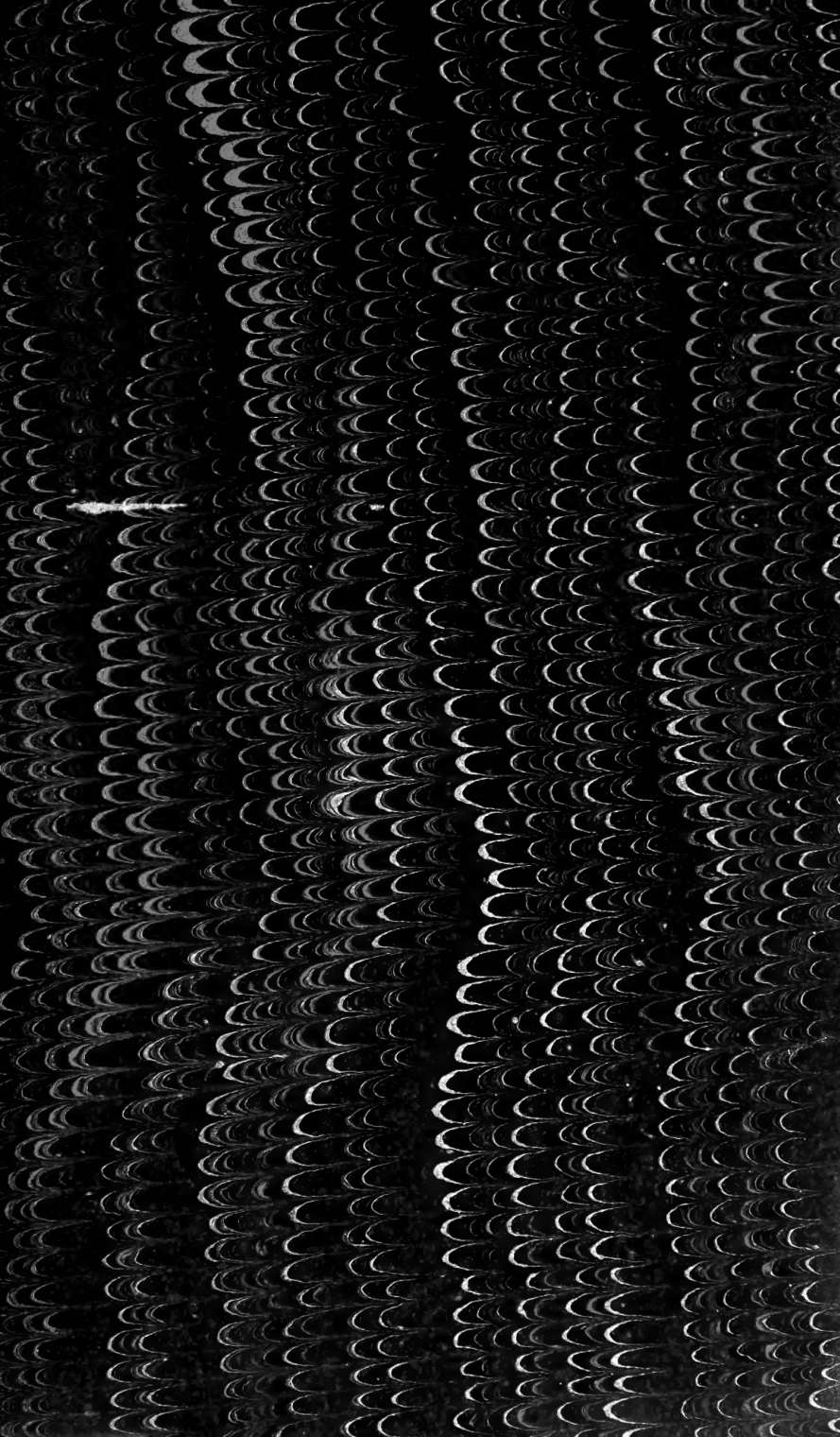


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EDITED BY

J. E. HARTING, F.L.S., F.Z.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

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P R E F A C E.

THE preparation of the Index to the volume for the closing year 1891 suggests many points for reflection, to some of which it may be well to refer.

And first, one cannot repress a feeling of sadness at the loss of those friends and contributors to zoological science who have been taken from amongst us during the past twelve months. We have had to deplore the death of such well-known scientists as the late Prof. Martin Duncan, Dr. P. H. Carpenter, and Prof. H. N. Moseley, and of such old and valued correspondents as the late Mr. Thomas Cornish and the Rev. T. H. Frere.

But although their names have dropped out from the list of living zoologists, the work which each has done in his own particular line (whether it be important original research, or the patient collection of observed facts) will live in the memory of fellow-workers, and in the annals of Zoology.

In other respects the past year for us has been calm and uneventful. From the numerous communications which continue to reach us from all quarters, it is evident that the study of Natural History has lost none of its charm, and we are glad to welcome every year the advent of fresh workers in the field of Zoology. The Editor trusts that in the year to come he may count upon the cordial support which has hitherto been accorded to him, while he on his part will endeavour still further to increase the utility of a Journal which for more than forty years past has been regarded as a storehouse for accumulating the results of the out-door observation of animals, and a medium of communication for field-naturalists. It has been hinted by friendly critics that the pages of 'The Zoologist' contain perhaps rather too much Ornithology to the exclusion of other branches of Zoology. But this only indicates the taste of a large number of contributors. Certainly if the Editor were

favoured with more papers on Mammals, Fishes, Reptiles, Mollusca, and Crustacea, they would be gratefully received, and much good would no doubt result if some of our contributors would occasionally turn their attention to other branches of Zoology than that with which they are most familiar. Remembering the old adage "*docendo discimus*," they would derive a new pleasure from the investigation of a new subject, and their researches might lead to the discovery of novel and perhaps important facts. And here a suggestion may be hazarded. During the past year the Editor has received a number of letters pointing out the inadequacy at the present day of Bell's 'British Quadrupeds' as a text-book (a fact of which he has long been cognizant), and urging the desirability of preparing something better. As a matter of fact, ever since 1874, when the second edition of Bell's work was published, the Editor has been engaged in collecting materials with a view to meet the demand which is now being made. These materials, however, are still far from complete, and although the number of British Mammals is comparatively limited, there are still many points upon which trustworthy statistics are wanting. For example, the period of gestation in certain species, their rate of growth, the average age which they attain, their weight, and measurements, taken from living or recently-killed specimens, their habits of migration and hibernation, the cause of variation in colour, of albinism, melanism, and so forth. On all these points there is still much to be ascertained, and those who can forward statistics will materially assist the preparation of such a new work as is now needed. There is no doubt that in the forty-eight volumes of 'The Zoologist' which have been published information is to be found on many of these points, but the want of a "General Index" makes the search for it extremely laborious. We have on former occasions called attention to this want, and we may again remind our readers that as the cost of preparing and printing a "General Index" would be considerable, it would not be expedient to undertake it unless every reader of 'The Zoologist' were to signify his or her willingness to take a copy of it when published. So long as there continues to be a hesitation to support the undertaking, so long, we fear, will a "General Index" remain unpublished.

Verbum sap.

CONTENTS.

ALPHABETICAL LIST OF CONTRIBUTORS.

APLIN, O. V., M.B.O.U.

Distribution in the British Islands of the Spotted Crake, 88; Autumn notes from the Norfolk coast, 144; Coloration of Pallas's Shrike, 187; Distribution of the Red-backed Shrike and Cirl Bunting, 190; Note on the Water Vole, 304; Immigration of Hawfinches, 367, 430; Polecat in Merionethshire, 392; Colour of iris in albino birds, 426

ARCHIBALD, CHARLES F.

Squacco Heron in Wales, 471

AUSTEN, C. E.

A new locality for *Lacerta viridis*, 156

BACKHOUSE, J.

On *Lanius excubitor* and *L. major*, 310; Winter notes from Corsica, 371

BARRETT-HAMILTON, G. E. H.

On the identity and distribution of the Irish Rat, 1; Melanism in mammals and the Irish Rat, 59; Leaping powers of the Irish Hare, 60; Great flight of small birds to the westward, 107; Ornithological notes from Co. Wexford, 170; Introduction of the Magpie into Ireland, 247; Sibbald's Rorqual on the Irish coast, 306

BARING, ALEX. H.

Tufted Duck nesting in Hants, 357

BARRINGTON, R. M., LL.D., F.L.S.

Rare additions to the Irish avifauna, 186; Wren in Iceland, 349

BELL, Rev. CHARLES D.

Breeding of the Syrian and White-eared Bulbuls in confinement, 355

BELT, ANTHONY

Water Rail in Middlesex, 66

BUTLER, A. G., F.L.S., F.Z.S.

Nesting of Blue Robin in confinement, 154; Song of Redwing, 352; Hybrid Finches at Crystal Palace Bird Show, 353; House Martin as a cage bird, 397

BUTRESS, L.

Little Auk in Notts, 194; Polecat in Notts, 424; Manx Shearwater inland in Notts, 428

BUXTON, E. N.

Homing instinct of *Hyla arborea*, 221

CLARKE, A. L.

Rare birds in Gloucestershire, 195

CLARKE, W. EAGLE, F.L.S.

On the identity and distribution of the Irish Rat, 1; Melanism in mammals and the Irish Rat, 59; Daubenton's Bat near Edinburgh, 214; Daubenton's Bat in Yorkshire, 395

CLARKE, W. J.

Red-necked Grebes at Scarborough, 193; Spotted Crake at Scarborough, 275; Supposed occurrence of Kentish Plover at Scarborough, 397; White-tailed Eagle at Scarborough, 470; Spotted Crake at Scarborough, 473

COBURN, F.

Grey-headed Wagtail in Warwickshire and Worcestershire, 111; Rose-coloured Pastor in Warwickshire, 112; Oared Shrew in Staffordshire, 185

COCKS, A. H., M.A., F.Z.S.

Alleged antipathy of cattle to Deer, 34; Smews in Bucks and Oxon, 153; Destruction of Kingfishers, 154; Habits of the Polecat, 344

COLLIDGE, W. E.

A sinistral variety of *Helix hortensis*, 399

- CORBIN, G. B.**
Deer and other animals eating yew, 151; Landrail in Hampshire in winter, 188; Red-necked Phalarope in Hants, 191; Colour of iris in albino birds, 426
- CORDEAUX, JOHN**
Lines of migration, 103; Great Grey Shrike at Spurn, 154; Birds of Heligoland, 216; Birds of Greenland, 241; Icterine Warbler in Holderness, 309; Reminiscences of the Kite in Lincolnshire, 313; Variety of the Common Heron, 316; Icterine Warbler nesting at Heligoland, 354; Rare British birds in the Humber district, 362; Spring migration in the Humber district, 409; A white Porpoise, 425; Inland occurrence of the Manx Shearwater, 467
- CORNISH, T. H.**
Ray's Bream near Penzance, 35; Large catches of Mullet and Mackerel on the Cornish coast, 195
- CROUCH, WALTER**
Common Rorqual on the Essex coast, 214; Sibbald's Rorqual on the Irish coast, 215; Bottle-nosed Whales in the Thames, 347
- DICKINS, F. V.**
Japanese treatise on Falconry, 161
- DOUGLASS, G. NORMAN**
Herpetology of the Grand Duchy of Baden, 13, 53, 158, 179, 255, 338, 380
- DOWKER, GEORGE**
Noctule and Serotine Bats in Kent, 305; Serotine in Kent, 424
- D'URBAN, W. S. M., F.L.S.**
Ornithological notes from Devon, 110; Hawfinch breeding in Devonshire, 272
- DYE, B.**
Notes from Great Yarmouth, 316
- EASTWOOD, G. H.**
Common Buzzard in Surrey, 63
Curious resting-place for Kingfisher, 116
- ELLIOTT, J. S.**
Osprey in Warwickshire, 116
- ELLISON, REV. ALLAN**
Migration of birds at night, 429; Unusual nesting of the Chiffchaff, 470
- EVANS, H. A.**
Marsh Harrier in N. Devon, 62
- FEILDEN, Col. H. W., F.G.S.**
Addition to the Avifauna of the Faroe Islands, 66; Scops Owl in Norfolk, 315; Dispersal of oak-trees by Wild Duck, 350; Manx Shearwater in N. Norfolk, 428
- FINN, FRANK**
Zygodactylism in non-zygodactyle birds, 357
- FITZGERALD, C.**
Hibernation of Squirrels, 466
- FITZGERALD, H. PUREFOY**
Animals eating yew, 186
- GATES, ARTHUR F.**
Grey Phalarope in Essex, 116
- GOLDSMITH, H. ST. B.**
Bittern in Somersetshire, 166; Notes from Somerset, 189
- GORDON, Rev. H. D., M.A.**
Goosander in W. Sussex, 117; Montagu's Harrier breeding in Sussex, 310; Notes from W. Sussex, 472
- GURNEY, J. H., F.L.S., F.Z.S.**
Melanism of the Water Rail, 67; Ornithological notes from Norfolk, 136; Greater Shearwater and Dipper in Kent, 274; Red-breasted Flycatcher at Scarborough, 471
- HAIGH, G. W. CATON**
Lapland Bunting in Lincolnshire, 217
- HAMLING, J. G.**
Eared Grebe, Smew, and Bittern in N. Devon, 67
- HARPER, R. P.**
Bernacle Goose near Scarborough, 68
- HART, EDWARD, F.Z.S.**
Notes from Christchurch, Hants, 471
- HART, H. CHICHESTER, B.A., F.L.S.**
Natterer's Bat in Co. Donegal, 271; Notes on the birds of Donegal, 297, 334, 377, 421, 459
- HARTING, J. E., F.L.S., F.Z.S.**
Death of Mr. Thomas Cornish, of Penzance, 33; Bonaparte's Gull in Cornwall, 35; Death of the Rev. H. T. Frere, 59; Occurrence of the Blackcap in winter, 61; Great flight of small birds to the westward, 63; Wolves in France, 102; The recent visitation of Bustards, 103; Photographs of Sand Grouse, 188; The former

- value of Sea Gulls in Sussex, 194; The Serotine, 201; Large Trout in the Thames, 221; Locusts in India and Egypt, 221; Memoir of the late Dr. P. Martin Duncan, 269; Wood Warbler in the Midlands, 271; Habits of the Emu as observed in confinement, 272; Development of fishes, 275; The Polecat, 281; The Marten in Co. Down, 304; The Fox, 322; Nesting of Pallas's Sand Grouse in captivity in Denmark, 351; The Diamond-back Moth, 359; Insects injurious to farm crops, 359; The British Marten, 401, 450; The venom of the Toad, 430; Nesting habits of the Ringed Plover, 447
- HEAD, F.**
Winter notes from Shoreham, 226
- HORN, W. J.**
Unusual nesting-place for a Magpie, 353
- INGRAM, WILLIAM**
Colour of iris in albino birds, 426
- JENKINSON, J. H.**
Lesser Kestrel in Scilly, 153
- JOHNSON, F. P.**
Hybernation of Squirrels, 152
- KELSALL, Rev. J. E.**
Serotine Bat in Hampshire and Cornwall, 395
- KENNAWAY, L. M.**
Nesting habits of the Magpie, 430
- KERR, R. N.**
Dipper nesting in March, 317
- KERRY, F.**
Pied Flycatcher near Harwich, 112; Ornithological notes from Harwich, 115; Short-eared Owls in Essex in May, 315; Dimensions and weight of Glaucous Gull, 354
- KNIGHT, F. A.**
Long-tailed Duck on the coast of Somerset, 66; Spotted Crake in Somersetshire, 117
- LARKEN, E. P.**
Variety of the Bullfinch, 190; Average length of Viper, 275; Little Auk inland, 397
- LATHY, P. T.**
Black Redstart in Hants, 194
- LAVER, HENRY, F.R.C.S., F.L.S.**
Wildfowl in Essex, 66; Notes from Essex, 116; Capture of a Spotted Eagle near Colchester, 470
- LILFORD, Rt. Hon. Lord, F.L.S., Z.S.**
Notes on the Ornithology of Northamptonshire, 41; Polecat in Northamptonshire, 342
- LISTER, ARTHUR**
Hybernating Squirrels, 61; Dartford Warbler in Dorset, 117
- LOCKHART, J. G.**
Habits of the Moose in the far north of British America, 206
- MACAULEY, T.**
Scaup in Leicestershire, 66; Common Skua in Leicestershire, 117
- MACPHERSON, ARTHUR H., B.A.**
Hybrid Finches at the Crystal Palace Bird Show, 188; Black Guillemot in breeding plumage in February, 194; Polecat in Oxfordshire, 424
- MACPHERSON, Rev. H. A., M.A.**
On the Great Grey Shrike, 96, 189; Fishes of Northumberland and Durham, 195; Polecat in Wales and Cumberland, 342; Colours of adult female Golden Oriole, 466
- MACRADISH, RANDOLPH**
Measurements of a Golden Eagle's nest, 354
- MALCOM, G. H.**
American Red-breasted Snipe in Argyleshire, 427
- MARSDEN, H. W.**
Blackcap in Gloucestershire in mid-winter, 193
- MASEFIELD, JOHN R. B.**
Hybernation of Squirrels, 100
- MASON, PHILIP B., F.L.S.**
Hybernation of Squirrels, 151
- MATHEW, Rev. M. A., M.A., F.L.S.**
The great frost in the South-West, 102; Distribution of the Lesser Whitethroat in the South-West of England, 273
- MORE, A. G., F.L.S., F.Z.S., F.R.S.E.**
Lesser Kestrel in Ireland, 152; Irish localities for Natterer's Bat, 304
- MORLEY, JOHN**
Manx Shearwater near Malton, 396
- MUSGRAVE, GEORGE A.**
Albino Ring Ouzel, 116
- NELSON, T. H.**
Comparative scarcity of the Bernacle Goose, 193; Notes from Sussex, 219; Ornithological notes from Redcar, 249
- NICHOLL, DIGBY S. W., F.L.S., F.Z.S.**
Bittern in Glamorganshire, 116

- NICHOLSON, FRANK**
Wild Swans in the Isle of Man, 218
- OGILVIE, MENTEITH**
On the habits of the Stone Curlew or Thick-knee, 441
- OLDHAM, CHARLES**
Lyme Park herd of Wild White Cattle, 38
- PALMER, J. E.**
Breeding the Woodcock in Ireland, 191
- PATTERSON, A.**
Notes from Great Yarmouth, 316
- PATTERSON, ROBERT**
Notes from North of Ireland, 183;
Wilson's Petrel in Co. Down, 427;
Roller in Co. Antrim, 430; Fork-tailed Petrels in North of Ireland, 468
- PHILLIPS, E. CAMBRIDGE, F.L.S.**
Welsh names of birds of prey, 173
- PIDSLEY, WM. E. H.**
Wildfowl in Devon during the winter of 1890-91, 217; Lesser Whitethroat in Devon, 309; Egyptian Goose in Devon, 317
- PILLEY, J. B.**
Nesting of the Magpie and Carrion Crow, 351
- PRENTIS, W.**
Wild Duck removing her eggs, 396
- PUREFOY, W. B.**
Dartford Warbler in winter, 215
- RAEBURN, HAROLD**
Reported Wild Cat in Shetland, 60;
Birds of Papa Stour, with an account of the Lyra Skerry, 126;
Wren of Shetland, 349
- READ, ROBERT H.**
Lesser Whitethroat in Somersetshire, 354
- RODD, FRANCIS R.**
Noctule in Cornwall, 347
- ROPE, G. T.**
Natural-History notes from East Suffolk, 165; Long-tailed Field Mouse swimming, 185; Supposed occurrence of the Barbastelle in Suffolk, 347
- SAUNDERS, HOWARD, F.Z.S.**
Supposed occurrence of Orphean Warbler in Devon, 272
- SCLATER, P. L., F.Z.S.**
Australian mole-like Marsupial, *Notoryctes typhlops*, 393
- SCULLY, REGINALD W.**
New locality for *Geomalacus maculosus*, 35
- SEEBOHM, HENRY**
Turdus migratorius in the British Islands, 219; A comparative list of the birds of Heligoland and those of the British Islands, 261; Common Wren of the Shetland Islands, 294
- SERVICE, ROBERT**
Strange roosting-place for Swallows, 352
- SICH, ALFRED**
Hawfinch in Middlesex, 471
- SMITH, Rev. ALFRED CHARLES, M.A.**
Blackcap in Wiltshire in mid-winter, 106
- SOUTHWELL, T., F.Z.S.**
King Duck at Hunstanton, 67;
Notes on the Seal and Whale Fishery of 1890, 121; White-beaked Dolphin, 395; Broad-billed Sandpiper in Norfolk, 396; Opah on the Norfolk coast, 431
- STEWART, D. H. STUART**
Teal breeding in Bedfordshire, 358
- STOTT, C. E.**
Destruction of Kingfishers, 194;
Animals eating yew, 214
- STUBBS, Rev. MAURICE**
Lesser Whitethroat in Devon, 309
- SWAINSON, Capt. E. A.**
Ornithological notes from Wales, 108; Cirl Bunting in Cardiganshire, 353; Garden Warbler, Lesser Whitethroat, and Lesser Redpoll in South Wales, 355
- TUCK, Rev. JULIAN G., M.A.**
Swans in Suffolk, 191; Interbreeding of the Pied and White Wagtails, 314
- TUCK, W. H.**
Mortality of small birds during the recent frost, 113
- TYE, E.**
Spotted Crake in Staffordshire, 117
- USSHER, RICHARD J.**
Pomatorhine Skua in Co. Mayo, 62; Great flight of small birds to the westward, 106; Crossbills breeding in Co. Waterford, 218; Crossbills and Siskins breeding in Co. Waterford, 311
- VERRALL, S. H.**
Blackcap in Sussex in winter, 216;
Colour of iris in albino birds, 426
- WAITE, EDGAR R.**
Albino Twites in Ireland, 317
- WALKER, Rev. F. A., D.D.**
Polecat in Cambridgeshire, 392

WARREN, ROBERT

Wildfowling in the Estuary of the Moy, 9; Pomatorhine Skua in Co. Mayo, 62; Ornithological notes from Mayo, 210

WEIR, J. JENNER, F.L.S., F.Z.S.

Hybrid Finches at the Crystal Palace Bird Show, 274; Colour of iris in albino birds, 358

WHITAKER, J., F.Z.S.

Red-throated Diver and other birds in Notts, 216; Variety of the Wild Duck, 217; Unusual nesting-place for a Magpie, 309; Redwings singing in April, 313; Tufted Ducks nesting in Notts, 472; Wildfowl on Rainworth Water, Notts, 472

WHITLOCK, F. B.

