanting even among fish. And these would be better known and understood, if there were more out-door naturalists, and fewer book students, who, with the truth, propagate, instead of correcting the errors of their predecessors.

R. Q. COUCH.

Penzance.

Note on the preservation of colour in Dried Fishes. I observe, in the first volume of your Magazine (Zool. 193), a "Note on the preservation of Fish," but there is not one word about preserving fish in all the note. I have no doubt, if Mr. Kidd can prove that he is capable of keeping the colours of fish after being preserved, that he would get full employment, if he is a working man: if he is a gentleman, why not publish his method, so that your country readers (who cannot visit Van Voorst's establishment), may prove his principle for themselves? I am a fish fancier, and have had considerable practice, but have no pretensions to being able to keep their colours, nor have I ever fallen in with any person, either in England or Scotland (and I have had many opportunities), who could perfectly keep their colours. This ballan wrasse, and its congeners, are the most easy of all our British fish to keep in shape, and I consider that he must be a mere Tyro that cannot keep the generality of ordinary-sized fish in shape. There are many colours that are easier to keep than others, but the beautiful and delicate tints of the opah, and similar fishes, have never been preserved. As I consider that it would be a great desideratum filled up, I beg to call upon Mr. Kidd, or any other gentleman, to publish, in your valuable Magazine, their method of keeping colours, and I shall be most happy to make the experiment, and will publish the results. At the same time, will Mr. Kidd be kind enough to say if he has been successful with serpents. We are now able to keep their colours by preserving them in bottles, but I would prefer stuffing (which is the cheapest and easiest), if the colours could be as well kept.—*Henry Johnson*; 18, *Seal-street, Liverpool, October 15, 1844.*

Note on Fishes being infested by Insect Parasites. On the 10th of last July, a friend of mine who happened to be walking by the side of the reservoir which supplies the town of Manchester with water, observed a perch lying on its back, and struggling on the surface of the water. On taking it out, he found about a dozen insects attached to its head; these measured above the fifth of an inch in diameter, and were of a flat form, and a greenish colour. On opening the gills of the perch, he found them filled with other insects, similar in form, but of a smaller size. My friend has since observed a stickleback in the same state. Probably some of your entomological readers will be able to furnish the name of the parasite from these particulars, slight as they are, and thus oblige—*Thomas Webster*; 96, *Ormond-street, Chorlton-upon-Medlock, Manchester, October 30, 1844.*

Note on Abstinence in a Snail. In August, 1843, I brought home from Riddlesdown a specimen of that beautiful snail, *Helix hortensis*. Somehow it was laid by and forgotten until April, 1844, when it was placed in a window, where it soon crawled up a pane, and attached itself to the glass; here it remained exposed to the sun throughout the summer, and until October, when it was broken down by accident, and soon after died, after remaining fourteen months without food.—*H. T. Harding*: No. 1, *York-street, Church-street, Shoreditch, October 30, 1844.*

[Many very remarkable instances of this kind have been recorded by naturalists: in one instance the shells were supposed empty, and had for years been exhibited in the drawers of a museum.—*Edward Newman.*]

Note on capturing Moths with Sugar. I find, from reading your Note on capturing Moths with Sugar (Zool. 688), and also from several letters I have received, questioning me as to my success, that there are still a number of sceptics respecting that most useful plan. I hope the following observations will, in some degree, tend to dispel the doubts entertained by those who have not yet succeeded. Like many others who have since succeeded, I was disappointed at first; but disappointment in what I knew others practised to good purpose, only stimulated me to fresh endeavours, which were eventually crowned with success. I was told to take sugar, without regard to what sort, and I took what was in use in the house at the time, never for a moment supposing that it was at all requisite to take any particular sort. It was fine white sugar, a mixture of East India, made up to look as white as possible, for sale. On paying more attention to this, I found it had little or no smell, consequently, could not be very attractive to moths. I therefore got some from the lower side of a West India hogshead; it was very dark brown, and smelled very strong of rum: I then tried my experiment on a length of rails round a plantation, using first the fine sugar, next the same mixed with honey, and lastly, the dark brown, at distances of about twenty yards apart; the result was, on my return to the brown, I got one *Cerigo Cytherea*, and missed another specimen, which had not quite got settled to his supper. Retracing my steps, I found, on the brown sugar, and the houied sugar, six specimens of *Graphiphora baja*, three of *Xanthia flavago*, three of *Agrotis valligera*, two of *Actebia præcox*, five of *Agrotis cursoria*, besides a number of common *Noctuæ*, but I did not take a single specimen from the fine white sugar, though I could see numbers of moths flying past it. From observations made since then, I find, that though I have taken a few from fine sugar, they have invariably been common species; and the numbers on the brown have been five or six to one on the white. Hence, I presume that the reason so many have not succeeded, has been, that they have used sugar without any smell. Mild balmy nights are very good, but a calm night, and a mizzly rain (generally termed about here *Scotch mist*), are sure to repay any one who does not fear a wet jacket, or soiled boots.—*C. S. Gregson*; 60, *Mill-street, Toxteth Park, Liverpool, October 26, 1844.*