Notes on the birds of Leicestershire, 21; On lines of migration, 179; Wood Warbler and White Wagtails in the Midlands, 313; Manx Shearwater inland, 468

WILLIAMS, EDWARD

Sabine's Snipe in Ireland, 112; Parrot Crossbill in Ireland, 112; American Bittern in Co. Kildare, 218; Golden Oriole in Co. Galway, 318; Wilson's Petrel in Co. Fermanagh, 428; Fork-tailed Petrel in Ireland, 469

WITCHELL, CHAS. A.

Evolution of bird-song, 216; Song of the Redwing, 398

ALPHABETICAL LIST OF SUBJECTS.

Albino Ring Ouzel, 116; Twites in Ireland, 317; birds, colour of iris, 358, 426

Avifauna, of Færoe Islands, addition, 66; Irish, rare additions, 186

Bat, Barbastelle, supposed occurrence in Suffolk, 347; Daubenton's, near Edinburgh, 214,—in Yorkshire, 395; Natterer's, in Co. Donegal, 271,—Irish localities, 304; Noctule, in Cornwall, 347,—Kent, 305; Serotine (Plate I.), 201,—in Cornwall, 395,—Hampshire, 395,—Kent, 305, 424

Bird-song, evolution of, 216

Birds, of Leicestershire, 21; small, great flight to westward, 63, 106, 107,—mortality, during recent frost, 102, 113; albino, Ring Ouzel, 116,—Twites, in Ireland, 317,—colour of iris, 358, 426; of Papa Stour, with account of Lyre Skerry, 126; rare, in Gloucestershire, 195; of prey, Welsh names, 173; of Heligoland, 216,—and British Islands, comparative list, 261; of Greenland, 241; of Donegal, notes on, 297, 334, 377, 421, 459; non-zygodactyle, zygodactylism in, 357; rare British, in Humber district, 361; spring migration, in Humber district, 409; at Kissingen, 415; of Devonshire, new work on, 425; migration, at night, 429

Bittern, in N. Devon, 67,—Glamorganshire, 116,—Somersetshire, 116; American, in Co. Kildare, 218

Blackcap, in winter, 61,—in Sussex, 216; in mid-winter, in Gloucestershire, 193,—Wiltshire, 106

BOOKS REVIEWED:—

The River-side Naturalist; Notes on the various forms of Life met with either in, on, or by the water, or in its immediate vicinity, by Edward Hamilton, 72

The Birds of Norfolk, with remarks on their habits, migration, and local distribution, by Henry Stevenson, continued by Thomas Southwell, 76

The Natural History of Selborne, edited by C. Davies, 79

Wild Life on a Tidal Water; the Adventures of a House-boat and her Crew, by P. H. Emerson, 225

The Birds of Sussex, by William Borrer, 227

The Birds of Devonshire, by Wm. E. H. Pidsley, 232

Bibliothèque Scientifique Contemporaine:—(1) La Géographie Zoologique, par le Dr. E. L. Trouessart; (2) Les Facultés Mentales des Animaux, par le Dr. Foveau de Courmelles; (3) Les Huitres et les Mollusques Comes-

- tibles, par Arnould Locard; (4) Les Sociétés chez les Animaux, par le Dr. Paul Girod; (5) L'Évolution des Formes Animales avant l'apparition de l'homme, par Fernand Priem, 236
- An Introduction to the Study of Mammals, Living and Extinct, by W. H. Flower and R. Lydekker, 433
- A Vertebrate Fauna of the Orkney Islands, by T. E. Buckley and J. A. Harvie Brown, 435
- An approved Treatise of Hawkes and Hawking, by Edmund Bert, with an Introduction by J. E. Harting, 436
- An Introduction to the Study of British Birds; explaining the distinction between many allied species, by Rev. H. A. Macpherson, 437
- A Catalogue of Local Lists of British Birds, arranged under Counties, by Miller Christy, 438
- A List of the Birds of Worcestershire, and the adjoining Counties, by J. W. Willis Bund, 439
- A Briefly Annotated List of the Birds of Hampshire and the Isle of Wight, by Rev. J. E. Kelsall, 440
- Fremde Eier im Nest; ein Beitrag zur Biologie der Vögel, von Paul Leverkühn, 440
- Bream, Ray's, near Penzance, 35
- Breeding of Woodcock in Ireland, 191; of Crossbill in Co. Waterford, 218, 311; of Hawfinch in Devonshire, 272; of Montagu's Harrier in Sussex, 310; of Siskins in Co. Waterford, 311; of Pallas's Sand Grouse in captivity in Denmark, 351; of Syrian and White-eared Bulbuls in confinement, 355; of Teal in Bedfordshire, 358
- Bulbuls, Syrian and White-eared, breeding in confinement, 355
- Bullfinch, variety, 190
- Bunting, Cirl, destruction of, 190,—in Cardiganshire, 353; Lapland, in Lincolnshire, 217
- Bustards, recent visitation of, 103
- Buzzard, Common, in Surrey, 63
- Cat, Wild, reported in Shetland, 60
- Cattle, alleged antipathy to Deer, 34
- Chiffchaff, unusual nesting, 470
- Cornish, Thomas, death of, 38
- Crake, Spotted, distribution in British Islands, 88,—at Scarborough, 275, 473,—in Somersetshire, 117,—Staffordshire, 117
- Crossbill, breeding in Co. Waterford, 218, 311; Parrot, in Ireland, 112
- Crow, Carrion, nesting, 351
- Curlew, Stone (or Thick-knee), habits (with illustration), 441
- Deer, alleged antipathy of Cattle to, 34; and other animals, eating yew, 151, 186, 214
- Dipper, in Kent, 274,—nesting in March, 317
- Diver, Red-throated, and other birds in Notts, 216
- Dolphin, White-beaked, 395
- Dove, Turtle, hybrid, 113
- Duck, King, at Hunstanton, 67; Long-tailed, on coast of Somerset, 66; Tufted, in Notts, 315,—Hants, 357; Wild, dispersal of oak trees by, 350,—removing her eggs, 396,—variety, 217
- Duncan, Dr. Martin, memoir, 269
- Eagle, Golden, measurement of a nest, 353; Spotted, near Colchester, 470; White-tailed, at Scarborough, 470
- Eggs, blue, of Nightingale, 427
- Emu, habits, as observed in confinement, 272
- Evolution of bird-song, 216
- Falconry, Japanese treatise on, 161
- Farm crops, insects injurious to, 359
- Finches, hybrid, at Crystal Palace Bird Show, 188, 274, 352
- Fishes of Northumberland and Durham, 195; development of, 275
- Flycatcher, Pied, near Harwich, 112; Red-breasted, at Scarborough, 471
- Fox (Plate II.), 321
- Frere, Rev. H. T., death of, 59
- Geomalacus maculosus, new locality, 35
- Goosander in West Sussex, 117
- Goose, Bernacle, near Scarborough, 68,—comparative scarcity, 193; Egyptian, in Devon, 393
- Grebe, Eared, in N. Devon, 67; Red-necked, at Scarborough, 193
- Grouse, Pallas's Sand, photographs, 188,—breeding in captivity in Denmark, 351
- Guillemot, Black, in breeding plumage in February, 194
- Gulls, Bonaparte's, in Cornwall, 35; Glaucous, dimensions and weight, 355; Sea, former value of in Sussex, 194

- Habits, of Moose in the far north of British America, 206; of Emu as observed in confinement, 272; of Polecat, 344; of Stone Curlew (or Thick-knee), 441; nesting, of Magpie, 430; of Ringed Plover, 447
- Hare, Irish, leaping powers, 60
- Harrier, Marsh, in N. Devon, 62; Montagu's, breeding in Sussex, 310
- Hawfinch, breeding in Devonshire, 272,—immigration, 367, 430,—in Middlesex, 471
- Helix hortensis, sinistral variety, 399
- Heron, Common, variety of, 316; Squacco, in Wales, 471
- Herpetology of the Grand Duchy of Baden, 13, 53, 138, 179, 255, 338, 380
- Hybernation of Squirrels, 61, 100, 151, 152, 466
- Hybrid Finches at Crystal Palace Bird Show, 188, 274, 352; Turtle Dove, 113
- Hyla arborea, homing instinct, 221
- Immigration of Hawfinch, 430
- Insects injurious to farm crops, 359
- Iris, colour in albino birds, 358
- Jamrach, Mr. Charles, death of, 391
- Kestrel, Lesser, in Ireland, 152,—at Scilly, 153
- Kingfisher, curious resting place for, 116; destruction of, 154, 194
- Kite, in Lincolnshire, reminiscences of, 313
- Lacerta viridis, new locality, 156
- Landrail, in Hampshire in winter, 188
- Lanius excubitor and L. major, 310
- Locusts in India and Egypt, 221
- Mackerel, large catches, on Cornish coast, 195
- Magpie, introduction into Ireland, 247,—unusual nesting-place for, 309, 353,—nesting of, 351, 430
- Mammals, melanism in, 59
- Marten, British (Plate IV.), 401, 450,—in Co. Down, 304
- Martin, House, as a cage-bird, 397
- Melanism in mammals and Irish Rat, 59; of Water Rail, 67
- Migration, lines of, 103, 153, 176; spring, in Humber district, 409; of birds at night, 429
- Moose, habits, in the far north of British America, 206
- Moth, Diamond-back, 359
- Mouse, Long-tailed, swimming, 185
- Mullet, large catches on Cornish coast, 195
- Nesting of Blue Robin in confinement, 154; of Dipper in March, 317; of Carrion Crow, 351; of Magpie, 351, 353, 430; of Pallas's Sand Grouse in captivity in Denmark, 351; of Swallow, 352; of Tufted Duck in Hants, 357; of Ringed Plover, 447; unusual, of Chiffchaff, 470
- Nightingale, blue eggs of, 427
- Notes, on Seal and Whale fishery, 121; ornithological, from Corsica, 371,—Christchurch, Hants, 471,—Devon, 110,—Essex, 116,—Harwich, 115,—North of Ireland, 183,—Co. Mayo, 210,—Norfolk, 136, 144,—Northamptonshire, 41,—Redcar, 242,—Shoreham, 220,—Somerset, 189,—Sussex, 219, 472,—Wales, 108,—Co. Wexford, 170,—Great Yarmouth, 316; natural history, from E. Suffolk, 165
- Notoryctes typhlops, the Australian Mole-like Marsupial, 393
- Opah on the Norfolk coast, 431
- Oriole, Golden, in Co. Galway, 318,—colours of adult female, 466
- Ornithological notes (see "Notes")
- Osprey in Warwickshire, 116
- Ouzel, Ring, in Ireland, in winter, 67,—albino, 116
- Owl, Scops, in Norfolk, 315; Short-eared, in Essex in May, 315
- Pastor, Rose-coloured, in Warwickshire, 112
- Petrel, Fork-tailed, in Ireland, 468, 469; Wilson's, in Co. Down, 427,—Co. Fermanagh, 428
- Phalarope, Grey, in Essex, 116; Red-breasted, in Hants, 191
- Plover, Kentish, supposed occurrence at Scarborough, 397; Ringed, nesting habits (with illustration), 447
- Polecat (Plate III.), 281, 342, 344, 392, 424,—habits, 344
- Porpoise, White, 425
- Rail, Water, in Middlesex, 66;—melanism, 67
- Rat, Irish, identity and distribution, 1; melanism, 59
- Redpoll, Lesser, in South Wales, 355
- Redstart, Black, in Hants, 194
- Redwing, singing in April, 313,—song of, 352, 398
- Robin, Blue, nesting in confinement, 154
- Roller, in Co. Antrim, 430

- Rorqual, Common, on east coast, 214; Sibbald's, on the Irish coast, 215, 306
- Sandpiper, Broad-billed, in Norfolk, 396
- Scaup, in Leicestershire, 66
- Seal and Whale fishery of 1890, notes on, 121
- Shearwater, Greater, in Kent, 274
Manx, near Malton, 396,—in North Norfolk, 428,—Notts, 428,—inland occurrence, 467, 468
- Shrew, Oared, in Staffordshire, 185
- Shrike, Great Grey, 96, 139,—at Spurn, 154; Pallas's, coloration, 187; Red-backed, distribution, 190
- SOCIETIES, SCIENTIFIC:—
- Entomological, 39, 71, 119, 159, 199, 224, 280, 319, 360, 399, 431, 475
- Linnean, 36, 68, 117, 156, 196, 222, 276, 318, 473
- Zoological, 37, 69, 118, 158, 197, 223, 278, 474
- Squirrels, hibernation of, 61, 100, 151, 152, 466
- Swallow, strange nesting-place for, 352
- Swans in Suffolk, 192; Wild, in Isle of Man, 218
- Teal, breeding in Bedfordshire, 358
- Toad, venom of, 430
- Trout, large, in Thames, 221
- Turdus migratorius in British Islands, 219
- Twite, albino, in Ireland, 317
- Variety, of Bullfinch, 190; of Wild Duck, 217; of Common Heron, 316; sinistral, of *Helix hortensis*, 399
- Viper, average length of, 276
- Vole, Water, note on, 304
- Wagtail, Grey-headed, in Warwickshire and Worcestershire, 111; Pied and White interbreeding, 314
- Warbler, Dartford, in Dorset, 117,—in winter, 215; Garden, in South Wales, 355; Icterine, in Holderness, 308,—nesting in Heligoland, 364; Orphean, supposed occurrence in Devon, 272; Wood, in Midlands, 271, 313
- Whale, Bottle-nosed, in the Thames, 347
- Whitethroat, Lesser, in Devon, 309,—Somersetshire, 354,—South Wales, 355,—distribution in S.W. England, 273
- Wild Cat, reported, in Shetland, 60
- Wild White Cattle, herd of, at Lyme Park, 81
- Wildfowl in Devon during winter of 1890-1, 217,—in Essex, 66,—on Rainworth Water, Notts, 472
- Wildfowling in Estuary of the Moy, 9
- Woodcock, breeding in Ireland, 191
- Wolves in France, 102
- Wren, Common, of the Shetland Islands, 294, 349; of Iceland, 349

LIST OF PLATES.

	To face Page
I. THE SEROTINE BAT, <i>Vesperugo serotinus</i>	202
II. THE FOX, <i>Vulpes vulgaris</i>	321
III. THE POLECAT, <i>Mustela putorius</i>	281
IV. THE BRITISH MARTEN, <i>Martes sylvatica</i>	401

ADDITIONAL ILLUSTRATIONS.

Eggs of the Stone Curlew	444
Eggs of the Ringed Plover	448

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ON THE IDENTITY AND DISTRIBUTION OF THE IRISH RAT, *MUS HIBERNICUS*, THOMPSON.

BY WM. EAGLE CLARKE & GERALD E. H. BARRETT-HAMILTON.

SOME amount of uncertainty, or of misapprehension, appears to have always enshrouded the Rat described by Wm. Thompson (Proc. Zool. Soc. 1837, pp. 52, 53), as the Irish Rat, *Mus hibernicus*. The present contribution gives the results of investigations undertaken with a view to the solution of this little problem.

From Thompson's time to the year 1888 no practical attention appears to have been paid to this animal by zoologists; at least, no information based upon an examination of specimens has, we believe, been contributed to a further knowledge of it. On the other hand, the several naturalists who have had occasion to refer to *M. hibernicus* have ventured opinions as regards its identity which are irreconcilable with the facts.

In the course of this enquiry we have examined no less than fifty-six specimens, of which forty were received in the flesh. As the result of this investigation, based as it is upon an ample supply of material, we are able to declare, without qualification, our conviction that *Mus hibernicus* is a melanistic form of *Mus decumanus*. Though only common in Ireland, less so in the Outer Hebrides, and apparently unknown elsewhere in Britain, there is no reason for regarding it as a distinct species.* For

* De Selys Longchamps, in the Appendix to his 'Etudes de Micro-mammalogie' (1839), states that, if the colour of the fur is constant, and if

ZOOLOGIST.—JAN. 1891.

the sake convenience, we shall allude to it as *Mus hibernicus* in this communication.

We cannot understand why *Mus hibernicus* has been confounded or associated with *Mus rattus*. In no respect does it possess any of the characters of that species, which it can only be said to resemble in colour. It has also been thought to be a hybrid between *Mus decumanus* and *Mus rattus*, while Mr. T. Southwell, of Norwich (Trans. Norfolk and Norwich Nat. Hist. Soc. ii. pp. 419—421; Zool. 1889, pp. 321—323), has suggested that certain rats, which he was inclined to regard as examples of *Mus hibernicus*, were hybrids between *Mus decumanus* and *Mus alexandrinus*. We can only say, with respect to these opinions, that *not one* of the fifty-six examples of *Mus hibernicus* which have been examined by us was found to possess, in the smallest degree, any of the peculiar characters of either *Mus rattus* or *Mus alexandrinus*. All the specimens of *Mus hibernicus* which have come under our notice have been characterised by the possession of (1) a tail decidedly shorter than the head and body, (2) comparatively small ears, and (3) cranial characters agreeing entirely with those of *Mus decumanus*.

Where, then, are the peculiarities which have caused this form to be associated with *Mus rattus* and *Mus alexandrinus*. Both these species have (1) the tail decidedly longer than the head and body, (2) the ears comparatively large, considerably larger than in *M. decumanus*, and (3) the cranial peculiarities markedly different from those of *M. decumanus*. If *M. hibernicus* is related to either of these forms, should it not be the possessor, to a greater or lesser degree, of some of their important and characteristic peculiarities? Yet it has absolutely none of them.

Thompson's original description of *Mus hibernicus* is an accurate one; but it is necessary to add that the examination of a much larger series of specimens than came under his observation makes it certain that the white patch on the breast is possessed only by a comparatively small number of individuals; of the fifty-six specimens we have received thirteen only possessed this peculiarity. Thompson undoubtedly attached much im-

the difference in the length of the ears between *Mus hibernicus* and *Mus rattus* is not due to the way in which the type-specimen has been prepared, he should be inclined to admit it as a species.

portance to this white breast-spot; but it is needless to say that, beyond being an interesting fact, this peculiarity possesses no real value.

This patch of white is borne upon the breast and between the fore limbs. It varies much in size and shape, and is mostly unsymmetrical, being more developed to the right or left of the median line of the breast, as the case may be. In some it takes the form of a narrow stripe extending backwards towards the abdomen, and is an inch or more in length. In others it is a spot, or a somewhat triangular and irregularly shaped patch. One specimen examined in April, 1890, had three spots on the breast and between the fore-legs arranged thus:—O O O. But, as above remarked, beyond being an interesting fact, this peculiarity possesses no specific value; on the other hand, similarly marked examples of *M. decumanus* are unknown to us, though we have come across some curiously marked specimens of that species, in which the head and legs were flecked with white. As Messrs. Thompson's and Eagle Clarke's descriptions have already been reproduced in 'The Zoologist' (1889, pp. 201—206), it is not thought necessary to repeat or modify them here.

The following tabulation gives the dimensions of several individuals selected to show the variation to which mature specimens of *Mus hibernicus* are subject:—

	♂	♂	♂	♀	♀	♀
	In.	In.	In.	In.	In.	In.
Length of head and body	8·4	9·5	10·0	8·25	9·0	10·20
„ head	2·0	2·3	2·6	2·0	2·15	2·2
„ tail	7·4	7·7	7·10	7·7	6·1	8·5
„ ears	0·75	0·9	1·1	0·75	0·9	0·9
„ fore-feet and claw ...	0·8	0·85	1·0	0·75	0·8	0·8
„ hind-feet and claw...	1·6	1·8	1·9	1·7	1·58	1·75

The heaviest male weighed $17\frac{1}{2}$ oz. The largest female, a splendid specimen, had been gutted before it was received, and hence no weight could be taken.

Regarding the cranial characters, we find that there are two well-marked types of skull represented in our British rats. The most conspicuous difference between these types lies in the interparietal, parietal, and squamosal bones, and the zygomatic arches. To put it in a general way, in *Mus rattus* and *Mus*

alexandrinus the cranium is broad and arched; while in *Mus decumanus* and *Mus hibernicus* the cranium is straight and depressed.

These differences are well and accurately shown in the accompanying figures (p. 5), for which we are much indebted to the skilful pencil of our friend Mr. Herbert Goodchild, of Edinburgh.

The characters of these two types of cranium are expressed and compared in the following tabulated form:—

	MUS RATTUS AND MUS ALEXANDRINUS.	MUS DECUMANUS AND MUS HIBERNICUS.
Interparietals .	{ For difference of shape, see Figure	{ For difference in shape, see Figure.
Parietals	{ Convex; broad between the lateral ridges	{ Flat; narrow between the lateral ridges, which are closer to each other than in <i>Mus rattus</i> and <i>Mus alexandrinus</i> .
Squamosals ...	{ The anterior temporal mar- gins of these bones, and the anterior margins of the parietals, are in the same line.....	{ The anterior temporal mar- gins are considerably in advance of the anterior margins of the parietals.
Zygomata	{ More expanded than in <i>Mus rattus</i> and <i>Mus alex- andrinus</i> .
Nasal region...	{ Tapers somewhat conspic- uously, as compared with <i>Mus decumanus</i> and <i>Mus hibernicus</i> .	

It is perhaps not improbable that *Mus decumanus* and *Mus hibernicus* interbreed, but we have no evidence that such is the case; nor can the fact that parti-coloured specimens appear, so far as we have been able to ascertain, to be most uncommon, be urged in proof that such unions do not take place. That evidence of such a nature is perhaps not to be expected, we may refer to the experiments of J. von Fischer (Zool. Garten, 1869, p. 341), who attempted to breed a variegated form of *M. musculus* by pairing grey with white specimens, but without success, the young always being either uniform grey or uniform white. M. De L'Isle's elaborate experiments on the inter-breeding of *Mus rattus* and *Mus alexandrinus* (Ann. Sci. Nat. iv., Zoologie) also prove that parti-coloured specimens are of extreme rarity.

We know, however, of one parti-coloured rat,* but whether it was the offspring of a cross between *Mus decumanus* and *Mus hibernicus* it is impossible to say. In this specimen, which was trapped at Kilmanock, the predominating colour was brown, with the shoulders and tail black, while a black line extended the whole length of and along the median line of the back. To add to its singular appearance the head was marked with white.

In two nests of young rats which were found in the winter of 1889-90 it is interesting to note that all the young were black. One of these nests contained five young. The haunts frequented by *M. hibernicus* are precisely similar to those of its brown brother. We have had specimens from dwelling-houses, from the upper storey of a granary, from the banks of a pond, and from rabbits' burrows.

FIG 1.

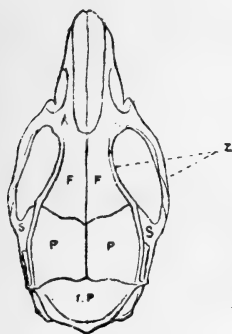


FIG 2

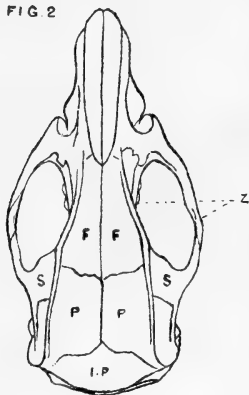


Fig. 1. Skull of *Mus rattus* and *M. alexandrinus*. Fig. 2. Skull of *Mus decumanus* and *M. hibernicus*. Seen from above and from behind. F = Frontals. P = Parietals. I-P = Interparietals. S = Squamosals. Z = Zygomata.

No difference has been detected in the habits of the two forms. They are frequently found in the same hole; and young of both kinds have been seen playing together. Mr. Gibbon,

* Described in 'The Zoologist' for 1889, p. 142.

who sent us specimens from the Saltee Islands, off the Wexford coast, remarks that they live there with the Brown Rats, and do not appear to interfere with each other.

Perhaps the most interesting, as well as the most singular, feature in the history of *Mus hibernicus* is its peculiar and limited geographical distribution. It is not rare, and is very widely distributed in Ireland. Out of that country, the only known localities for Britain in which it occurs are in the Outer Hebrides, where it has long been known to the inhabitants, and whence we have examined three specimens. It would appear to be quite unknown on the mainland of Britain, where all our endeavours to procure specimens have failed, though we should certainly not be surprised to find that a melanism of so common a creature as the Brown Rat should now and then occur. It seems certain, however, that such varieties are very far from common. On the Continent of Europe the only instance of the occurrence of black varieties of *Mus decumanus* known to us is the one recorded by A. Milne-Edwards (Ann. Sci. Nat. 1871, xv. art. 7) for Paris, where, in 1871, it had been known for twenty years in the Menagerie of the Museum, and is described as abundant and increasing in numbers.

The somewhat common and general occurrence of this melanic form in the circumscribed areas indicated should, it is thought, afford some help towards the solution of the interesting, but as yet unexplained, phenomenon of melanism. In this connection, it may not be considered out of place to allude to another melanic form, Sabine's Snipe, which has occurred in Ireland, we believe, much more frequently than elsewhere; thus out of about thirty recorded examples, one appears as a continental specimen, one is from Scotland, about ten from England, while no less than about eighteen are credited to Ireland.

Considerable trouble has been taken to investigate the distribution of *Mus hibernicus* in Ireland, and communications have been received on the subject from almost every county. Further investigation is, however, still needed. This we hope to undertake, and, should it prove successful, it may form the subject of a future communication. Though a careful record has been kept of all the localities from which positive evidence of the existence of these Black Rats has been received, it has been thought

that the whole list would be too long for insertion here in its entirety, and that a condensed summary would be sufficient. Negative evidence has been considered of little value, as it is thought that the presence of *Mus hibernicus* in a district or locality has been frequently overlooked. Indeed, both positive and negative evidence has sometimes been received from the same locality.

Positive evidence (in some cases of more or less doubtful value) has been received of the presence of Black Rats in seventeen Irish counties. These, with the exception of the Queen's County, are all situated on or near the coast, but chiefly on the eastern side of the island. Some reputed localities are, however, in the extreme west: thus all Ireland, except the most central parts, is included in the list of localities. It has been found that those counties (such as Armagh, Antrim, and Wexford) which have been most closely examined, have produced the most successful results, although they are situated in widely separated parts of Ireland. It is our belief that, when all Ireland has been as carefully examined, *Mus hibernicus* will be found to exist in varying abundance, though, perhaps, locally, all over the island. The localities from which specimens have been received, either by Thompson or by ourselves, are twenty in number, and are distributed over the following counties:—Antrim (2), Armagh (2), Carlow (2), Dublin (2), Kilkenny (1), and Wexford (11). These counties all lie on the east coast of Ireland, and were an attempt made to estimate the distribution of *Mus hibernicus* from them alone, we should have to conclude that the animal is confined to the extreme east. Yet an examination of the evidence received from the west coast (which is unfortunately of too great length to be given here) shows that its presence there is at all events extremely probable. It is likely that head-quarters of the Black Rat in Ireland are now in Carlow, in one part of which (Fenagh) it is said even to equal the Brown Rat in numbers. But its abundance appears to vary very considerably in different localities, and even in the same locality at different times. Thus at Ballyhyland (Wexford) it was common in 1872, after which it became scarce, and disappeared altogether after 1878, from which date no Black Rats were observed until August, 1889, when a specimen was trapped and forwarded to us by Mr. C. B. Moffat. At Fenagh (Carlow), on the contrary, it

is said that Black Rats "seem to have increased much lately." In our opinion *Mus hibernicus** is not decreasing in Ireland, as a whole, though it is possible that in single localities it may sometimes become extinct or lost sight of. Wherever it has *once* occurred, *there*, we think, it will probably always be found, though, as has been shown, its numbers may vary considerably.

The following note, by the Rev. P. A. Keatinge, of Athlone, appeared in 'The Field' in 1883. It gives a very good account of a peculiar and, as yet, unexplained phenomenon in the history of the Irish Black Rat:—

"BLACK RAT IN CO. WEXFORD.—During a short visit to Co. Wexford, early last October, I was informed that a large colony of Black Rats had suddenly put in an appearance in that county.† I repaired with a friend to the locality, with no small degree of curiosity. We quietly entered a field of oaten stubble, in which some stacks of corn were yet standing. About fifteen yards from these stacks ran a dyke separating the field from the adjoining farm. In this dyke, which was regularly honeycombed with them, the strange visitors had taken up their abode. In less than an hour I counted over forty of them running out and in from burrow to stubble. Where they came from so suddenly, and in such numbers, is a mystery to me, as I have been intimately acquainted with the place for over thirty years, and a Black Rat was never heard of in the locality; in fact, the country folk viewed them with serious apprehension of some pending calamity. I secured two with the gun, and am having the skins dressed for a tobacco-pouch, as the fur is remarkably soft and silky."

We cannot, at present, offer any explanation of the above phenomenon; but we may state that similar occurrences have been reported from other localities.

In conclusion, we must offer our hearty thanks to all those whose names are mentioned as having assisted us in this enquiry, as well as to many others who have taken considerable trouble to help us, and whose names are too numerous to mention. We must therefore content ourselves with expressing our obligation to them collectively.

It is hoped that this paper will stimulate Irish naturalists to study such an interesting, yet neglected, creature as *Mus hibernicus*. We shall always be most happy to receive com-

* Owing to a confusion with *Mus rattus*, *Mus hibernicus* is often described as a decreasing species in Ireland.

† In the parish of Dennistown.

munications, or to answer any questions which may be put to us, on the subject.

The following is a list of the localities from which specimens have been received, with the names of those who have kindly procured them:—

ANTRIM.—Coggrey Mills and Carrickfergus (Thompson).

ARMAGH.—Loughgall; Mr. E. Williams. Tynan Abbey; Messrs. R. L. Patterson and R. L. Praeger.

CARLOW.—Fenagh; Mr. D. R. Pack Beresford. Borris; Mr. A. A. May.

DUBLIN.—Dame Street; Mr. E. Williams. A specimen labelled "Dublin" is in the Museum of Science and Art: donor, Mr. J. S. Trevor.

KILKENNY.—Waterford; Mr. Fennessy. Ferrybank; Dr. R. J. Burkitt.

WEXFORD.—Alderton; Miss L. S. Glascott. Arthurstown; G. E. H. B.-H. Ballyhyland; Mr. C. B. Moffat. Cahore; Mr. W. Potter. Dennistown; Rev. P. A. Keatinge. Kilmanock; G. E. H. B.-H. New Ross; Mr. A. Shanahan. Rosegarland; G. E. H. B.-H. Rosslare; Mr. E. A. Gibbon. Saltee Island (Lesser); Mr. E. A. Gibbon. Stokestown; Mr. C. F. Dean Drake.

WILDFOWLING IN THE ESTUARY OF THE MOY.

By ROBERT WARREN.

WIGEON appeared here this season in much larger numbers than usual, and at least a month earlier than the regular time for the main flight to arrive in the Estuary. A few generally show themselves in September (probably birds bred in Scotland); but it is not until the middle or end of November, most frequently the latter time, that the great body of Wigeon arrive in this locality. Last season very few were seen until the last week in November, when the great flight appeared; while this year large numbers arrived by the 20th October, and I think by the 28th all the Wigeon had arrived for the season.

Golden Plover arrived in very large numbers, more so than for some years past. A very large stand of 500 or 600 birds frequented the banks of the Sligo side of the Estuary, a part of the sands they had deserted for several years past; while on the Moy side the stands of Golden Plover haunting the Moyne and Bartragh sands were larger than I have observed there for many years. From other parts of the country I have had similar accounts of the unusually large number of both Lapwings and

Golden Plover met with. Snipe also are said to be more numerous than usual this season.

A few notes of my first two days' punt-shooting this season may interest some of your readers, as showing the variety of birds met with, as well as some of the successes and disappointments of the wildfowl shooter, and the hardships that have occasionally to be undergone.

On the 28th October I launched my punt, and having got everything on board, I pushed off from the shore for Bartragh, and observing some birds about half-a-mile away, I took them to be Mergansers, from seeing some of them diving; however, on approaching nearer, the Mergansers made off, leaving twenty ducks behind them, which my glass showed to be Pintails. These swam into the bank, some walking up on it, and began pluming themselves, while others remained in the water, but all so scattered and far asunder that they offered no prospect of a good shot when within range. I had no choice but to fire at those nearest, and knocked over five birds, but secured only four, an old female and two young ones, and a young male just showing a few grey feathers on the thighs. My shot disturbed a large number of Lapwings and a large stand of 500 or 600 Golden Plover, and these after a time pitched far in on the sand-bank, quite out of shot from the water. Seeing there was no chance of getting at the Plover, I continued my way down the channel to Bartragh. When turning round a bend of the channel I saw from behind a point of sand a number of heads stretched up watching, and on getting a little nearer, I found they were a lot of Mergansers (about fifty), resting after their morning's fishing; some were on the bank, while others were in the water, playing about, the old males chasing each other, and performing all sorts of odd-looking antics, such as only Mergansers can go on with. Not caring to fire at such worthless birds, I passed on to the stony flat on the Scurmore side of the channel, where I saw about 150 Wigeon feeding amongst the stones. On hearing some Curlew screaming an alarm, they all rose and pitched in the water outside the flat, but shortly after returned to feed, scattering in all directions so widely over the flats that they offered such a poor mark for a shot that, when I brought up the punt and fired at those nearest, I knocked down only eight birds. Four of these so effectually hid themselves in the long sea-weed on the stones before I landed

that I was unable to find them, and had to content myself with only four birds as the produce of my shot. Having loaded, and feeling very much disgusted at my poor luck, I landed at Bartragh to wait for the turn of the tide to return. While thus waiting, I observed that a large company of Wigeon had come in from the bay, and were swimming into the bank before the "Big Rock," so, dressing the punt with wrack, I paddled down to them, easily getting within shot of about a dozen that were feeding along the shore, but unfortunately there was a short sea knocked up by the flood-tide, which caused the punt to be so unsteady that I fired over them as she was raised by a sea just as I pulled the trigger, and the consequence was that I only got a brace of Wigeon.

Thus unsuccessful with the Wigeon, I returned up channel with the flood-tide, intending to try my luck with the Plover when the rising tide would crowd them upon the bank, and float the punt within shot. On reaching the bank where the Plover were, I found that they were far out of shot on the highest part of the bank, while a large number of Lapwings were resting along the edge of it, some standing in the water, but all too scattered to be worth firing at; and for half-an-hour I waited, paddling nearly all round the bank, trying from various positions to find the Lapwings well placed for a shot. Several times I was on the point of firing, but waited in the hope of their crowding nearer together; at the same time the Golden Plover were very restless, frequently shifting their ground, but still never crossing near the edge of the bank, and in the end, long before the bank was covered, they and the Lapwings left the sands for the fields, without my obtaining a shot, although I had waited so long.

On the 30th I went out again, my destination being the Moyne channel and Killala pool, and as that part of the Estuary was seldom disturbed, I expected to get some shots if the birds were there. On my way down the channel to Bartragh I observed the large stand of Golden Plover and a very large number of Lapwings flying about, waiting for the banks to uncover, and also several bunches of Wigeon, but none within shot; so in order to save the tide for crossing the flats between Bartragh and Moyne, I hurried on, not waiting to try for the Wigeon. In the upper part of the Moyne channel I saw a dozen of Wigeon (but did not get a shot, for they were too scattered), and an immense flock of Curlew and Godwits; and further down the channel opposite the

Abbey, about a dozen Wigeon were resting on the side of the bank; they were very unsuspecting, and, letting me come up within shot, I killed four of them dead. The report of the gun disturbed the Golden Plover on the Bartragh sands, and two very large stands were soon circling overhead, but did not come within shot, but again pitched on the bank far out of range. After loading I went further down the channel, and near the ballast-heaps I found four Wigeon feeding between the heaps; but although I got within forty yards, and waited for some time, I did not fire, because I was never able to get the four together, and did not think it worth firing at a pair. A short distance down I saw a few more, but, like the others, they kept too scattered; so I passed them, and then saw a Red-throated Diver and a pair of Slavonian Grebes diving in the channel. I followed the latter birds for some time, trying to get both together for a shot; but unfortunately whenever I brought up the punt within shot, they always separated, swimming far asunder, though keeping close together when out of range. I followed them with the same bad luck until I got opposite the Sand-eel Bank, and there, on the other side of the channel, I saw fifteen or twenty feeding along the edge of the water, and, paddling on to them, I found them very wild, not allowing me to get within shot; so turning the punt, I was just going again after the Grebes, when I saw a number of Wigeon resting on the point of sand in the pool below the Sand-eel Bank, and until then concealed from view by the bend of the channel; so at once, leaving the Grebes, I crossed over, paddling down to them, but found that, owing to some birds in the water, I was unable to fire at the thickest part of the flock, but was obliged to take those next me, knocking down seventeen birds, but securing only fifteen; two cripples escaped by hiding in the bent-grass on the sand-hills.

The wind then rising with the flowing tide, I turned for home, having a very hard pull of five miles before me against a head-wind, and although I had a chance of a very good shot at a large flock of Godwits, I was unable to take it, owing to the rough water. When passing the point of Goose Island I disturbed a Purple Sandpiper, but could not attempt to shoot it, for it was all I could do to make way against the rising wind and high seas, and, by the time I landed, was pretty well tired out; for working a punt with a small blade-paddle against a head-wind is much more fatiguing than rowing with a pair of ordinary sculls.

ON THE HERPETOLOGY OF THE GRAND DUCHY OF BADEN.

BY G. NORMAN DOUGLASS.

THIS part of Germany is now quite familiar to Englishmen, and it will suffice, for the purpose of these introductory remarks, briefly to glance over its physical features, to the influence of which its exceptional variety of organic life is in great measure due. The Black Forest, forming the back-bone of the country, comprises—within a limited area—considerable diversity of aspect; thus the Southern and Western Slopes, skirting the Rhine valley, are reckoned amongst the warmest parts of Germany, while, as we ascend its inclines, we find ourselves in districts of an almost Alpine character or on exposed table-lands, such as that constituting the watershed of the Danube and the rivers flowing westwards.

The surface of this region is similarly more diversified than its name might lead us to suppose, and the extensive fir forests, relieved here and there by rocky eminences or stretches of moorland and lakes, and intersected by numberless rivulets, are most productive in variety of specific forms. This circumstance strikes the observer more readily than their actual individual abundance, and can be explained by the fact that many strictly lowland forms, following up the sheltered valleys, are found in surroundings no longer adapted to their habits and occupied already by other, often allied or representative, species.

The more monotonous Rhine valley contrasts unfavourably in point of natural scenery with the mountainous tracts, though this portion of the country equally is not devoid of attractions for the naturalist, as it supports some highly interesting types of animal life. An almost continuous and luxuriant growth of wood, interspersed by small sheets of water in connection with the Rhine, covers the humid soil on both banks of that river, and it is much to be regretted that both here, as elsewhere, the relentless advance of civilization, under various disguises, has perceptibly reduced the numbers of several species, and threatens eventually to exterminate entire orders.

Between the above-mentioned belt of vegetation and the Schwarzwald proper, its northern less elevated prolongations,

and a portion of the Odenwald in the extreme north, is situated the alluvial Rhine plain, containing the most populous and highly cultivated districts.

As regards the geological constitution of the Grand Duchy, which has attracted the attention of several eminent writers, little need here be said, as its effects, direct or indirect, upon the organisms distributed over the surface, are easily over-rated, and indeed, in the case of the higher animals, almost *nil*. It will therefore be sufficient to notice that the more hilly portions of the country are composed chiefly of gneiss and granite, with occasional porphyritic formations superimposed, and that among sedimentary rocks the Trias predominates, being represented by large beds of Bunter sandstone (identical with that of the Vosges) and Muschelkalk; while of particular interest, as affecting also in some degree the distribution of certain species, may be mentioned:—the re-appearance of the oolite as a continuation of the Swiss Jura, pierced by the Danube in its upper course; the occurrence of pleistocene Loess or fluviatile loam, in portions of the Rhine valley; some noteworthy tertiary deposits in the South-east; and, lastly, the elevations of phonolite, dolerite, and other volcanic material of the Höhgau (north of Schaffhausen), the Kaiserstuhl (between Freiburg and the Rhine), and one or two isolated points.

Such contrasts of temperature and marked diversity of surface and soil may justly be expected to favour the preservation of the rarer indigenous species, while the geographical position of the country has afforded the necessary facilities for the immigration, from various points and by various sources, of foreign ones; and it is to the influence of these factors that we may attribute the richness, in almost all its branches, of the native organic world.

Referring exclusively to reptiles and amphibians, we find that Baden lays claim to nearly all the German species of the former now recognised, one Chelonian and one Ophidian only being absent from the list. Whereas in this instance we have reason to apprehend that the number may never be augmented, there is some prospect that of the two anurous batrachians, with the presence of which this country is as yet not credited, one or the other may still be discovered. Of tailed batrachians only one sub-alpine form can be cited, to which it is not entitled.

Yet, notwithstanding these apparent inducements, the number of those who have published observations on this branch of Natural History is relatively insignificant, even when compared with that of their collaborators of the neighbouring provinces; so much so, that the author who first, in 1883, sketched a brief outline of the entire native Fauna, is able to enumerate only two previous papers as dealing with these classes. In the two pages devoted to Herpetology of the treatise above referred to, an accurate, though not very detailed, account of the habitat of each species, so far as was then possible, is given; but since that time the study of this science has progressed with rapid strides, and, as is usually the case, some of the most valuable contributions to a general knowledge are found scattered throughout various works.

The following notes—founded mostly on observations which terminated with the earlier half of 1889—may perhaps induce others visiting this part of Germany to take up the same subject, and I may here premise that much still remains to be cleared up, as there is an astounding dearth of information respecting, for instance, the range of some of the more nocturnal and restricted batrachia, whose economy can be investigated successfully only at certain seasons of the year, as well as of those species which have only of late been added to the Fauna of Europe.

I have refrained from entering into descriptions of typical forms such as will be found in all systematic works, but have ventured to discuss more fully some of the phenomena of coloration, in the hope that this enquiry may merit the notice of other observers who have hitherto confined their remarks to the more descriptive side of the subject.

REPTILIA.—Order I. CHELONIA.

1. *Emys lutaria*, Mars.—Any specimens obtained in the Grand Duchy within recent times have doubtless not been of wild origin, and it may be added that equally little importance can be attached to the accounts of its occurrence in other parts of South Germany, such as in the neighbourhood of Kreuznach and various parts in Bavaria, &c.,—reports which have generally been founded on the capture of single individuals, escaped or purposely liberated. In Switzerland, also, its occurrence in a wild condition seems very doubtful, though F. v. Tschudi notes the capture of several in the valley of the Reuss, “which did

not appear to be specimens that had escaped": others, from the Rhone valley, Lake of Geneva, and elsewhere, are now considered to have been introduced (Fatio). Not so in Northern Germany, where this species is found in Mecklenburg, Brandenburg, Posen, Eastern Prussia; further, in Courland,—though not in Livonia,*—and even as far as the vicinities of Moscow.

Hence we may suppose that its hardy constitution would have been proof against all the climatal vicissitudes of the regions (Upper and Lower Austria, South Germany, North and Central France) situated between the above-mentioned northern limits and the Mediterranean countries, Dalmatia, Italy, South France, to which it is again indigenous. Fossiliferous remains testify to its former more extended and connected range; and its present apparent extirpation in the intervening territorial zone referred to may be attributed in some degree to an extreme structural inflexibility.

Order II. SAURIA.—I. Fam. LACERTIDÆ.

1. *Lacerta viridis*, Laur.—The range of this lizard is restricted in Baden to apparently two points, one of which, the Isteiner Klotz,—a hill lying between Freiburg and Bâle, and near the Rhine,—is frequently referred to. It appears to be rarer there now than formerly.† The other locality is the Kaiserstuhl already mentioned, where it is found in considerable numbers, affecting chiefly the central portions and the warm slope towards the Rhine (in greatest abundance on the so-called "Badberg," and near the ruined castle of Limburg), whilst, so far as my experience goes, it avoids the southern and eastern districts, where its place is occupied by a particularly fine race of *L. agilis*.

Specimens from here often attain 30 to 35 centimètres in length, and are usually of the *punctata*, Daud., variety, the female retaining more of the green ground-colour. The young of both sexes, at first characterized by a uniform brownish tint, generally assume with advancing years a tendency to *maculata*, Dugès,—Fatio's var. "tachée ou marbrée,—which develops later into the *punctata* of the adults, this process being carried furthest in the male. Sometimes this tendency fails to assert itself, in which case the

* See O. v. Lewis, 'Reptilien Kur-Liv-und Esthlands.' 1884.

† F. Müller, 'Verhandlungen der Naturforsch. Gesellschaft zu Basel.'

adults are of the bright green colour,—var. *concolor*, Dugès,—common, it appears, with German specimens from other localities, though I have found this form scarce on the Kaiserstuhl. Both the young and adult females often exhibit traces of the *bilineata*, Daud.

The immigration of this species into the country has evidently taken place by way of the Jura and Bâle, and its present sporadic distribution throughout South Germany can be ascribed to its well-known sensibility to cold and damp, and has not resulted from a supposed predilection for any particular soil. The Kaiserstuhl is covered to a large extent with the alluvial Loess, and I have been informed of the occurrence of *L. viridis* on tracts of this and loamy ground in other districts; but it appears highly probable that the Sand Lizard, which thrives exceptionally well on this soil, has been the cause of these statements. Prof. Leydig observed that *L. agilis* preferred the Keuper to the Muschelkalk, and in the Northern Palatinate the Wall Lizard is often conspicuous by its absence on metamorphic rocks, while abundant everywhere on the red sandstone; still, in spite of this and other negative evidence, I should hesitate in imputing any importance to this factor in the case of *L. viridis*.

Its distribution in other parts of Germany is now pretty accurately determined. It is found chiefly along the Rhine (at Bingen, Rudesheim, St. Goar, Loreley, &c.), and its western tributaries, the Nahe and Moselle; as also on the Danube near the point where it enters Austria. In the Haardt mountains of the Bavarian Palatinate, where an excellent authority (Dr. Noll) reports its occurrence, I have failed to detect any traces, nor have I been more successful in the course of my excursions into other parts of that country, and must certainly agree with Medicus* as to its extreme rarity there. Through the kindness of Mr. Basserman, of Deidesheim, I received a fine male *punctata* from that locality, which settles the question formerly raised as to its occurrence at this—again apparently isolated—point. He informs me that it is found in some numbers at two places near the town,—the “Königsbacher Wald” and the “Waldberg.”

Several writers testify to the existence of this species near

* ‘Thiere der Rheinpfalz,’ 1867.

Worms; hence I must consider my not meeting with it there as accidental: at Oberstein, on the river Nahe, celebrated for its agate industry, it was likewise not to be seen. This latter fact may help to support Mr. Geisen-Heyner's* supposition that it does not ascend the river beyond Münster.

The *L. viridis* of the Kaiserstuhl, though frequently of a bluish tinge about the head and neck, is not of the true "*mento-cærulea*" (Bonap.) variety, as it is found in parts of the Tyrol, Italy, &c. With typical individuals of this variety the lateral and anterior portions of the head, as well as the lower jaw, are often of a vivid green colour, whereas with specimens from the Kaiserstuhl it is precisely these parts which display the most intense blue, the throat itself being seldom thus marked. It may therefore be assumed that the latter are tending to attain this feature characteristic of the true *mento-cærulea*, though as yet they have not arrived at its typical development; and I should regard the green colour above referred to as the latest modification in this line of ornamentation, thus, that the blue has gradually concentrated itself on the throat, and that the head, by way of additional contrast, has re-assumed the original green colour.

Similar instances, illustrating a sort of reciprocal convertibility of the colours blue and green, when employed for mere "decorative" purposes, are exhibited by some forms of *L. muralis*—compare var. *cæruleo-ocellata*: *viridi-ocellata*—and other reptiles; sometimes the blue seems to have the priority, acquiring only by degrees an iridescent greenish lustre, which in its turn may become so permanent as to efface the original blue; in other cases the latter colour appears of more recent origin. It is noticeable that the same colours alternate in an analogous manner with some birds.

Even comparatively young individuals from the Kaiserstuhl are thus marked, a circumstance which no doubt favours the transmission of this character from the male to the female. There seems to be no difficulty in assuming such a transmission to have taken place, in view of the fact that many secondary sexual characters peculiar to the one are often inherited by both sexes, and more readily if they occur at an early age; and in the instance of colour, which is most easily modified and transmitted, many ornaments confined to the male

* 'Wirbeltierfauna von Kreuznach,' 1888.

tend to reappear in the female, sometimes with the curious phenomenon of a greater or less change in tint, consequent doubtless on physiological causes. The *mento-cærulea* variety is certainly a local fashion, so to speak, and it deserves notice that the distinguishing blue patch on the throat is in many localities of the most ephemeral nature; in others it is retained long after the honeymoon, and in some again the lizards are perpetually thus coloured.* Finally, this feature is not rarely confined to the male, but elsewhere equally conspicuous in both sexes (see de Bedriaga, 'Beitrag zur Kenntniss der Lacertidenfamilie,' p. 67).

Hence the unstable character of these periodical variations in colour does not preclude the possibility of their becoming fixed under certain conditions, and it may conversely be urged that many now permanent tints may have been at a former period more or less short lived.

In this category can be placed the blue of the Faraglione Lizard and other analogous varieties, to which I hope to recur later, merely noting here that the throat of the male is again the most brilliantly coloured portion of the body, that of the female being much less vivid; but in neither case does the blue appearance of the lizards entirely vanish during the summer and autumn, whereas the blue tinge occasionally suffused over the body of the common Wall Lizard is most volatile.

L. vivipara and *agilis* offer similar examples of blue colouring, during the pairing season, on the throat and lower surfaces, some Russian forms of the latter having, according to Bedriaga, a mark on the throat analogous to that of *L. viridis mento-cærulea*.

As the intensity of brilliant colours is generally considered to diminish if light be excluded, the behaviour of some specimens of *L. agilis*, which I had occasion to forward a day's journey to Prof. Leydig, may be worthy of notice to illustrate that the reverse sometimes takes place. He writes:—"On opening the box several of the males were of a light green, almost phosphor-

* In parts of Southern Italy I was surprised to find that *L. viridis* exhibited, even in the height of spring, no signs of blue colouring about the head; whilst with others captured near Lake Como the blue was hardly diminished in intensity even in autumn. (The Dalmatian *viridis*—var. *major*, Boul.—is entirely devoid of this peculiarity.)

escent, colouring all over (including the head and extremities), which soon, however, disappeared on their being set in a terrarium, and gave place to the usual green colour." He connects this with a similar change in the colour of *L. viridis* recorded by Vallisnieri, and referred to in Prof. Leydig's work on the German Saurians, p. 166. Other instances of a like nature—due in all cases to the action of the chromatophores—have been observed with the Batrachia, and with the m all variations of colour, whether seasonal or otherwise, are more rapidly produced and effaced.*

The term local, as applied to many forms of this species, is a little misleading, only a few being characteristic of distinct localities, though they certainly do not all occur promiscuously. Passing the whole series of varieties in review, we find that the main types change as we proceed from west to east; in the former the ocellated, in the latter the longitudinally striated varieties are more prevalent.

On the Kaiserstuhl, *L. viridis* was pairing about the middle of April or later, the males in slight numerical preponderance, and I have found the eggs as early as the latter part of June, once or twice under stones, a fact which perhaps indicates (as others have already observed) that the female had carried them there for safety.

The "voice" of *L. viridis* consists in a hissing or rasping sound, which appears to be by no means common to all individuals, and I noticed that the few of this species and of *L. agilis* which possessed this peculiarity were males. The power of emitting sounds appears more general with the *viridis* of Trieste (Prof. Landois, cited by Eimer): according to the last-named naturalist, *L. muralis cærulea* is equally capable of producing them.

In the instances which have come under my notice an examination failed to reveal any catarrhal symptoms, such as those which seem to affect some individuals of *L. muralis* when subject to sudden changes of climate. A pathological condition similar to this last is described by J. J. Tschudi in the case of *L. agilis*, but with this notable difference, that here the lizards were found in this state, and infected two others with which they were afterwards confined.

* Leydig, 'Uber das Blau,' &c., 1889.

NOTES ON THE BIRDS OF LEICESTERSHIRE.

BY F. B. WHITLOCK.

As the whole of my life has been spent either in Leicestershire itself, or immediately on its borders, in the neighbouring county of Notts, it was with feelings of no small interest that I commenced the perusal of Mr. Browne's work on the 'Vertebrate Fauna of Leicester and Rutland.' My special subject is Ornithology, and, though I possess some knowledge of the other Vertebrates of Leicestershire, I leave the criticism of the remaining portions of Mr. Browne's work to more competent critics.

With South Leicestershire my acquaintance is slight; the district I am familiar with is conveniently included in that portion of the county politically known as Loughborough or Mid-Leicestershire division. As this portion includes Charnwood Forest and the major portion of the Soar Valley, and also so much of the Trent Valley as lies in the north of the county, I think I am justified in saying that it includes all the prominent physical features to be found in Leicestershire.

It is to be regretted that Mr. Browne did not think it well to preface his remarks with a description of the general features of the country covered by his work. To do so now would occupy too much space, so I will content myself with the barest outline.

Leicestershire is an eminently agricultural county, and possesses but few areas of any great extent that remain in their virgin state. The most striking feature is the range of hills and woodlands known as Charnwood Forest; but, like many other so-called forests, the greater part is under cultivation.

At the present day Charnwood Forest consists of a hilly and well-wooded district lying in the north-west of Leicestershire, some ten miles in length by about six in breadth. The hills at Bardon and the Beacon reach the height of 850 feet and 700 feet respectively. The most prominent woods are—Buddon Wood, near Quorn, and the Out woods near Loughborough, whilst spinneys and woods of smaller areas are numerous. Lying within the area roughly known as the Forest are the deer-parks of Bradgate and Garendon, both of considerable extent, and containing fine old timber. In the smaller park of Beaumanor

are to be found exceptionally fine oaks. The two sheets of water known as the Old Forest Reservoir, near Thringstone, and the reservoir for supplying the town of Loughborough with water, should not escape notice, though the latter locality is but poorly patronised by wildfowl.

The River Soar—a sluggish stream of no great volume, and to-day sadly polluted—takes its rise from the Warwickshire border, and, roughly speaking, flows through the centre of the county until it falls into the Trent at Redhill. The country in the Soar Valley is principally pastoral; arable land in the Loughborough neighbourhood, and down to the Notts boundary, being almost entirely absent. This is owing to the liability of the land to sudden floods, consequent on the increased drainage of the higher grounds. These floods are more prevalent in the spring than at other times. Along the course of the Soar are many flour-mills, most of them accompanied by a backwater and a weir: such spots are patronised to a certain extent by waterfowl, but the best cover is afforded by the numerous osier-beds lying along the whole course of the river.

Coal is worked at Whitwick and the immediate neighbourhood. Slates are quarried to a small extent on Charnwood Forest, whilst extensive granite quarries exist at Mountsorrel, Sheepshed, Markfield, and other places. Barrow-on-Soar possesses large lime-works. Otherwise the surface of the land is not much disturbed.

The rest of Leicestershire may roughly be said to be undulatory, many of the hills being crowned by small woods and copses. There are large woods at Belvoir and Belton, and smaller ones in other parts, such as Diseworth and Castle Donington; a well-timbered park runs down to the Trent at the latter locality. Sheets of water are few and far between, and mostly owe their origin to the exigencies of water supply for the neighbouring towns.

A glance at Mr. Browne's map will show the county boundaries, but I must call particular attention to that portion formed by the course of the Trent in the north of the county. It is well known that the Trent Valley is extensively used as a fly line by birds arriving on our east coast and journeying towards the Bristol Channel, and other haunts of wildfowl on our S.W. coasts. It is much to be regretted that Mr. Browne's notes are so sparse

which relate to such species as the Dunlin, Redshank, Green-shank, Whimbrel, Curlew, Lapwing, Grey Plover, Ringed Plover, besides numerous Ducks, Gulls, and Terns which use this route, with great regularity.

It will no doubt strike the reader that Mr. Browne's book is largely compiled, as he states in his Preface, from the MSS. of the late James Harley, covering a period from 1840 to 1855. His other correspondents appear to reside either in the south of the county or in the east, so that for a period of thirty-five years he has no notes relating to the district with which I am most acquainted. Mr. Browne's own notes appear mainly to refer to the country immediately round Leicester, where his time must be largely taken up by the duties which occupy him as Curator to the Leicester Museum.

I think these facts, and also the fact of his contemplating a second edition of his work, will make my notes of sufficient interest to justify their publication.

Before criticising in detail the birds enumerated, I should like to call attention to Mr. Browne's treatment of two species, *viz.* the Wood Warbler, *Phylloscopus sibilatrix*, and the White Wag-tail, *Motacilla alba*.

In the case of the Wood Warbler Mr. Browne's scepticism is something surprising in the face of Harley's notes and accurate description of the nest. There is not the slightest reason for doubting Lord Gainsborough's observation, and I do not see the necessity for shooting a bird when one is quite certain of its identity.* That Mr. Browne has not seen a Wood Warbler in the Midlands for twenty-five years proves nothing but his own lack of observation.

In the case of the White and Pied Wagtails he is even more original. I cannot conceive it possible that anyone, having any pretensions to ornithological knowledge, could mistake the "male" of *Motacilla Yarrelli* for that of *M. alba* at a season of the year when the difference is most marked. With reference to the validity of the two species, I cannot help thinking that Mr. Browne has got a series of skins incorrectly labelled, on which he has based his conclusions.

* Yet Mr. Browne writes that the records "have been unsatisfactorily founded upon any other evidence than that of actual possession."

MISSEL THRUSH, *Turdus viscivorus*.—The number of resident birds is largely increased by foreign arrivals during October. Formerly common, but its numbers were much reduced by the severe winters between 1875 and 1881. It seems to have now recovered its former status. I have taken unspotted eggs in the Soar Valley.

REDWING, *T. iliacus*.—Living near the Soar mouth during 1886-7, I noticed constant arrivals throughout October until the following January, mostly at night.

RING OUZEL, *T. torquatus*.—I do not think this species now breeds in Charnwood Forest, or that it ever did in any numbers. The scarcity of the bilberry and other mountain fruits may to some extent account for its absence. It is curious that this species, breeding so freely as it does in Derbyshire, should so seldom occur in Leicestershire on migration. I think the explanation of the fact must be that it flies over at a great elevation.

WHEATEAR, *Saxicola cenanthe*.—I look upon its breeding in Leicestershire as quite exceptional. As it is scarce in the Peak of Derbyshire, I conclude we are out of its fly line. I see but a few each year on migration.

WHINCHAT, *Pratincola rubetra*.—I doubt its being double-brooded, from the fact of the parents being seen with the young in the hay-fields during the latter part of June. I have found the nest most frequently in mowing grass. It is very partial to fields alongside the railways. In the Soar Valley I found a nest situated in a small blackthorn bush standing in a nettle bed. I have frequently seen it hovering like a Kestrel before pouncing on some beetle or other insect, but I do not think it takes beetles on the wing.

STONECHAT, *P. rubicola*. Very rare. I met with a single pair on Charnwood Forest amongst the gorse bushes. I think they had young in the neighbourhood.

REDSTART, *Ruticilla phœnicurus*.—Breeds freely on Charnwood Forest, and in the neighbourhood of Loughborough. In the lower parts of the Soar Valley rather scarce.

NIGHTINGALE, *Daulias luscinia*.—More generally distributed than Mr. Browne imagines. Breeds regularly on Charnwood Forest, and also near Loughborough, and that portion of the eastern part of the county bordered by Notts.

LESSER WHITEThROAT, *Sylvia curruca*; BLACKCAP, *S. atrica-*

pilla; GARDEN WARBLER, *S. hortensis*.—These three species vary curiously in numbers from year to year. I have never known a season in which all the three species were equally common. With the exception of *S. curruca*, scarce in the lower Soar Valley. In the case of *S. hortensis* there seems to be an excess of males over females; some woods will resound with their song, but the female is not to be seen, neither is there any cover for the nest.

GOLDCREST, *Regulus cristatus*.—Far from uncommon, breeding in the Loughborough neighbourhood and on Charnwood Forest, but favours localities containing trees of the fir tribe. A pair bred in the grounds of the Loughborough Grammar School.

CHIFFCHAFF, *Phylloscopus rufus*.—Fifteen years ago this was a very common species, and I found many nests. A few still breed with us in North Leicestershire, and I met with young birds in September this year. In the 'Birds of Cumberland' will be found some notes on the extension northwards of the range of the Chiffchaff. There may be some connection in this and its partial disappearance from North Leicestershire. I once took the nest on a low branch of a spruce fir.

WOOD WARBLER, *Phylloscopus sibilatrix*.—Could I have anticipated Mr. Browne's notes on this species, I might have been able to place in his hands a nest and eggs, taken with a second one on Charnwood Forest last year; but as I possessed authentic eggs of the Wood Warbler, I only took a passing interest in them. I have known the Wood Warbler as a regular spring visitor, in small numbers, to certain woods on Charnwood Forest, for the last twenty years. I also meet with it in certain plantations in Notts, close to the Leicestershire border, most seasons. I have also observed it in Derbyshire. Writing from memory only, I think I heard it twelve years ago on a visit to the woods at Belvoir, but I do not insist on this latter locality. From its habit of frequenting the tops of trees, it is often more heard than seen; but there should be no difficulty in finding the bird, when guided by its song, if one only looks for it before the oak woods are in full leaf.

REED WARBLER, *Acrocephalus streperus*.—This species still breeds in the localities enumerated by Harley, though it certainly does not abound in any part of the lower Soar Valley. The most remarkable situation in which I have found the nest was in a willow tree, some 30 feet from the ground. The materials used

in the construction of the nest mentioned by Mr. Browne are not commonly used.

DIPPER, *Cinclus aquaticus*.—I fear extinct in Leicestershire as a breeding species. I know the brook mentioned by Mr. Browne but have never seen the Dipper there.

LONG-TAILED TIT, *Acredula caudata*.—I have always considered this a plentiful bird, more so in the better-wooded parts. I am surprised Mr. Browne did not meet with it for so long.

COAL TIT, *Parus ater*; MARSH TIT, *P. palustris*.—I agree that formerly the Marsh Tit was common. Several favourite breeding stumps I knew were quite riddled with old nest-holes. The Coal Tit, except in the autumn, is still scarce. I have only once found the nest. In 1881 and 1882 I found the Marsh Tit breeding commonly a few miles over the Leicestershire border, near Rugby.

NUTHATCH, *Sitta cæsia*.—Rather scarce. I have heard it near Buddon Wood, but have never taken the nest.

WHITE WAGTAIL, *Motacilla alba*.—On April 20th, this year, I had a male under observation for about half an hour. I was on Nottinghamshire ground, but, when a quarrelsome Pied Wagtail drove it away, it flew towards the Leicestershire border. I consider it a very uncommon bird in Leicestershire.

PIED WAGTAIL, *M. Yarrellii*. The first egg in a nest found at Cotes Abbey was a Cuckoo's. In a nest in Garendon Park were two Cuckoo's eggs.

GREY WAGTAIL, *M. melanope*.—I have observed this species near the Soar mouth as early as August, and have seen little flocks by the end of September. As this species breeds in Derbyshire, we might reasonably expect it to appear early in Leicestershire. As it is common on the Soar, I do not think it necessary to note each occasion on which I have seen it. A female seen April 2nd was just assuming the black throat.

RAY'S WAGTAIL, *M. rayii*.—Nests also on the stumps in osier-beds. More common in the Trent than in the Soar Valley. I met with several this year on April 6th.

MEADOW PIPIT, *Anthus pratensis*.—I cannot consider this a common breeding species. I have only once known the nest to be found in the Lower Soar Valley, the tussocky meadows which it prefers being absent. It breeds in Notts near the Soar mouth, and probably does so in the Leicestershire portion of the Trent

TREE PIPIT, *A. trivialis*.—Abundant on Charnwood Forest, and also near Loughborough. Scarcer lower down the Soar Valley.

RED-BACKED SHRIKE, *Lanius collurio*.—Decidedly rare. I have only seen the bird once or twice, but have five eggs taken near Loughborough.

PIED FLYCATCHER, *Muscicapa atricapilla*.—The only occasion on which I have seen this bird was in the case of a pair which nested in a hole in Coates Bridge, about the year 1874. I observed the birds whilst fishing. I had the eggs in my possession for several years.

SAND MARTIN, *Cotyle riparia*.—Nowhere so numerous as in the Leicestershire portion of the Trent Valley. In the cold spring of 1886 large numbers perished soon after their arrival. I saw a white specimen on August Bank Holiday, last year.

GOLDFINCH, *Carduelis elegans*.—Rare as a breeding species; more often found in the Vale of Belvoir. A few flights of young birds visit the Soar Valley in the autumn.

HAWFINCH, *Coccothraustes vulgaris*.—Mr. Browne remarks, "Breeding occasionally." In the Loughborough district five nests were found this year in one small wood. I have found the nest in several parts of the Soar Valley. The tenant of an allotment garden at Loughborough complained of the havoc the young Hawfinches had made with his peas last year.

TREE SPARROW, *Passer montanus*.—Partially migratory, and breeding more freely amongst the pollard willows of the lower grounds than on Charnwood Forest. Plentiful in 1889.

CHAFFINCH, *Fringilla cælebs*.—I suspect the Chaffinches "flocking in thousands," as noted by Mr. Ingram in the Vale of Belvoir, to have been foreign birds. I observed them in October, 1889, arriving in large numbers on the shores of the Wash.

BRAMBLING, *Fringilla montifringilla*.—I met with a flock in the early spring of 1874, I think. They were busily searching the branches of some fir trees.

LESSER REDPOLL, *Linota rufescens*.—I have frequently found the nests in hedgerows in the Soar Valley. This bird was numerous at Christmas, 1886.

MEALY REDPOLL, *L. linaria*.—Mr. O. V. Aplin informs me that he has in his possession the skin of a male, which he received from a dealer labelled "Loughborough, 3 October, 1882."

But he justly remarks that the date seems unusually early, and that the fact must not, of course, be taken as affording undoubted proof of the occurrence of the species in Leicestershire. This Redpoll is not included in Mr. Browne's book.

TWITE, *L. flavirostris*.—A scarce Leicestershire bird; perhaps more frequent in the Trent Valley than in other parts of the county. A few were taken in September, this year, by bird-catchers near the Soar mouth.

CORN BUNTING, *Emberiza rustica*.—Common in the Soar Valley; nowhere more so than in the Great Meadow at Loughborough. In spite of its being a resident bird, I look upon it as a late breeder.

STARLING, *Sturnus vulgaris*.—Large numbers of foreign immigrants arrive, *viâ* the Trent Valley, about the same time as the Fieldfares.

MAGPIE, *Pica rustica*.—In North Leicestershire getting scarce. I have frequently found nests in hedgerows nearly within reach, but only when the leaves were fully out. I was particularly struck by the number of Magpie's nests to be seen from the Midland Railway when travelling from Leicester to Rugby in 1881.

HOODED CROW, *Corvus cornix*.—Common. Arrives in small flocks in the Trent Valley during October. Frequents the margin of the river, where it feeds on dead fish and other river-side delicacies.

ROOK, *C. frugilegus*.—Abundant. Few villages exist which do not possess a rookery, some of them of ancient establishment. There are two large rookeries near the centre of Loughborough.

JACKDAW, *C. monedula*.—Abundant in the well-timbered parks. The obelisk in Garendon is supported on its pedestal by four stone balls; in the space underneath is a Jackdaw's nest.

SKY LARK, *Alauda arvensis*.—Large numbers of foreign-bred birds reach Leicestershire *viâ* the Trent Valley in the autumn.

WOOD LARK, *A. arborea*.—I am assured that the Wood Lark breeds near Loughborough, and have had eggs brought to me referred to this species, but the evidence is not conclusive, to my thinking.

SWIFT, *Cypselus apus*.—A large colony existed in the town of Loughborough, near Bedford Square, and on a summer evening parties of six or seven could be seen careering along just over the heads of passengers in the streets, filling the air with their shrill

screams. It also bred abundantly, and may do so still, at Morpilers, where James Harley lived.

WRYNECK, *Jynx torquilla*.—Rare in the northern portion of the county. I have not known the nest to be found.

HOOPOE, *Upupa epops*.—A pair occurred at Loughborough at the end of April, 1885, as recorded by me in 'The Naturalist,' No. 128.

BARN OWL, *Strix flammea*.—I have frequently seen this species when sugaring for moths, and once observed it flying in the daytime near Cotes Abbey.

LONG-EARED OWL, *Asio otus*; SHORT-EARED OWL, *A. brachyotus*.—I always considered the former bird to be the most common, but I have not often met with either species.

TAWNY OWL, *Strix aluco*.—The commonest of the Owls; the old timber in the parks, and pollard willows of the Soar Valley, affording numerous nesting sites.

PEREGRINE, *Falco peregrinus*.—I have twice seen this species near the Soar mouth, but never in the breeding season.

MERLIN, *F. æsalon*.—Has been reported to have bred on Pocketgate Rocks; the eggs were taken, and resembled Merlin's, but of course this is not conclusive evidence.

OSPREY, *Pandion haliaëtus*.—Has recently occurred on the Trent near Donington Park.

HERON, *Ardea cinerea*.—Nests sparingly near Long Whatton, and also near Castle Donington. In August, this year, I observed five Herons rise from a drain flowing into the Soar near Loughborough.

BITTERN, *Botaurus stellaris*.—As this species occurs every winter in the Trent Valley, I have no doubt it is occasionally found near the Soar mouth. I examined a fine specimen caught near Long Eaton, but whether on Leicestershire ground or not I cannot say.

CANADA GOOSE, *Bernicla canadensis*.—The Garendon flock has existed for many years, and I have frequently seen them miles away from home.

DUCKS.—Several species of migratory Ducks are to be found passing up the Trent Valley in the autumn, consequently they fly over the northern portion of the county. Amongst those I have seen or known to be shot are odd specimens of Common Sheldrake (*Tadorna cornuta*), Long-tail (*Harelda glacialis*),

Goldeneye (*Clangula glaucion*), Common Scoter (*Edemia nigra*), Goosander (*Mergus merganser*), Smew (*M. albellus*), and more frequently Wigeon (*Mareca penelope*), Teal (*Anas crecca*), Tufted Duck (*A. cristatus*), Shoveller (*A. clypeata*), and Wild Duck (*A. boscas*). This last-named species breeds, and I believe that the Teal, Tufted Duck, and Shoveller also occasionally do so.

STOCK DOVE, *Columba œnas*.—I have found this species breeding in Garendon Park, and also in several localities in the lower Soar Valley. It breeds in the red cliffs overlooking the Trent in various parts of its course in Nottinghamshire.

RED-LEGGED PARTRIDGE, *Caccabis rufa*.—Not uncommon near Loughborough and about Ratcliffe-on-Soar.

QUAIL, *Coturnis communis*.—I heard the notes of this species in the spring of 1882 near Loughborough. A specimen was killed by the telegraph-wires in May, this year, within a short distance of the county border.

WATER RAIL, *Rallus aquaticus*.—Inhabits most of the osier-beds, but without the aid of dogs is very difficult to find. I saw an egg taken near Loughborough.

SPOTTED CRAKE, *Porzana maruetta*.—Would probably breed every year were it not for the spring floods. Later broods may get off, which may account for young birds being met with late in October. I killed one on the 25th, this year, near Barrow-on-Soar.

CORN CRAKE, *Crex pratensis*.—Numerous in the mowing fields of the Soar Valley, especially so in the Great Meadow at Loughborough. Ranges up to the foot of Charnwood Hills.

COOT, *Fulica atra*.—Breeds at Garendon. Scarce on the Soar and on the Trent.

Before commenting on the *Limicolæ* mentioned in Mr. Browne's book, I must state that the direction of migration in the case of the Redshank, Dunlin, and Ring Plover is westerly, and not to the north-east, as might be imagined. I must also state that I have not always been standing on Leicestershire ground when making my observations, though not often at a greater distance than a mile from the county border, and as birds persistently follow the same course year after year, it merely requires a change of position on my part to actually note the fact on Leicestershire ground. On arriving at the Soar mouth birds appear to leave the course of the Trent, and to fly

in a more south-westerly direction, which carries them fairly over the county.

GOLDEN PLOVER, *Charadrius pluvialis*.—Occasional small flocks in the autumn and winter, but more often odd birds, in company with Lapwings. I have not seen black-breasted birds in Leicestershire, though they occasionally occur in Notts, on the immediate border.

GREY PLOVER, *C. helvetica*.—On Nov. 11th, 1888, I saw a flock of about a score, and occasionally recognised odd birds at a great elevation by their cries.

RINGED PLOVER, *Ægialitis hiaticula*.—Occurs in small numbers on migration in spring and autumn. I have met with it as early as April 21st, and as late as May 26th; in the latter case probably non-breeding birds. I have seen the young by the 20th July, and throughout August I have recognised their notes as they flew over at night.

LAPWING, *Vanellus vulgaris*.—Common as a breeding species in the lowlands, but almost absent at that season from Charnwood. Immense numbers sometimes arrive during November from more northern regions *viâ* the Trent Valley.

WOODCOCK, *Scolopax rusticola*.—Breeds sparingly on Charnwood. I have four eggs from that locality.

DUNLIN, *Tringa alpina*.—In spite of what Mr. Browne says to the contrary, this species is met with in breeding plumage with great regularity every spring. The direction of their journey is westward, as far as I have been able to trace them, but I have yet to learn their ultimate destination. On their spring journey they appear about the third week in April, in little parties of six or seven odd birds, a little earlier, and occasionally a late bird will be met with at the beginning of June. I have seen young with traces of down about the nape as early as July 20th. In the winter, as a rule, only odd birds occur, but on Nov. 9th, 1890, I saw a flock of eleven flying in a S.W. direction.

COMMON SANDPIPER, *Actitis hypoleucos*.—Another common visitor on migration to the Trent and Soar Valleys, occasionally remaining to breed. Odd birds may be seen by the Trent all through the summer; but usually they are absent from the middle of May till the first week in July, when young birds may be found with their parents. It is far more common on the Trent than on the Soar. A pair bred for several years near

Cotes Abbey, and in May, 1886, the nest was found, but not disturbed.

GREEN SANDPIPER, *T. ochropus*.—A scarce visitor to the Trent and Soar Valleys, and most often met with in August. It is occasionally, however, to be seen in the winter. On Feb. 14th, 1886, a pair flew in front of my boat on the Soar at Redhill.

COMMON REDSHANK, *Totanus calidris*.—This species is not mentioned by Mr. Browne, and as a few pairs breed annually between Redhill and Castle Donington, it is a pity he was not aware of the fact. I have met with them as early as March 15th, but I consider the beginning of April to be the usual time of their arrival.

GREENSHANK, *T. canescens*.—One of those species that occurs sparingly in the Trent Valley during migration. Several have been shot this year, but I am not aware of any actually killed in Leicestershire.

WHIMBREL, *Numenius phæopus*.—Passes on migration in small numbers with great regularity. I observed a flock near the Soar mouth on May 9th, 1889.

CURLEW, *N. arquatus*.—Like the last, a passing migrant, usually flies at a greater elevation. I saw an odd bird at the Soar mouth during severe weather in the winter of 1886-7. I can hardly credit Harley's statement, that this species was numerous on Charnwood Forest. The ground is far too dry, and, considering its scarcity on such ground as the Derbyshire Peak, I think Harley must have unwittingly exaggerated its numbers. A pair passed me near the Soar mouth on June 22nd, this year—a most unusual date.

ARCTIC TERN, *Sterna macrura*; COMMON TERN, *S. fluviatilis*.—Seen on migration some years in fair numbers, but I have never shot any of them, so cannot say for certain that both species occur.

SANDWICH TERN, *S. cantiaca*.—On May 14th, 1888, a single bird of this species was hawking up and down the Trent between Redhill and Barton Ferry. It passed close to me several times, so I had no difficulty in recognising it.

BLACK TERN, *S. nigra*.—Only met with in the spring, generally at the end of May or beginning of June, and only in small numbers. Long continued east winds in spring never fail to bring the Black Terns.

GULLS.—The Black-headed Gull, *Larus ridibundus*, is common in spring, and has been reported to have bred near Donington Park, but not, I think, on sufficient evidence. Most of the specimens I have examined showed signs of immaturity, and occurred at almost every time of the year. The Common Gull, *L. canus*, passes regularly on spring migration, and also occurs after storms with the Lesser Black-backed and Herring Gulls, and the Kittiwake, *L. tridactylus*. The two larger species are generally represented by immature birds.

GREAT CRESTED GREBE, *Podiceps major*.—Reported to breed at Dishley. An adult in winter plumage was killed at Zouch, October 13th, and a second bird, a little later, at the Soar mouth.

LITTLE GREBE, *P. minor*.—Breeds on the Soar, but only sparingly, and also at Dishley. I found this species very common about Normanton in October, 1889.

Mr. Browne concludes his remarks on the Birds of Leicestershire with a table headed "Dates of arrival of Summer Migrants in Leicestershire," which is divided into two periods. Taking the later period, I find extraordinary variation in the dates given. The table should evidently be headed, "Dates of *first noting* the arrival of Summer Migrants."

As will be seen by the text, the foregoing remarks refer to the district mentioned in the first part of my paper.

NOTES AND QUERIES.

Death of Mr. Thomas Cornish, of Penzance.—We have only recently heard, with regret, of the death of Mr. Thomas Cornish, of Penzance, which took place on the 12th of August last, at the age of sixty-one. Mr. Cornish, who was for many years a contributor to 'The Zoologist,' was born at Tavistock in July, 1830, and educated at the Bedford Grammar School in that town, and afterwards at Blundell's, Tiverton. Adopting the law as his profession, he went to Penzance in 1858, where he joined the firm of Messrs. Rodd and Darke, and, on the death of Mr. Darke, became Mr. Rodd's partner. The name of Edward Hearle Rodd, who died in January, 1880 (*cf.* Zool. 1880, p. 113), was well known in connection with the 'Birds of Cornwall,' and Thomas Cornish seems to have paid almost as much attention to the Marine Fishes and Crustacea of the county. His chief contribution to the literature of this

subject appeared in the new edition of Couch's 'Cornish Fauna,' which appeared in 1878. In this volume the information on Vertebrate Animals was brought up to date by different specialists; the Mammals being undertaken by Mr. Brooking Rowe, the Birds by Rodd, and the Reptiles and Fishes by Cornish. Since that date (1878) Mr. Cornish lost no opportunity of supplementing that publication by additional notes on various species which he communicated from time to time to this Journal, and which will be fresh in the recollection of many. As a useful correspondent in the west of England, he will be much missed by our readers.

MAMMALIA.

Alleged Antipathy of Cattle to Deer.—With reference to the doubt expressed in the last number of 'The Zoologist' (1890, p. 453) as to the statement on this subject, contained in the 'British Association Report, 1887,' on the Wild Cattle, may I, as the compiler of that Report, give the following explanation of the passage? Various members of the Committee contributed notes on one or other of the herds, and amongst these were some interesting items concerning the Chillingham herd, sent by Canon Tristram, *written on the spot*, which may be considered as sufficient guarantee of authenticity. In these notes the following passage occurs:—"Some Red-deer have been introduced, which associate and feed with the cattle on the most friendly terms. But they never will tolerate Fallow-deer or sheep in the park, probably because they eat the pasture too close, or they did not remember them as inhabitants in the palæolithic ages." The last part of the sentence was of course written in joke; but if I had been writing for myself only I should have omitted the whole passage, as I am unable to agree with it, having visited all the herds (except the two domesticated herds in Norfolk); and Chillingham I have visited on two separate occasions, sleeping each time in the immediate neighbourhood, so as not to be limited to a flying visit. Being, however, the mouthpiece of the Committee, I did not consider myself at liberty to omit the passage altogether, especially as the statement was made by so distinguished a naturalist as Canon Tristram. I did, however, modify it so far as I felt justified in doing. The statement that the Red-deer "have been introduced" was also a surprise to me. Perhaps, while I am on the subject of this Report, I may mention one other point. It will be noticed by anyone having a copy of the Report, as published by the British Association, that there are four short paragraphs at the beginning, which are omitted in 'The Zoologist' edition. These touch upon the probable origin of the herds of park cattle; the probability (judging from such shreds of evidence as can be scraped together) seeming to me entirely in favour of these herds not being descended directly from the huge Wild Urus, but rather from domesticated animals, or possibly *feral* cattle. Canon Tristram, however, being possibly

of a more sanguine temperament than I am, believes the contrary; and my original MS., as read from by Canon Tristram at the Manchester meeting, was slightly modified by me before being published. 'The Zoologist' edition was printed while these paragraphs were still under discussion, and the Editor thought the simplest plan was to omit them altogether, especially as the question under discussion was quite apart from the subject on which the Committee was asked to report.—ALFRED HENEAGE COCKS (Great Marlow, Bucks).

BIRDS.

Bonaparte's Gull in Cornwall.—I lately received from Mr. T. H. Cornish, of Penzance, for identification, an immature specimen, in the last year's plumage, of a small Gull which was shot at Newlyn, near Penzance, on the 24th October last. Its diminutive size, slender bill, and characteristic markings on the webs of the primaries, showed it to be Bonaparte's Gull, *Larus philadelphia*, Ord.—*Larus Bonapartii*, Swains. & Rich. This North American species, which in autumn goes southward to California on the west, and North Carolina on the east, has been found at the Bermudas, and on several previous occasions has occurred as a wanderer to the British Islands. It must nevertheless be regarded as one of the rarest visitors amongst the *Laridæ*. Before returning the specimen I took the opportunity of exhibiting it at a meeting of the Linnean Society on the 4th of December.—J. E. HARTING.

FISHES.

Ray's Bream near Penzance.—It may interest some of the readers of 'The Zoologist' to know that, on November 13th, a specimen of Ray's Bream, *Brama rayi*, was caught with hook and line in Mount's Bay. I saw it while still fresh. Although not particularly uncommon, I never before heard of one being caught with hook and line. They are generally thrown ashore after heavy gales.—T. H. CORNISH (Penzance).

MOLLUSCA.

A new Locality for *Geomalacus maculosus*, Allman.—While following the road between Kenmare and Glengariff, last August, I came across two specimens of this rare and curious slug. They were within a few yards of each other on the damp grassy roadside, about nine miles from Kenmare and a mile from the Tunnel over which runs the boundary between Cork and Kerry. Caragh Lake, where Mr. Andrews first found *Geomalacus maculosus* in 1842, had hitherto remained its only known habitat, and the chief interest, therefore, of this new Kerry locality lies in the wide extent of country over which this slug may be expected to range; for while the two localities are more than twenty miles apart in a straight line, Caragh Lake is about 60 feet above sea-level, and the new locality

between 600 and 700 ft. Being within a mile or so of the county Cork boundary it also points to the probable extension of its range to this latter county.—REGINALD W. SCULLY (91, Lower Baggot Street, Dublin).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

Nov. 20, 1890.—Prof. STEWART, President, in the chair.

Mr. J. F. Braga and Rev. E. M'Clure were elected Fellows.

Mr. G. Murray exhibited specimens of a fresh-water *Delesseria*, previously unknown.

On behalf of Mr. Henry Hutton, of Cape Town, Mr. B. D. Jackson exhibited some follicles and seeds of a somewhat rare Asclepiad, *Dregia floribunda*; and showed also, on behalf of Mr. W. Matchwick, some ripened seeds of *Ailanthus glandulosa*, from a tree at Reigate, said to be a hundred years old.

Prof. Bower exhibited several drawings from microscopic sections of carboniferous nodules belonging to Prof. Williamson, and pointed out the peculiarities of structure. Microscopic details of such sporangia being very rare, he remarked that a comparison of the slides showed a peculiar uniformity of type. For a comparison of these sporangia from the coal he exhibited sections of the sporangia of *Todea barbara*, and while not going so far as to refer these carboniferous sporangia (which are not attached to the plants which bore them) to any distinct genus, he thought the Osmundaceous affinity was unmistakable.

Mr. J. E. Harting exhibited some original MSS. and water-colour sketches of birds, fishes, and plants found in Sussex by William Markwick, the friend and correspondent of Gilbert White, of Selborne, which had been presented by him to the Society in his lifetime, and had been lost sight of for many years. The drawings are sufficiently well executed to enable the correct determination of several species which the author had failed to identify.

A paper was then read by Prof. T. Johnson (Dublin) on the systematic position and affinities of *Punctaria*, a genus of brown sea-weeds ((*Phæophyceæ*) founded in 1830 by Greville. The paper was illustrated by explanatory diagrams, and a discussion followed in which Messrs. D. H. Scott, E. M. Holmes, and G. Murray took part.

Mr. Vaughan Jennings gave an abstract of a paper on a variety of sponge, *Alectona Millari*, Carter, boring in the shell of *Lima excavata*, from the Norwegian coast. The sponge had endeavoured to grow inwards, dissolving the nacreous layer and encroaching on the mollusc instead of

restricting its wanderings to the thickness of the shell. The mollusc had retaliated by depositing fresh layers on the intruder, and the struggle had gone on until the chambers were several times the normal thickness of the shell, and were roofed over by a thin curved layer of secondary shell-substance, while the points at which branches had been pushed further in were represented by thick conical papillæ.

December 4.—Prof. STEWART, President, in the chair.

Mr. John Watson was admitted a Fellow of the Society; and the following were elected:—Messrs. A. Barclay, W. Brown, W. A. Clarke, W. Gill, C. M'Rae, W. H. Miskin, R. Bentley, H. Williams, and H. G. Plummer.

The President exhibited some eggs of the Shell-slug, *Testacella haliotidea*, and briefly described the habits and mode of feeding in this mollusk. He also delineated and described the feeding tract of the snail.

Mr. F. G. George exhibited an autumnal flowering form of *Mercurialis perennis*, with stems four feet in length, which he had found at Preston, Lancashire.

Mr. R. A. Rolfe exhibited and made some remarks on a coloured drawing of *Cynoches rossianum*, showing both male and female inflorescences on the same pseudo-bulb.

Mr. J. E. Harting exhibited an immature example of Bonaparte's Gull, *Larus philadelphia*, Ord., of North America, which had been shot on the Cornish coast at Newlyn, on the 24th October last.

Mr. T. Christy exhibited and made remarks on some Coca-leaves which had been forwarded from an East Indian plantation, and which were found to be superior to any received from South America.

On behalf of Mr. H. N. Ridley, of the Botanic Gardens at Singapore, Mr. B. D. Jackson read a paper on Orchids, genus *Bromheadia*, on which some critical remarks were offered by Mr. R. A. Rolfe.

The next paper was one by Messrs. J. H. Lace and W. B. Hemsley, on the Vegetation of British Beluchistan, illustrated by a route-map showing the district in which Mr. Lace had been collecting. Seven hundred species were catalogued, amongst which were eleven new to science. The paper was ably criticised by Mr. C. B. Clarke, and Mr. J. G. Baker made some interesting observations on the peculiar prickly character of the vegetation which predominates in the hot and dry district explored.

ZOOLOGICAL SOCIETY OF LONDON.

Nov. 18, 1890.—Dr. MIVART, F.R.S., in the chair.

Mr. F. Mentieth Ogilvie exhibited and made remarks on a specimen of the Red-headed Flycatcher obtained in Norfolk.

Prof. F. Jeffrey Bell exhibited an example of the Cotton-spinner, *Holothuria nigra*, taken off the west coast of Ireland, and sent for determination by Prof. Herdman.

Mr. G. A. Boulenger exhibited a series of skulls belonging to *Distira cyanocincta* and *Chelone midas*.

Mr. G. A. Boulenger read a paper upon the Reptiles and Batrachians of Barbary (Morocco, Algeria, Tunisia), based chiefly upon the notes and collections made in 1880–84 by M. Fernand Lataste. A second paper by Mr. Boulenger contained remarks on the Chinese Alligator.

A communication was read from the Rev. O. P. Cambridge, giving an account of some new species and two new genera of *Araneidea*, mostly collected in South Africa by the Rev. Nendick Abraham.

Mr. Smith Woodward read a paper on some Upper Cretaceous Fishes of the family *Aspidorhynchidæ*. He offered a detailed description of *Belonostomus comptoni*, from Brazil, and defined a new genus (*Apateopholis*) from Syria. The latter is remarkable as being the only physostomous fish hitherto described exhibiting a spinous armature of the preoperculum.

Mr. G. C. Champion read a paper on the Heteromorous Coleoptera collected by Mr. Bonny at the Yambuya Camp, Aruwimi Valley.

December 2.—Prof. W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during November, and called special attention to the acquisition of a specimen of the Cryptoprocta, *Cryptoprocta ferox*, of Madagascar.

A letter was read from Mr. A. Milne-Edwards, containing an account of the mode in which the typical specimen of Grévy's Zebra had been mounted for the Gallery of the Museum, and pointing out that the mounted specimen has been carefully modelled after the living animal.

A letter was read from Dr. Emin Pasha, dated "Tabora, East Africa, August 16th, 1890," containing an expression of his thanks for having been elected a Corresponding Member; and giving some remarks on the Striped Hyena of that district.

Mr. Richard Crawshay read a paper on the Antelopes of Nyassaland, treating especially of those to be met with west of the Lake. Lichtenstein's Hartebeest was stated to be very generally distributed, and seven other Antelopes to be plentiful. The Kudu, Sable Antelope, and Black-tailed Gau were seldom met with; but exact localities were given where these Antelopes were to be found. In conclusion, the author added that there are at least two other species of small Antelopes found in the hills, which hitherto he had not been able to identify.

Prof. G. B. Howes read a paper on the peculiar mode of the suspension of the viscera in the Australian Batoid fish, *Hypnos subnigrum*. A second communication from Prof. Howes contained notes on the pectoral fin-skeleton of the Batoidea and of the extinct genus *Squaloraia*, which he maintained must be referred to the Chimæroid group.

Mr. G. A. Boulenger read a paper on the presence of pterygoid teeth in a tail-less Batrachian, *Pelobates cultripes*, and added remarks on the localisation of the teeth on the palate in the Batrachians and Reptiles.

Mr. H. Seebohm read a paper on the Fijian birds of the genus *Merula*, and gave a description of a new species from Viti-Levu, which he proposed to call *Merula layardi*.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

December 3, 1890.—The Rt. Hon. Lord WALSINGHAM, M.A., F.R.S., President, in the chair.

Mr. John Gardner, of 6, Friar Terrace, Hartlepool; and Mr. Samuel James Capper, F.L.S., of Huyton Park, near Liverpool, were elected Fellows of the Society.

Dr. D. Sharp exhibited specimens of *Papilio polites*, *P. erithonius*, and *Euplœa asela*, received from Mr. J. J. Lister, who had caught them on board ship when near Colombo, in November, 1888. Dr. Sharp read a letter from Mr. Lister, in which it was stated that from the ship hundreds of these butterflies were seen flying out to sea against a slight breeze. Many of them, apparently exhausted by a long flight, alighted on the deck of the ship, and large numbers perished in the sea.

Lord Walsingham exhibited a coloured drawing of a variety of *Acherontia atropos*, which had been sent to him by Mons. Henri de la Cuisine, of Dijon. He also exhibited specimens of an entomogenous fungus, apparently belonging to the genus *Torrubia*, growing on pupæ, received from Sir Charles Forbes, and which had been collected in Mexico by Mr. H. B. James. Mr. M'Lachlan expressed an opinion, in which Mr. C. O. Waterhouse and Mr. G. C. Champion concurred, that the pupæ were those of a species of *Cicada*. Mr. F. D. Godman said that at the meeting of the Society on the 3rd October, 1888, he had exhibited a larva of a *Cicada* with a similar fungoid growth. The specimen was subsequently produced, and the fungus proved to be identical with that on the pupæ shown by Lord Walsingham.

Mr. R. Adkin exhibited male specimens of *Spilosoma mendica*, Clk., bred from ova obtained from a female of the Irish form which had been impregnated by a male of the English form. These specimens were of a dusky white colour, and were intermediate between the English and Irish forms.

Mr. F. Merrifield showed samples of a material known as "cork-carpet," and explained its advantages as a lining for cabinets and store-boxes. Dr. Sharp fully endorsed the opinion expressed by Mr. Merrifield.

Mr. R. W. Lloyd exhibited specimens of *Anisotoma Triepkei*, Schmidt, and *Megacronus inclinans*, Er., collected last August at Loch Alvie by Aviemore.

Mr. Merrifield read a paper entitled, "On the conspicuous changes in the markings and colouring of Lepidoptera caused by subjecting the pupæ to different temperature conditions," in which it was stated that the results of many experiments made on *Selenia illustraria* and *Ennomos autumnaria* tended to prove that both the markings and colouring of the moth were materially affected by the temperature to which the pupa was exposed: the markings by long continued exposure before the last active changes; the colouring, chiefly by exposure during these last changes, but before the colouring of the perfect insect began to be visible, a moderately low temperature during this period causing darkness, a high one producing the opposite effect, and two or three days at the right time appearing in some cases sufficient. Dryness or moisture applied during the whole pupal period had little or no effect on either markings or colouring. Applying the facts thus ascertained, Mr. Merrifield said he had obtained from summer pupæ of *illustraria* some moths with summer colouring and spring markings, some with spring markings and spring colouring, and some with summer markings, but an approach to spring colouring. These specimens, with enlarged and coloured photographs of them, were exhibited.

Mr. C. Fenn, who said he did not agree with Mr. Merrifield's conclusions, exhibited a very long and varied series of specimens of *Ennomos autumnaria*, all of which, he stated, had been bred at the same temperature. He expressed an opinion that the presence or absence of moisture, rather than differences of temperature, was one of the principal causes of variation. The discussion was continued by Lord Walsingham, Colonel Swinhoe, Mr. Waterhouse, Mr. Jenner Weir, Captain Elwes, Mr. M'Lachlan, Mr. Porritt, Dr. Mason, Mr. Barrett, and others.

Mr. G. T. Baker read a paper entitled "Notes on the Lepidoptera collected in Madeira by the late T. Vernon Wollaston." The paper was illustrated by a number of figures drawn and coloured some years ago by Prof. Westwood.

Mr. Hamilton H. Druce exhibited several very beautiful species of butterflies, belonging to the genus *Hypochryrops* from the Solomon Islands and Australia, and read a paper on the subject, entitled "A Monograph of the Lycænoïd genus *Hypochryrops*, with descriptions of new species."

Mr. C. J. Gahan read "Notes on some species of *Diabrotica*."—
H. Goss & W. W. FOWLER, *Hon. Secretaries*.

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NOTES ON THE ORNITHOLOGY OF NORTHAMPTONSHIRE.

BY THE RT. HON. LORD LILFORD, F.L.S., F.Z.S.

I CONTINUE my notes from Oct. 16, 1889 (Zool. 1889, p. 430); for explanation of initials used, *cf.* Zool. Dec. 1888.

OCTOBER, 1889.

19th. A Spotted Crake, taken in a snare at our decoy, was brought to me alive and uninjured, and at once set at liberty.

21st. Three Snipes snared at the decoy averaged only $3\frac{3}{4}$ oz. in weight.

23rd. About thirty-five Wigeon dropped into the decoy at morning flight-time, and twenty-three of them were at once taken; these were all apparently young birds of the year. Mr. J. E. Harting, who paid us a visit on this day, informed me that he saw, from the train near Thorpe Station, a Spotted Crake at close quarters, first swimming, and then fluttering across the water towards the river-bank. He added that he could almost have shot it from the carriage had he been prepared.

25th. Three Geese and a continuous stream of Sky Larks passing southwards.

27th. Thirty Geese, and a small flock of Gulls, supposed to be Kittiwakes (more likely *Larus ridibundus*), reported to me as passing southwards.

28th. A few Teal are dropping in at the decoy and elsewhere; a Water Rail taken alive in a snare at the decoy, and placed in

the aviary. We left home for Bournemouth on Oct. 29th; so that my following records till May, 1890, are taken from letters received from various correspondents in Northamptonshire.

NOVEMBER.

1st. An immature male Buffon's Skua was picked up alive, but with one thigh broken, close to the L. & N.W. Railway, not far from Thorpe Station. My cousin, the Rev. William Powys, who met the finder of the bird a few minutes after the capture, was of opinion that the injury had been caused by shot, but he bought, killed, and forwarded the specimen to me at Bournemouth, where I received it on the 4th inst., and I have no doubt that the fracture was occasioned by the bird flying against the telegraph-wires. This is, so far as I know, the second recorded instance of the occurrence of this species in our county.

5th. Three House Martins flying about Lilford.—R. C.

11th. A Great Grey Shrike visited our sentinel of the same species at the hawk-hut at Pilton, took a slight refecation from his food, and remained for about an hour in the immediate vicinity.—R. C.

12th. A pair of Gadwalls, taken this morning, were brought to Lilford from the decoy, pinioned, and put upon the park-pond.—R. C.

19th. Large numbers of Sky Larks passing over daily. A pair of Common (?) Sandpipers are constantly about the river-side near the hawk-hut.—R. C. I place a mark of interrogation after the word "Common," as, though my informant is well acquainted with *Totanus hypoleucus* (a bird that is never abundant about Lilford), that species has not hitherto been met with, or heard of, by me later than the end of September in our neighbourhood. I suspected that these two birds were either Green Sandpipers or Dunlins; but, on questioning my informant closely, I found that he was quite positive as to correct identification. I can only attribute this late stay of the Sandpipers to the extraordinary mildness of the season. On the day last mentioned our head-gardener wrote:—"The weather is so warm here that the Sparrows have built a nest on the pear tree at the end of my cottage."

20th. Mr. W. Tomalin, of Northampton, informed me that on this day a Hoopoe was murdered in a rick-yard near Yardley-

Hastings, brought to him, and presented to the Northampton Museum.

26th. I had a Golden-eye on the decoy yesterday.—R. S.

27th. Of eight Snipes received to-day from Lilford, the heaviest weighed rather more than $4\frac{1}{4}$ oz. Mr. F. A. Irby tells me of a large trip of Golden Plover going southwards near Lilford to-day, and of having seen two "grey geese" near Aldwinckle on the 28th inst.

DECEMBER.

2nd. I received this morning, from Mr. F. Dyer, formerly of Irthlingborough, but now living at Margate, a very perfect specimen of the Black-breasted, or Scandinavian, form of Dipper, *Cinclus melanogaster*, with the information that the bird was shot on Nov. 18th ult., at Raunds Staunch, on the Nene near Ringstead, and sent to him, for preservation, by Mr. Spencer, of Irthlingborough. The Dipper is a rare visitor to our district, and this is the only instance of the occurrence of the Scandinavian race in Northamptonshire that has hitherto come to my knowledge. Under this date Mr. W. Tomalin informed that a Great Grey Shrike was taken alive near Northampton "about three weeks ago."

3rd. In some ornithological notes very kindly communicated by the Rev. H. H. Slater, of Irchester, I find, under this date, the following statements:—"A lot of Golden Plover on my shooting (close to Irchester), very wild; I shot two. I saw also a white Cushat." In a subsequent note, of 12th inst., Mr. Slater tells me that this white Wood Pigeon had been seen several times since his first notice. I received an immature female Golden-eye from Lilford, shot yesterday on the river below the house.

4th. I this day received a letter from Mr. Arthur Tucker, of Northampton, informing me that he found a nest of Common Redpoll in the parish of Great Houghton on July 10th ult.: I record this, as I have very few records of the breeding of this species in our county.

5th. My son and the falconer report a Peregrine, a few Herring Gulls, and some Gulls of a smaller species seen near Lilford to-day.

10th. An old Haggard Peregrine made one stoop at my

Pigeon at the hut, but she had a full crop, and was not in earnest.—R. C.

12th. Under this date I find, in Mr. Slater's notes above mentioned:—"A male *Picus major*, shot lately near Irchester, and brought to me, had recently eaten several grubs of the goat-moth, of which there were three whole ones, and various scraps, in the gizzard of the bird." An immature female Tufted Duck shot near Lilford, and forwarded to me in the flesh.

19th. I took a male Pintail on the decoy this morning.—R. S. This bird was pinioned and placed on the park-pond.

23rd. I heard to-day that seventeen Woodcocks were killed one day last week in the Duke of Buccleuch's coverts at Boughton, near Kettering: this is now-a-days an exceptionally large bag of Woodcocks for North Northamptonshire.

26th. A solitary male Pochard on the decoy.—R. S.

JANUARY, 1890.

1st. A Bittern was shot in Blatherwycke Park this morning; the occurrence communicated to me by Mr. Horace S. O'Brien.

3rd. My son shot a very good specimen of adult female Smew on the Nene, below Lilford, this morning, and forwarded the bird to me at once. It is long since I have heard of a Smew in the neighbourhood of Lilford; but a good many seem to have visited the eastern coasts of England during this winter, and I purchased seven of this species alive in Leadenhall Market; these birds were probably brought over from Holland, but I do not remember to have had more than one or two previous offers of living Smeews from the London markets.

30th. Two Swans seen on wing near the decoy.—R. S.

FEBRUARY.

1st. First egg of hand-reared Wild Duck found at Lilford.—R. C.

3rd. Under this date, Mr. Slater writes:—"A Waxwing on the large hawthorn-bushes near Ditchford Bridge. Mrs. Slater, whom I was driving to Irthlingborough, called my attention to a 'particularly beautiful' bird, and there was the Waxwing, sitting on a bush not twenty yards off; it made off when we stopped, so I got out and followed, and had another good look at it; it was a female, or a young bird, and appeared to be alone."

12th. I received to-day, from the Rev. H. N. Rokeby, of Arthingworth, near Northampton, for identification, a ragged and moth-eaten specimen of Storm Petrel, stuffed and set up in an old cigar-box, with the information that the bird was picked up on the high road in the neighbourhood of Arthingworth, some fifty or more years ago. I may add that this specimen has been most marvellously restored and remounted by the skilled hands of Mr. J. Cullingford, of Durham, to whom, with Mr. Rokeby's permission, I sent it. I record this at length, as, although I have heard rumours of the Storm Petrel's occurrence in other parts of the county, I know that some of them relate to other species, and this is the only one of which I have proof positive.

17th. Under this date, I heard of two wandering Mute Swans, and a large number of wildfowl, Fieldfares and Redwings, haunting our flooded meadows. Of fifteen Wigeon taken on the decoy to-day and on 22nd inst, and sent to me at Bournemouth, twelve were males in perfect adult plumage. One Pochard on the decoy on 22nd.—R. S.

MARCH.

8th. I received from Mr. G. Hunt, of Wadenhoe, a female Tufted Duck, shot by him at Thrapston on 1st inst.

12th. Fifty Ducks, twelve Teal, and ten Wigeon on the decoy, and a "Starn" flying up the river on 10th.—R. S. If it had not been so early in the year I should have been inclined to put down this "Starn" as a Black Tern, as the decoy-man calls the Common Tern "Sea Swallow," but from subsequent examination and enquiry I feel little doubt that the bird was really a Brown-headed Gull.

26th. A nest of Tawny Owl with three eggs, and two nests of Barn Owl (containing respectively one and three eggs) found in hollow trees in the close vicinity of Lilford.—S. J.

APRIL.

1st. Two more nests of Tawny Owl, with eggs, near Lilford.—R. C.

3rd. From this date till nearly the end of the month I received constant reports of Canada Geese frequenting our meadows and occasionally visiting my ponds, their numbers varying from two to nine. I found, on enquiry from Mr. H. S. O'Brien, of Blather-

wycke, that he has some fifty or more of these birds, unpinioned, on his lake at that place (which is about ten miles from Lilford), and that at this time of year the old ganders drive the young birds entirely away from the park. It is remarkable that I should not have even heard of any of these birds coming up the Nene before; but I believe that they prefer the valley of the Welland to that of our river. Mr. O'Brien mentions that at the time of writing to me on this subject,—*i. e.* about April 18th,—five Great Crested Grebes were frequenting his lake.

12th. Two "Grey Geese" near the decoy.—R. S.

21st. Under this date Mr. Slater informs me that he saw "a fine old male Merganser at Field's shop in Kettering, shot close by. I am making enquiries as to exact date and locality of this occurrence.

25th. A nest of Little Owl, containing six eggs, found in a hollow ash-tree in the park at Lilford (*cf.* Zool. 1889, p. 426). Young Stock Doves ready to fly.—S. J.

MAY.

5th. A pair of Wigeon on the decoy.—R. S.

We returned to Lilford from Bournemouth on May 14th, the weather fine, but unseasonably cold. Large flocks of Wood Pigeons haunting the tall elms about the pleasure-grounds; these birds are, no doubt, merely passing through our county on their way from their winter quarters to the north, as many of our home-breeding Cushats are sitting hard. These travellers are smaller and darker-coloured than our average typical Wood Pigeons.

16th. Some of the eggs in the Little Owl's nest have been hatched for several days.

17th. A nest of Hawfinch, containing five eggs, found in a horse-chestnut tree near the aviary. Mr. G. Hunt shot eighty-five Wood Pigeons over wooden decoys on a pea-field on Wadenhoe; he assures me that of these not more than six were, in his opinion, home-birds; and certainly the differences between one of the latter and three "travellers" sent by him as samples of his bag were very remarkable. Mr. Hunt informed me that most of these Pigeons had empty crops, and that the principal attraction for them to the spot was a common creeping-plant with a white flower, locally known as "May-weed."

JUNE.

6th. A Partridge is sitting on a nestful of eggs under a tussock of pampas-grass, in the flower-garden, at not more than twenty yards from our ground-floor windows, and within five yards of much-frequented garden-seats.

22nd. Five young Pied Woodpeckers brought to me from a hole in an oak in Barnwell Wold; one of these birds was weakly, and soon died; the others went on fairly well for some weeks, but, one after another, began to droop, and were all set at liberty.

27th. A young House Sparrow, of a uniform light chestnut-colour, was caught in a rat-trap near the park-keeper's lodge at Lilford.

JULY.

1st. I received two eggs of Nightjar (the first Northamptonshire specimens that I have seen), from the same locality as the young Woodpeckers above mentioned, where I am assured that two pairs of the former species have bred this summer.

4th. First report of Green Sandpiper for the season.

11th. I received two Hawfinches, caught in the Rectory-garden at Tichmarsh, and hear reports on all sides of the unusual abundance of this species, and the ravages committed by the birds amongst the green peas.

13th. Our butler tells me that in a stroll by the river-side near Achurch, this afternoon, he came across a brood of young Common Sandpipers, just able to fly. This is the first positive proof of the breeding of this species in our neighbourhood that has come to my knowledge.

14th. Very strong S.W. wind. An adult female Dabchick was picked up in a sunken lane close to the house at Lilford, and brought to me immediately, in a dying condition, having evidently flown against some wire rabbit-netting that borders our lawn on one side of the lane.

15th. A male Shoveller on my small aviary-pond. I sent the falconer to search for a Hobby's nest, in the wood often alluded to in my previous communications to 'The Zoologist'; but although a pair of these little falcons were there as usual, and flew about shrieking over the tree-tops, he could not, in spite of several stiff climbs up to various old nests of Carrion Crow and Magpie, discover the nursery of the Hobbies. On 22nd inst. he

went again to the same wood, with another excellent climber, and examined many other nests, without result; on this second visit the explorers did not even see a Hobby, from which fact I infer that the eggs must have been taken between the two expeditions, and that the old birds had left the locality in disgust.

26th. I received from Mr. Clarke Thornhill, of Rushton Hall, Kettering, a fine young female Peregrine, with a bell on each leg, captured near that place a few days previously. I advertised this falcon, and am glad to say that I was thereby enabled to restore her to her rightful owner, Mr. Thomas Mann, of Hyde Hall, Sawbridgeworth.

AUGUST.

5th. A great many Herons haunting the meadows during the last week.

12th. The decoy-man brought me a Green Sandpiper, alive, snared at the decoy this morning. This bird showed no sign of injury, and pecked viciously at our fingers, but could not, or would not, use its legs, and utterly declined to feed.

13th. Some large Gulls and a small trip of Golden Plovers reported as going up our valley by one of the gamekeepers.

14th. First report of Snipe for the season.

23rd. My cousin, the Rev. Wm. Powys, rector of Achurch, brought, for my inspection, the mummified remains of a Kestrel, which were discovered, with many Jackdaws in similar condition, in an old disused chimney, by workmen employed on repairs at the rectory.

27th. One of our gamekeepers brought to me the head, wings, and legs of a Whimbrel, shot from a passing flock a few days ago, near Sudborough, by a tenant of my neighbour, Lord Lyveden. The shooter had eaten the body of the bird, no doubt with satisfaction to himself, but giving me cause for regret, as—although the Whimbrel is by no means uncommon in this neighbourhood on double passage—I do not possess a “county” specimen.

SEPTEMBER.

3rd. I saw a flight of some six or seven Whimbrels going up the valley near Wadenhoe.

4th. Some Turtle Doves still lingering with us.

8th. I saw a Kestrel chased, and fairly bullied, by a Wood Pigeon.

10th. A flock of some twenty or more Herring Gulls, identified by their cries, passed southerly at an immense height.

12th. A very marked diminution in number of the *Hirundines* about the river; both House Martins and Swallows have been unusually abundant this summer, but very few of the former are now to be seen, and the latter are becoming scarcer every day. On the 17th and 18th insts., however, we were inundated by vast numbers of Martins, and a considerable fresh flight of Swallows coming from the north; these birds "rode out" the southerly gale of the 20th with us, and remained without any perceptible diminution or increase in their numbers till the 25th inst., under which date I find in my journal:—"The river, from the house downwards, is absolutely swarming with *Hirundines*." These birds had almost entirely disappeared on Sept. 28th.

22nd. Mr. Slater informed me that a young Ruff was shot at Ditchford, and brought to him on this day; he added, too, this note:—"The remains of food in the gizzard and the bottom of the œsophagus (which has no dilatation at its bottom end capable of being called a crop) were as follows:—Three or four larvæ of some aquatic *Ephemera*, a grasshopper's hind leg, a great quantity of remains of freshwater bivalves, two daddy-longlegs, a fat white grub (coleopterous, I think), a black fly, much gravel and a good deal of small animal matter, joints of legs of insects, &c., amongst which a proportion of *Algæ*—swallowed, no doubt, accidentally." Three Teal, the first of the season taken on the decoy, brought in with seventeen Mallard; but the decoy-man tells me that five of the former species made their first appearance about a week ago. I have previously noted, in 'The Zoologist,' that the first appearance of Teal in our locality is always accompanied, or very shortly followed, by that of a Peregrine, and this experience was, in this instance, confirmed by the appearance of a falcon in the park yesterday.

24th. I heard and saw the first Redwing of the season.

29th. An adult female Pintail taken on the decoy, pinioned, and placed in the aviary, where she became perfectly tame in a few days.

OCTOBER.

1st. Sudden appearance, on the river near the house, of a vast number of Sand Martins, a species never very abundant in the

immediate locality, and notably scarce throughout this summer; only two were to be seen on the 2nd inst. I may mention that we had a whole gale from W. by S. on the 1st, and that the 2nd was a perfectly calm, sunny day, with a slight touch of frost in the early morning.

8th. I heard and saw the first Brambling, and first Grey Crow of the season.

15th. I received a Little Owl, alive, that was taken from a rabbit-burrow at Deene a few days ago, its retreat discovered by a pointer-dog. This bird is, in all probability, one of the many turned down hereabouts during the last few years.

17th. Wild, stormy day, with strong N.W. wind. Clouds of small birds crossed the lawn *to windward* throughout the day; the majority—so far as I could make out from the window—was composed of Sky Larks; but there were also great numbers of Chaffinches, Linnets, Greenfinches, possibly Redpolls and Starlings. Ten Geese also passed over the house, going heads to windward.

18th. Wind veering to the N.; a great many birds passing to S.W. First certain report of Fieldfare for this season.

20th. First Woodcock of the season, shot close to the house by the falconer. One of the gamekeepers, who was employed in packing game to send away at the game-larder, suddenly heard a great uproar of Chaffinches, Tits, and Robins, and thinking that it was, in all probability, caused by the appearance of a Little Owl, went out to investigate, and found that the excitement was due to the Woodcock, which had apparently just settled under a chestnut tree hard by the larder; he flushed and marked down the stranger, and summoned the falconer with his gun. This is not by any means the first instance that has come to my knowledge, in this county, of the mobbing of a Woodcock by small birds—a proof, no doubt, of the lamentable local scarcity of this desirable species.

22nd. Four Pochards and an adult pair of Scaups dropped on to the decoy-pool at morning flight-time, but left at sunset, and did not reappear there.

23rd. First Wigeon of this season, on the decoy.

25th. First Water Rail of the season, at the decoy.

NOVEMBER.

3rd. The decoy-man brought in twelve Mallards, taken this morning, and told me that he had left fifty-five of this species, eight Teal, and four Wigeon on the pool. The meadows are perfectly dry, hard, and very bare, and there is not a Snipe to be found in the neighbourhood.

10th. A solitary Swallow flying around the house.

22nd. Received a letter from a resident of Woodford, near Thrapston, telling that he had caught a strange bird, that he believed it to be a "Sea Egal," and wished to know if it had escaped from us. In response to a telegram from me the writer brought his bird here in the afternoon: it is an immature Common Gull, in good condition.

26th. An adult Kittiwake, miserably thin and weak, was picked up yesterday in the rectory garden at Tichmarsh, and brought to me this afternoon. This bird recovered, and thrived upon earth-worms for some weeks, but as soon as the supply of this food failed, on account of the severe frost, the gull refused to feed at all, and of course died of starvation. It is certainly remarkable that such an especially maritime bird as the Kittiwake should utterly decline to eat both salt- and fresh-water fishes and raw meat.

28th. A small lot of Snipes has come in; the first "Jack" of this season was shot to-day, with six Common Snipes and three Teal. Five Goldeneyes on the decoy.

DECEMBER.

6th. A Water Rail was caught by the decoy-dog; this is only the second occurrence of this by no means locally rare bird hereabouts that has come to my knowledge this season. A large flock of Siskins on the alders near Pilton bridges.

10th. Three Geese—which, from the account given to me, must, I think, be *Anser albifrons*—seen near Aldwinckle.

12th. The decoy-man reports a solitary "Grey Goose" as haunting the meadows in the neighbourhood of the decoy.

16th. A fairly good male Tufted Duck shot on the river near Tichmarsh.

21st. We have been, and still are, feeding many birds on the garden-terrace during this terrible spell of frost and snow.

I notice that the few Song Thrushes, and many Blackbirds, that come regularly to the banquet scattered for them on the swept gravel, fight furiously with their own species, but do not molest the Sparrows, Chaffinches, Redbreasts, or Hedgesparrows. The Nuthatches and Tits are regaled at some of the windows of our top storey, and very rarely come down to the terrace.

24th. A Dabchick, caught under the platform at Barnwell Station, was brought to me alive; it took two or three meal-worms, but declined everything else offered to it, and soon died.

The year 1890 was, in our locality, remarkable from an ornithological point of view, from the late stay of the northward-bound Wood Pigeons, owing probably to the cold northerly winds that prevailed almost throughout the month of May, and the comparative scarcity of two of our usually abundant species, the Redstart and Spotted Flycatcher. On the other hand, Swallows and House Martins were remarkably abundant, and most of our other vernal migrants quite up to their average numbers. The extraordinarily dry weather of the latter end of August, nearly the whole of September and the early days of October deprived us, to a great extent, of many of our usual autumnal visitors,—*e.g.* Spotted Crakes, Snipes, and other more or less frequent waders,—and no doubt hastened the departure of the Corn Crakes, which swarmed in our meadows before hay time, but had virtually disappeared before September. As I have stated in these notes, there was an immense passage of migratory birds in September and October, but I did not hear of a Ring Ouzel, and only saw one Grey Wagtail during the autumn. I am of opinion that the valley of the Nene, from the Wash as far up as Thrapston, is certainly a much-used route of migration; but I believe that the majority of our autumnal migrants leave the valley somewhere above that town, and strike across country for the eastern affluents of the Severn, and my theory regarding this last autumn is that the migrants, with this intention, started earlier than usual, and finding our district dry and unproductive, passed on without lingering; the river was unusually low, and is annually becoming less attractive to animals of all kinds, from pollution by chemical poisons. The very severe frosts and snow of December brought us no uncommon birds, even before all our streams were completely ice-bound, as they have been, and still are at this moment (Jan. 8th, 1891).

The following dates, all of which may be depended upon *quantum valeant*, of course prove nothing beyond the dates upon which my informants first saw the birds named. In my opinion, the *only* value of these records is for comparison with others from different localities:—March 12th, Woodcock; 16th, Merlin; 23rd, Chiffchaff; 28th, Wheatear; 30th, Whinchat, Tree Pipit; 31st, Wryneck, Golden Plover. April 9th, Blackcap; 14th, Ray's Wagtail, Swallow; 15th, Martin; 16th, Cuckoo, Willow Wren; 17th, Sand Martin; 18th, Wigeon; 21st, Redstart, Nightingale; 22nd, Sedge Warbler; 23rd, Common Sandpiper; 26th, White-throat; 29th, Wood Wren, Red-backed Shrike; 30th, Landrail. May 2nd, Turtle Dove; 4th, Lesser Whitethroat; 6th, Spotted Flycatcher; 7th, Reed Warbler; 15th, Swift.

ON THE HERPETOLOGY OF THE GRAND DUCHY OF BADEN.

BY G. NORMAN DOUGLASS.

(Continued from p. 20.)

2. *Lacerta agilis* (Linn.).—The young are the first to appear in spring, namely, about the middle of March, and often pay dearly for their temerity; they are also the last to withdraw towards the end of October. The old males leave their winter quarters towards the beginning of April, and may be observed, often still covered with earth, basking in the warm sunshine. They precede the females by about a week, as in the case of many other reptiles, batrachia, fishes, and migratory birds.

With respect to the distribution of this lizard, it may be noticed that in the Bavarian Palatinate and Northern Elsass it is for the most part less ubiquitous than *L. muralis*; and I hear that in some districts, as near Deidesheim, where both the southern forms are found, *L. agilis* is decidedly scarce. On the eastern side of the Rhine it is by far the most generally-diffused species, avoiding the highest parts only of the Black Forest, while in the lower and wooded portions of the country it is most abundant, and frequently attains large dimensions.

The extreme length usually cited is 21 cm., but, in the immediate vicinity of the capital, specimens of 20 to 22 cm. are not

uncommon, and one in my possession from a small village about five miles distant (Wörth) measures as much as 25.1 cm. This individual, a male, is otherwise interesting as possessing a distinctly-developed gular fold, a feature as a rule not marked in *L. agilis*. According to Bedriaga, the gular fold is characteristic of some Russian forms of this species, a circumstance which appears to countenance his supposition respecting its affinity with *L. viridis*, these Russian varieties being, as he shows, the intermediate links. I see Steindachner ('Schlangen &c. der Galapagosinseln'), speaking of *Amblyrhynchus*, says, "Some large specimens have a *sulcus gularis*, others have absolutely none." The young of *L. agilis* possess a marked gular fold, which, in the same manner as that of some caudate batrachians, loses its distinctness at the approach of maturity.

During the growth of the individual the collar which at first, like that of *L. muralis*, is even-edged, becomes denticulated. It is to be observed, however, that immediately after desquamation, or with males of a bright green colour, the edges of the otherwise pigmented collar are often quite translucent, the green colour exhibiting an even line, as though the collar were not serrated.

It is open to question whether much stress should be laid on cases of individual variability such as these, though they may under circumstances give a clue to generic relationships. As another example may be adduced the variability in the rows of ventral plates of certain species, which has caused some difficulty to systematic naturalists; as also the irregularities occurring in the plates on the head. From a considerable list of such irregularities which I have tabulated,* it appears that (1) they occur more frequently with the male than with the female; (2) some correlation appears to exist between certain plates, the variability of one entailing that of another; (3) some irregularities are more liable to occur than others, and in an analogous manner with different species of lizards.

This tendency in different species to present analogous vari-

* As: occipital rudimentary, often absent; internasal very variable in shape and size; between the latter and the frontonasalia a small plate often inserted; interparietal divided into small plates; two plates joined together without a division, or all plates irregular (perhaps the result of an external injury), &c.

ations is in itself a study, and one which deserves in the highest degree the attention of those who have the required leisure and materials at their disposal. In view of the growing interest now justly attached to "variability" in general, it may not be out of place to refer to a few facts of this nature which have struck me in comparing a very limited number of species, and with respect only to one character (that of colour). Generalisation is not always to be commended in enquiries of this description, but in the present instance it will appear obvious that the universality of the phenomenon becomes more apparent as we extend the field for investigation of this subject, by bringing together larger groups, and by comparing them from more than one point of view. Perhaps in no department more than in Herpetology has this tendency to analogous variability been productive of confusion in nomenclature, by frequently concealing true "specific" characters.

In the instance of *Lacerta agilis* hardly any colour-variety can be pointed out which is not "parallel" to others of *L. viridis* or *L. muralis*. Thus the uniform brilliant green tint, which covers in rare cases even the head, limbs, and dorsal zone of the male,*—the last parts of the body to undergo this periodical change,—may be said to correspond in *L. muralis* to the var. *elegans*, Eimer, or to the var. *viridissima*, Fitz. of *L. viridis*. Another variety of the same lizard, not uncommon in Baden, is marked by a profusion of small black dots, greatly resembling the ordinary *L. viridis punctata*, and suggestive of several types of *L. muralis*.

In considering the curious tendency exhibited by various species to offer analogous varieties of this description, it is immaterial to notice whether these varieties are found only sporadically, or whether they have developed into fixed local races; and further, whether the analogy is permanent or of a merely transitory nature. For it is sometimes more pronounced at certain periods of the year, and in some cases it is only then that its existence strikes the observer.

In support of this, I may call attention to the significant fact that some males of *L. agilis*, far from obliterating in spring all

* Boettger, 'Zoolog. Garten,' 1885, mentions this form of *L. agilis* as very common near Strasburg.

traces of their usual darker markings in a glow of vivid green (as has been supposed), frequently tend to embellish and render conspicuous these designs, notably the brown dorsal stripe.* This is often transformed into an object of great beauty, and a considerable amount of variety is displayed even in the arrangement of this single feature. In many cases a broad band of white runs down the middle of it, in others two thin white bands accompany it on each side, the vertebral zone itself being narrowed and darkened at the same time. Sometimes to the last figure a delicate row of white specks is also added along the centre of the back, which then displays three parallel white lines; or again, the ocelli on the lateral portions each exhibit a white centre. An exactly similar development of patterns takes place with some forms of *L. muralis*, while the analogy with *L. viridis bilineata* (or respectively *trilineata* and *quinque-vittata*) is evident.†

The Sand Lizard offers other varieties interesting from this point of view, such as one which may be called analogous to the var. *nigriventris* of *Lacerta muralis*—a *nigriventris* form of *L. oxycephala* has also been described—another is transversely barred with black markings, like several forms of *L. viridis* and *L. muralis*.

Even the Blind-worm, *Anguis fragilis*, within its stringently limited province of variation, furnishes varieties analogous to the single- or double-lined, as well as to the speckled or cross-striped forms of *L. agilis* above referred to, and if we look still further to the Colubrine Snakes, we encounter numberless instances of one species presenting simultaneously uniformly-coloured, spotted, longitudinally or transversely striated varieties.

* The difference between two males thus diversely decorated is very striking:—later in the season they again resemble each other (having doffed their ornamental costume), and generally assume a bluish-grey tint, owing, I presume, to the “diminished vigour of the constitution.”

† It is difficult to imagine why certain colour-varieties of one species should occur often promiscuously amongst others, and elsewhere as fixed local forms. In the latter case they are sometimes seen to gain the advantages of adaptation to the environment at the same time. The particular two-lined variety of *L. viridis* above alluded to has probably not become established in more parts of Western Europe because it is here mostly confined to the female, and in such cases of sexual dimorphism the preponderance of the male element will generally prevent the young from acquiring, otherwise than temporarily, characters peculiar to the female.

Of still more general nature may be mentioned the frequent appearance, in very many reptiles, of melanotic varieties. Another example is the widespread tendency for morphologically corresponding parts to be marked in a similar manner. Thus attention has been drawn (Leydig, 'Pigmente der Haut-decke,' p. 17) to the dark streak which in many amphibia runs from the nasal opening through the eyes, and is likewise perceivable in some ophidians.* Another case in point is the bright yellow colouring which is seen on the hind legs of many of our *Ranidæ* (its entire absence with *R. ridibunda* is a distinguishing feature of that species); the reproduction of blue or black spots on the outer ventral plates, common to all four of the German *Lacertidæ*, or the V-shaped mark on the shoulders of many anurous batrachians may be also mentioned. The formation of the last-named feature can be traced, in all species which possess it, to the breaking-up of the lateral lines into oval spots, which, when they coalesce at the back of the head (though this is not universally the case), produce this figure.

But, though the development of these markings may have been identical, their existence is less a sign of close affinity than of an inherited tendency to vary in an analogous manner; a fact which is demonstrated still more clearly in the rarer cases of structural variability of this kind.

A reference to any work which enumerates the varieties of the Reptilia and Amphibia will show that the number of such instances could be multiplied *ad infinitum*, and will serve at the same time to illustrate the principle firmly established, that "Nature is prodigal in variety, but niggardly in innovation."

A number of Sand Lizards from extensive tracts of wood in Baden, and from the large Bienwald on the other side of the Rhine, were very uniform in their coloration. This circumstance at first led me to suspect a connection between the locality

* The importance attached by some zoologists to markings, even as characteristic as these often are, as something inoculated into the constitution, and hence unalterable, appears often exaggerated. With birds they are frequently of great value; with reptiles, and still more in the case of batrachians, their stability is easily overrated, and in the cases here named the markings, or special colours, however frequent, are not constant characters in the species which exhibit them.

and their colour, but I should feel averse to drawing any inference from this case, unless it could be supported by others.

A propos of some protectively coloured local races of this species referred to by Dr. Leydig, I have been at some pains to discover the exact locality in his instance of those on the Gebhardsberg, near Lake Constance; but hitherto without success. During a visit to the renowned Miocene deposits at Oehningen, on the Rhine, I was no less unfortunate with the protectively-coloured *L. agilis* he mentions; but this was to be expected, as the sides of the road on which the adaptation to the soil was observed were quite overgrown at the time. I may note that these quarries, celebrated in their day for Schleuchzer's "*homo diluvii testis*," and the wonderful Fauna and Flora described by Heer and others, have been entirely covered with vegetation for the last twelve years, so that this site is now-a-days only found with difficulty. It was last worked by an enterprising Swiss, who established some brick-kilns there, but at present the enthusiastic palæontologist, if not sufficiently compensated for this disappointment by the scenery, is driven to excavate his own quarry in order to obtain a few specimens.

The individual variability of this species is great. In a series of males from the Kaiserstuhl the dorsal stripe was of a light brick-red colour: this, however, proved to be not the true var. *erythronotus* Fitz., prevalent in several chiefly mountainous districts.

Passing on to isolated cases, one or two males captured at different seasons and localities, were interesting, the upper surfaces and sides being of a dark gamboge colour, without any traces of green. With the female the sphere of variability is more restricted; one type of coloration not uncommonly met with is greyish green, covered with innumerable black and white dots, and recalling the speckled male variety already alluded to. Another form is of a uniform cinnamon-colour, others again are very prettily marked with rings of reddish brown on a ground of stone-colour. The lower surfaces sometimes assume a rich yellow tinge, and it is noticeable that the female of *L. viridis* is often coloured in a similar manner.

L. agilis, as well as the three other species, suffers much from the parasitic *Ixodes ricinus*. I have counted as many as

forty-five of these pests on one individual, affecting mostly the throat, limbs, and face.

The proportion of the sexes seems to be more equal than with *L. muralis*. The males still predominate considerably, although the females, especially towards summer, appear to be more numerous, owing to their diminished activity.

(To be continued.)

NOTES AND QUERIES.

Death of the Rev. H. T. Frere.—We have recently heard with regret of the death of an old contributor to this journal, in the person of the Rev. Henry Temple Frere, who passed away in December last, in the sixty-ninth year of his age, at Burston Rectory, near Diss. He was born at the family seat at Roydon Hall, in 1821, and was all his life devoted to the study of Natural History. The owner of a small but choice collection of birds, he prided himself especially on two British-killed Savi's Warblers, one of which he lately presented to Professor Newton for the Cambridge Museum, and an American Meadow Starling, *Sturnella magna*, shot at Thrandeston, in March, 1860. He was one of the oldest correspondents of 'The Zoologist,' and a member of the Norwich Naturalists' Society, whom he entertained at Burston on the occasion of one of their annual excursions. In the Natural History of his own county he always took a great interest, and was a constant correspondent of the late Mr. Stevenson, to whom he communicated several useful notes for his 'Birds of Norfolk.'

MAMMALIA.

Melanism in Mammals and the Irish Rat.—In Dr. Mivart's 'Monograph of the Canidæ,' in his description (p. 7) of the black variety of the Wolf, he remarks:—"It is not, however, completely black, having a reddish tinge on the hinder part of either thigh, while the margins of the mouth, a patch on the breast, the under surface of the lower jaw, and the paws are white." Now in the black variety of the Common Rat (the so-called Irish Rat, *Mus hibernicus* of Thompson), the region of the muzzle is whitish, the feet are silvery white, and in about twenty per cent. of the specimens examined by us the breast had a white patch. The flanks of the Irish Rat have a reddish cast, and in not a few specimens this is more pronounced upon the thighs. We have no wish to give undue significance to the value of these peculiarities, but we venture to suggest the probability that the phenomenon of melanism in the Mammalia is frequently accompanied by

a whitish or nearly white muzzle, white feet, and by a tendency to bear a white patch on the breast. Further investigation may show that the singular concomitants to melanism, in the case of the Wolf and the Rat, are perhaps more general, and not confined to these species. [So-called "black cats" are hardly ever entirely black; there is almost always a white foot or a white spot on the chest.—ED.] We should like to take this opportunity of modifying a statement in our paper in the last number of 'The Zoologist,' which escaped attention when bringing our report down to date. The words "several naturalists" (p. 1) should have been "British naturalists"; for since that statement was penned we became aware that Blasius, in 1857 ('Fauna der Wirbelthiere Deutschlands: Säugethiere,' p. 815), and De L'Isle, in 1865 (Ann. Sci. Nat. iv. Zoologie, p. 189), had expressed the opinion that *Mus hibernicus* was only a variety or race of *M. decumanus*. We did not, however, think it necessary to allude to this in our report, for our object there was to make known facts based upon the examination of specimens, and not to quote mere opinions founded upon a perusal of Thompson's original description.—W. EAGLE CLARKE & GERALD E. H. BARRETT-HAMILTON.

Reported Wild Cat in Shetland.—As there are no real Wild Cats in Shetland, the animal reported (Zool. 1890, p. 454) was doubtless a descendant of the ordinary domestic animal—cats which have run wild, and are to be found in several of the Shetland Islands, haunting the steep cliffs where rabbits abound, and living upon these. The father of the Mr. Laurensen who shot the animal, and is mentioned in the report referred to, in a letter to me describing an eyrie of the White-tailed Eagle, alludes to the abundance of these so-called Wild Cats near the site of the eyrie. The shooter, Mr. J. G. Laurensen, states that he can find no difference, except in size, between the cat referred to and a domestic animal. In colour it is said to resemble a leopard, but with *white* paws. From its teeth, it was evidently an old animal.—HAROLD RAEBURN (The Elms, Eastern Road, Romford).

Leaping powers of the Irish Hare (*Lepus variabilis*).—In 'The Zoologist' for 1888 (p. 259) there is an interesting note, by Dr. R. W. Shufeldt, on the leaping powers of two species of American Hares, *Lepus callotis* and *L. sylvaticus*, to which is appended an editorial request for details of similar experiments with English and Scotch Hares. Bearing this in mind, I made a few experiments here during the recent frost with some Irish Hares. On Dec. 28th I was standing near a fir tree close to the lawn at Kilmanock, when a Hare passed by me across the lawn. I immediately shouted loudly, and sent a little Dachshund, which happened to be with me at the time, in pursuit. The uproar caused by our united efforts had the effect of making the Hare go away at a great pace. I then

measured the length of several successive leaps, and found them to be, in inches:—90, 46, 90, 45, 86, 42, 62, 44, 86, 47, 60, 120. The snow being hard and frozen at the top, the animal did not sink into it, but left two slight, but clearly recognisable, footmarks on its surface after each leap. The measurements were made from one pair of marks on the snow to the next pair, and not, as in the following measurements, from one mark made by a hind foot to the next made by a hind foot. They are rough, but are probably accurate to within an inch or two. The largest leap, 10 ft., will compare very favourably with the measurements given by Dr. Shufeldt of the leaps of the Mexican Hare, which he describes as a "big hare," and therefore likely to make a longer leap than our own. Probably the Hare whose leap I measured would have added another foot to her best efforts if she had had a brace of greyhounds at her heels. I found that the length of the leaps taken by a Hare when merely wandering about was about 30 in. from the mark made by one hind foot to the next one made by that foot, or much less if measured from a fore-foot mark to the next hind-foot mark. This was also about the length of the dog's leap. The alternate nature of the leaps is interesting to notice, long and short leaps seeming to follow each other in regular succession.—G. E. H. BARRETT-HAMILTON (Kilmanock, New Ross, Co. Wexford).

Hybernation of Squirrels.—Some months ago I searched through the back volumes of 'The Zoologist,' and referred to Bell's 'Quadrupeds,' to ascertain the facts in reference to the reported hybernation of Squirrels, but was unable to find any very definite statement. The habits of so common an animal must be familiar to many readers of 'The Zoologist,' and it might be of interest to others, as it certainly would be to myself, if the results of their observations on the subject could be recorded in your Journal. That Squirrels are busy enough with the fir-cones in our woods, in mild winter weather, is of course well known; but have there been any authentic records of actual hybernation in periods of severe cold? On the morning of Nov. 28th, 1890, during sharp frost, I saw a Squirrel climbing with its accustomed agility among the trees in a copse near here. The temperature fell to 20° Fahr. the night before, and for several days previously we had hard weather with biting east wind. Will you kindly tell me whether the hybernation of Squirrels is a point on which there is any doubt, and, if so, would it not be worth while to invite your readers to give their experience regarding it?—ARTHUR LISTER (Highcliff, Lyme Regis).

BIRDS.

Occurrence of the Blackcap in Winter.—The occasional occurrence in England and Ireland during the winter months of the Blackcap, *Sylvia atricapilla*, has been from time to time noted in this and other journals, but such instances have always been regarded as exceptional; have been

observed chiefly in the southernmost counties of England, and generally during mild winters. To find these delicate little summer birds sojourning here during such severe weather as has been experienced during the last six weeks was hardly to be expected, and yet two or three instances of their having been met with in December, 1890, and January, 1891, have been reported. Mr. Samuel Bale forwarded a male Blackcap which was shot on December 12th, while feeding on some honeysuckle in a garden at Barnstaple, North Devon. On the 20th of the same month, according to Mr. O. V. Aplin, a female Blackcap was shot at Bloxham, Oxfordshire, while feeding on the berries of the cotoneaster. There were six inches of snow on the ground at the time, and the cold was intense. The bird, nevertheless, on examination was found to be in good condition. At Lyme Regis, Dorsetshire, on December 23rd, Mr. Arthur Lister observed a hen Blackcap feeding in his garden, and found one—probably the same bird—lying dead there ten days later. On January 5th Mr. W. K. Mann, of Clifton, communicated the fact that a pair of Blackcaps had frequented a garden at Ilfracombe, and on the date mentioned were still there. The question arises, Were these birds voluntary sojourners here for the winter, or were they wanderers from those vast flocks of small birds which, about the same time, were observed for several hours on different days to be speeding westward through Sussex, Dorset, and Devon? A note on this remarkable migration will be found in the present number (p. 63).—J. E. HARTING.

Marsh Harrier in North Devon.—Like all our larger birds of prey, the Marsh Harrier is shot down by everybody who has the chance of doing so, and this bird probably will soon be extinct in this neighbourhood. A male was killed on Braunton marshes on November 3rd, and has been preserved for the collection belonging to the United Services College, Westward Ho.—H. A. EVANS (Westward Ho).

Pomatorhine Skua in Co. Mayo.—I received a good specimen of the Pomatorhine Skua, in its first year's plumage, from my friend Dr. H. Scott, of Enniscrone, which had been shot by his nephew in the last week of November, at Killasea, Co. Mayo, as it was flying over a bog in company with two or three others. Killasea is situated twelve or thirteen miles from the nearest part of the sea coast, so it is probable the birds were making their way across the country to the south-west, their usual line of migration from Killala Bay.—ROBERT WARREN (Moyview, Ballina).

Pomatorhine Skua in Co. Mayo.—I have received an adult specimen of this species from my friend Dr. Burkitt. It was found dead, on Nov. 8th, in a field near the house where he resides, about a mile from Belmullett. It appears to have perished from starvation and exposure, the weather on Nov. 5th, 6th and 7th having been most tempestuous. Dr. Burkitt informs me that the bird was greatly attenuated, weighing but 14 oz., and

that the throat and stomach contained no trace of food. This is interesting in connection with the occurrence noted in the 'Field' of Nov. 1st, of another Pomatorhine Skua obtained on Lough Conn on Oct. 24th, Mr. Warren, of Moyview, having no previous record of the species on our west coast since 1862.—R. J. USSHER (Cappagh, Co. Waterford).

Common Buzzard in Surrey.—A specimen of the Common Buzzard, *Buteo vulgaris*, was caught in a trap by a gamekeeper at Woodhill, a few miles from Bramley, on November 15th last. It was a hen bird, measuring four feet from tip to tip of wings. It has been preserved by Mr. Bradden, taxidermist, of Guildford.—G. H. EASTWOOD (Godalming).

Great Flight of Small Birds to the Westward.—Writing from Brighton, on the 4th of December last, Mr. H. S. Harland reported that on Nov. 27th, during the whole of the day, thousands of small birds—for the most part Starlings, but including Thrushes, Larks, Fieldfares, and Redwings—flew past the sea-front of Brighton in an almost continuous stream, from east to west and from morn till eve, The wind was N. by W., and during the forenoon the birds had to face a snow-storm. From this it was concluded that still more severe weather was in prospect, with the wind veering round to the east; and this proved to be the case. The following day the wind was due east, and the frost became so intense that snow remained on the beach down to high-water mark until Nov. 30th.

Further westward, Mr. Arthur Lister, writing from Lyme Regis on Dec. 23rd, reported as follows:—"On Thursday night and throughout Friday, the 18th and 19th of December, snow fell heavily over a great part of the country, with a westerly wind; for nearly a month previously the wind had blown from the east and north-east, with continuous frost at night, the temperature seldom rising above freezing-point during the day. The lowest I registered at Lyme Regis was 18° F. on Nov. 29th, and 20° to 21° on three other nights; but the cold was more severe inland, for this house stands on high land overlooking the sea, and is sheltered from the north by trees and rising ground. Up to Friday, Dec. 19th, we had little snow in our immediate neighbourhood. On Dec. 20th the wind returned to the N.E., with freezing rain, which covered all herbage with a thin coating of ice. This was very noticeable on the leaves of *Iris fetidissima*, a plant which is very abundant on the Lyme undercliff, where the ground was strewn with thin plates blown off by the wind, and bearing the impression of the veins of the leaves. Towards evening heavy snow set in, and in a few hours lay four inches to a foot deep over all the country side. Lyme Regis, lying in the centre of West Bay, between Portland and the Start, has been a favourable point for witnessing the partial migration of birds occasioned by conditions of weather such as I have described. During the whole of Dec. 20th vast flocks of Larks and Starlings, with Fieldfares,

Redwings, Lapwings, and Linnets, with other small birds, passed over us, flying west, in an almost continuous stream; Larks were most abundant, and must have numbered many hundreds of thousands. Some of them appeared much fatigued, and they spread in multitudes over kitchen gardens and turnip fields, but the main body kept on their course to the westward. How long this lasted into the night we could not tell, but some time after dark the twitter of Larks could be heard. From 8 a.m. to about noon on the morning of Dec. 21st, the stream of Larks and other birds continued to pass in similar clouds as on the previous day, but it slackened as the day wore on, and towards evening it very nearly ceased. Although Larks formed the bulk of the migrants, Linnets were very numerous; some of these were so tame that they remained searching for seeds in the heads of knapweed and charlock which stood above the snow, while we passed within a few yards of them. On the cleared patches, about hayricks, Chaffinches, Larks, Tits, Starlings, Linnets, Yellowhammers, Greenfinches, and Rooks were in great abundance, with a few Cirl Buntings and Wagtails. Some years ago, when hard weather set in over the eastern counties, we observed migration towards the west along the same lines as in the present instance. Larks and Starlings formed the majority of the migrants, but, though their numbers were very great, they did not approach the vast flocks seen on Dec. 20th and 21st. On Dec. 23rd the wind changed to the S.E., with thaw and rain, and, on the melting snow, dead Larks, Redwings, and Linnets were frequently found. Those examined were miserably thin, with nothing in their gizzards but grit."

In a later report, dated Jan. 8th, 1891, Mr. Lister writes:—"Since the date of my last communication (Dec. 23rd) we have experienced in this district (Lyme Regis) a continuance of the rigorous weather which has prevailed throughout the country, and which has killed off Thrushes and Blackbirds in numbers altogether unprecedented in my experience; on the public roads, as well as along the hedgerows, dead birds are met with in dozens. Redwings were the most numerous victims when the frost first set in; they came to us in great numbers about the middle of December, together with a vast influx of Song Thrushes, so that in many fields the two species might be counted almost in hundreds; but the persistent cold and snow have driven away most of the survivors, which have probably joined the flocks of other birds flying westwards; their numbers, indeed, have so diminished that on the 4th of January not a Redwing was to be seen or heard in a ramble of several miles. The migration of Larks, referred to in my former letter, has continued ever since, though with considerable fluctuation; with somewhat milder weather between Jan. 2nd and 4th it had almost ceased, but on the 5th it was again renewed. The day had been almost cloudless, with steady N.E. wind: towards evening the cold increased, and for several hours flights of Larks, going westward, passed

over in scattered groups, without intermission, till after dark. During the night the temperature steadily fell, and at 10 o'clock on the morning of the 6th it stood at 22° against the house. On going into my garden at that hour, I found on the path, by the side of a thick holly tree close to the house, a frozen hen Blackcap, *Sylvia atricapilla*, doubtless the same which we had observed a fortnight before (on Dec. 22nd), and which had at last succumbed to the bitter cold. It was not emaciated, like most of the Red-wings and Thrushes we examined, but the stomach contained nothing but a little mucous matter, with no special character which the microscope could determine."

From a point still further westward, the Rev. E. C. Spicer, of Throwleigh Rectory, Devon, writes:—"An extraordinary flight of birds was observed in many parts of Devon on the morning of Dec. 21st, after the first heavy fall of snow took place at the beginning of the present severe weather. At 8 o'clock on Sunday morning (Dec. 21st) I was astonished at a continuous stream of Skylarks flying overhead in a westerly direction. The flight continued for more than an hour after that, in the most astonishing numbers. Over five hundred were counted in three minutes, and the cloud of birds seemed endless, in every direction. An old farmer here said that he had seen a similar thing about ten years ago. The birds then were found on the estuaries, and by the sea-coast of Cornwall, where they died by thousands. Several letters have appeared in the local papers announcing a similar migration on the same morning, so that there must have been millions of birds on the wing. One correspondent mentions other birds—Thrushes, Blackbirds, &c.—as well, but here I saw only Skylarks. I have seen no record of their destination. It would be interesting to know if any of your readers could tell us where the birds went. They were all flying towards Cornwall. I observed also large detached flocks of Plover, flying towards Dartmoor, on the edge of which I live, in a southerly direction. The appearance of these birds, all hastening away in perfect silence, was almost weird in the dead stillness, all the ground and every twig and bush being covered with deep snow, and not a breath of wind stirring. The event has certainly justified their instincts, for until to-day (Jan. 1st) it has been almost impossible for the birds to obtain any food, except from the berries, which this year are exceptionally plentiful. Large flocks of Fieldfares have taken possession of my garden, where there are a great many hollies, and at any noise they rush out of the bushes like a swarm of flies. It is curious to watch them from the windows in the morning, some ten or a dozen sitting in the snow under the bushes, mere dejected heaps of feathers, occasionally pecking at the berries which their busy comrades have knocked off. The Thrushes are in the wildest excitement. They sit above the hollies, quivering and chattering, and occasionally darting upon a luckless Fieldfare, whose unwonted presence they resent most strongly. I do

not know how these birds discover the berries; it cannot be by their colour, for there are two large hollies within ten yards of each other; one of them was for days full of birds constantly flying past the other, which was almost a mass of brilliant red berries. One tree was almost stripped bare, and the birds all went to an adjoining field for three days. Then one morning I found them in the remaining bush, which they speedily stripped as bare as the rest."

The Water Rail in Middlesex.—I have for the last two months intended to inform you of the occurrence of the Water Rail, *Rallus aquaticus*, in this neighbourhood, where of late years it has been but little seen. On Oct. 31st a friend brought me a female bird of this species, which he had picked up by the road-side near Osterley Park. It was in excellent plumage, though miserably thin, and had apparently died of starvation.—ANTHONY BELT (Ealing).

[But Water Rails are always thin, or seem so; the sternum being very narrow and the ribs much compressed, a peculiarity of structure correlated no doubt with the bird's habits. So also with the Land Rail, Spotted Crane, and in fact all the *Rallidæ*.—ED.]

Scaup in Leicestershire.—A female Scaup, *Fuligula marila*, was shot at Thornton Reservoir on Dec. 4th, and is now in my possession. I am indebted for this note and the bird to Mr. Whitaker, of Wistow.—T. MACAULAY (Kibworth, Leicester).

[Although less addicted to fresh water than the Pochard, *Fuligula ferina*, the Scaup occasionally comes a long way inland during the winter months, and especially after rough weather.—ED.]

Addition to the Avifauna of the Færoe Islands.—The veteran ornithologist, Herr H. C. Müller, of Thorshavn, informs me that he obtained the Jack Snipe *Gallinago gallinula*, in Færoe, last year (1890), for the first time.—H. W. FEILDEN (Wells, Norfolk).

Long-tailed Duck on the Coast of Somerset.—A Long-tailed Duck, *Harelda glacialis*, was shot in the bay at Weston-super-Mare on Dec. 16th, and brought to me. It was in immature plumage, but there was no doubt about the species. I can find no mention of its previous occurrence in Somersetshire.—F. A. KNIGHT (Weston-super-Mare).

Wildfowl in Essex.—The almost arctic weather which prevailed during the early part of January caused us, in this district, to be visited by many species of birds we rarely see in milder winters. On visiting our local birdstuffer, Mr. Pettitt, on Jan. 10th, I found him very fully employed. He had received three Common Bitterns (*Botaurus stellaris*), two Bewick's Swans, one Whooper, one Mute Swan (immature, and possibly an escaped bird), two Bean Geese (*Anser segetum*), one Pink-footed Goose (*A. brachy-*

rhynchus); some Eiders (*Somateria mollissima*), immature; several Smews (*Mergus albellus*), females; and numerous other more common species of ducks and geese, a few Shore Larks (*Otocorys alpestris*) and Snow Buntings (*Plectrophenax nivalis*). I saw all these birds in the flesh, and satisfied myself that they were all local captures.—HENRY LAVER (Colchester).

King Duck at Hunstanton.—On Nov. 13th I received from Dr. Whitty a second specimen of the King Duck, which had been killed off Hunstanton, St. Edmonds, a day or two previously. In this bird the rufous edgings to the feathers indicated maturity, and upon dissection it proved to be an old female; its stomach contained remains of a species of Starfish (I believe *Ophiura albida*, Forbes) found abundantly on the mussel-scaups over which it was feeding. The measurements were so nearly the same as those of the young male that it is not worth repeating them. Like the previous specimen, it was in company with Scoters when killed, and Dr. Whitty tells me that it is not unusual for Eiders to associate with these birds: probably the mussel-scaups, which teem with marine forms equally acceptable to both species, formed the bond of union. Last year, when shooting off Hunstanton, Dr. Whitty killed a Scoter, and his boatman a female common Eider from the same flock.—T. SOUTHWELL (Norwich).

The Ring Ouzel in Ireland in Winter.—A male Ring Ouzel, in winter plumage, was brought to me alive, on Jan 21st, by Master Richard Crofton. It was captured on Jan. 19th, at his grandfather's residence, Edmundstown Park, Rathfaruham, Co, Dublin. I thought at first that it was a young bird of last year, but on showing it to my friend Mr. A. G. More he pronounced it to be an adult male in winter plumage. Is not the occurrence of this bird in winter very unusual?—CHARLES W. BENSON (Rathmines School, Dublin).

[Not so uncommon as was at one time supposed. See 'The Zoologist,' 1879, p. 203, and Trans. Norfolk Nat. Soc. 1889, vol. iv. pp. 627-8.—ED.]

Melanism of the Water Rail.—The Rev. J. E. Kelsall, in his annotated 'Birds of Hampshire,' p. 23, mentions a hairy variety of the Water Rail, taken at Blackwater: it really was a Moorhen. A list of hairy Moorhens is given in the Proceedings of the Norwich Naturalists' Society. But a lady at Christchurch has, what is quite as curious, a black Water Rail, and I am indebted to Mr. Edward Hart for obtaining the loan of it; he informs me that it was seen to strike against a bridge, in October, 1869, and then was picked up dead or disabled by a namesake of mine, who flushed it. It may be described as a real melanism, being black all over, and its own natural colours indistinguishable.—J. H. GURNEY (Keswick, Norwich).

Eared Grebe, Smew, and Bittern in North Devon.—On Thursday, Jan. 15th, a friend of mine, whilst skating near South Molton,—a town

about nine miles S.E. of Barnstaple,—caught an Eared Grebe, *Podiceps nigricollis*. It was shuffling along on the ice, and seemed unable to rise or take wing. I believe this is the first Eared Grebe recorded as having been killed in Devonshire. Several Egyptian Geese have been shot on the Taw, as well as a beautiful specimen of the Smew, *Mergus albellus*, which I saw at Mr. Rowe's, the taxidermist of this town. A Common Bittern was shot near Bideford about Jan. 1st.—J. G. HAMLING (The Close, Barnstaple).

[Our correspondent is mistaken in supposing the above-mentioned instance of the occurrence of the Eared Grebe to be the first recorded for Devonshire. Several previous captures will be found noticed in Messrs. Pidsley and Macpherson's lately published 'Birds of Devonshire,' to be had of Mr. Commin, High Street, Exeter.—ED.]

Bernacle Goose near Scarborough.—Since 1866 (in which year specimens were obtained on the coast of Northumberland) not a single example of this species has come to my knowledge. In October of that year I met with a small flock (to the best of my recollection five in number) a few miles north of Scarborough, flying southward and very low near the foot of the cliff. One I wounded, which fell near to me just over the broken water, so that ample opportunity was afforded for identification; though the bird escaped before the gun could be reloaded.—R. P. HARPER (Scarborough).

[The present severe winter has brought us so many wildfowl from the north that we may expect to hear of Bernacles from some of our correspondents.—ED.]

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

December 18, 1890.—Prof. STEWART, President, in the chair.

Messrs. T. W. Cowan, H. G. Rimmer, and H. Williams were admitted; and the following were elected Fellows of the Society:—Messrs. R. W. Phillips, S. L. Mosley, A. P. Swan, W. M. Webb, A. W. Kappel, and T. W. Fyles.

Prof. T. Johnson exhibited and made remarks on the male and female plants of *Stenogramme interrupta*.

Mr. Clement Reid exhibited specimens of *Helix obvoluta* from new localities in Sussex, and, by the aid of a specially prepared map, traced the present very local distribution of this mollusc in England.

Mr. E. M. Holmes exhibited some examples of galls formed on *Styrax benzoin* by an Aphis, *Ætegopteris styracophila*. He also exhibited and described some new British Algæ, *Mesoglaea lanosa* and *Myriocladia tomentosa*.

A paper was then read by Prof. R. J. Harvey Gibson on the structure and development of the cystocarps in *Catánella opuntia*, and critical remarks were offered by Messrs. D. H. Scott, E. M. Holmes, and others.

Mr. G. F. Scott Elliott then read an interesting paper on the effect of exposure on the relative length and breadth of leaves, upon which a discussion followed.

Jan. 15.—Prof. STEWART, President, in the chair.

Messrs. W. A. Clarke and C. M' Rae were admitted; and the following were elected Fellows:—Messrs. L. Field, E. S. Goodrich, H. S. Streatfeild, J. Symons, and C. Wilson.

The President exhibited a bunch of holly berries, which were remarkable for being perfectly black instead of red, but which in no other respect looked abnormal. The peculiarity was attributed to the effect of a fungus.

Mr. J. E. Harting exhibited a male specimen of the Wigeon, *Anas penelope*, which had been shot in Ireland, and forwarded by Mr. Williams, of Dame Street, Dublin, and which had a tassel of feathers about an inch in length, depending from the under side of the neck. The explanation suggested was that it was the result of a former shot wound, when the pellet, as often happens, plugged the wound with feathers, and the skin had grown round and below the obstruction.

A paper was then read by Dr. P. H. Carpenter on certain points in the morphology of the *Cystidea*, which were admirably demonstrated with the aid of diagrams. A discussion followed, in which Mr. H. Bury and Mr. Bather took part.

On behalf of Mr. Thomas Kirk, of Wellington, New Zealand, the Secretary read an interesting report of a botanical visit to the Auckland Islands.

ZOOLOGICAL SOCIETY OF LONDON.

January 6, 1891.—Prof. ALFRED NEWTON, F.R.S., Vice-President, in the chair.

Mr. Sclater exhibited some sketches made by Lieut. W. E. Stairs, R.E., of the horns of a large Antelope, apparently new to science, which had been met with by the Emin Pasha Relief Expedition in the forest district of the Aruwimi River.

Mr. G. A. Boulenger read the description of a new Lizard of the genus *Ctenoblepharis*, obtained in the Province of Tarapacà, Chili, by Mr. A. A. Lane, which he proposed to describe as *Ctenoblepharis jamesi*. A second paper by Mr. Boulenger contained an account of some specimens of extinct and fossil Chelonians preserved in the Museum of the Royal College of Surgeons.

Mr. F. E. Beddard gave an account of certain portions of the anatomy of the Kagu, *Rhinocetes jubatus*, as observed in specimens lately living in the Society's Gardens.

Lieut.-Col. H. H. Godwin-Austen read a paper on the land-shells collected in Borneo by Mr. A. Everett, Mr. Whitehead, and others. In this communication (the second of the series) the author gave a list of the species of the families *Zonitidæ* and *Helicidæ*, as known, from Borneo up to the present time. He described the anatomy of several species and defined two new genera (*Diakia* and *Everettia*), pointing out how they differ from previously known genera founded on anatomical characters.

Jan. 20.—W. T. BLANFORD, Esq., F.R.S., F.Z.S., in the chair.

Mr. Sclater exhibited specimens of three species of Purple Waterhens (*Porphyrio poliocephalus*, *P. cæruleus*, and *P. smaragdonotus*), of the Eastern Palæartic Region, and made remarks on their nomenclature and geographical distribution.

Mr. F. E. Beddard described a new African earthworm of the genus *Siphonogaster* from specimens transmitted by Sir A. Moloney, from the Yoruba country to the north of Lagos, and proposed to call it *Siphonogaster millsoni*.

Mr. Oswald H. Latter read some notes on the Freshwater Mussels of the genera *Anodon* and *Unio*, describing the passage of the ova from the ovary to the external gills, the mode of attachment of the glochidia to the parent's gill-plate, and some other peculiarities.

A communication was read from Mr. Roland Trimen, containing an account of a series of Butterflies collected in Tropical South-western Africa by Mr. A. W. Eriksson. The collection contained examples of 125 species, of which eleven appeared to be new to science.

A communication was read from Mr. H. H. Brindley, containing an account of a specimen of the White Bream, *Abramis blicca*, in which the pelvic fins were entirely absent.

Mr. Boulenger read notes on the osteology of the poisonous Lizards, *Heloderma horridum* and *H. suspectum*, pointing out the differences between the two species. He also remarked on the systematic position of the *Helodermatidæ*, which he held to be between the *Anguidæ* and *Varanidæ*, but nearer the former; any close relationship with the *Mosasauroidæ* was demurred to. It was incidentally mentioned that the Eocene genus *Thinosaurus*, Marsh, was probably a member of the family *Teiidæ*, and that the Cretaceous *Hydrosaurus lesinensis* was a *Dolichosaurus*. The *Dolichosauria* were considered as the probable common ancestors of the *Lacertilia*, *Pythonomorpha*, and *Ophidia*.

Prof. C. Stewart gave an account of some points in the anatomy of *Heloderma horridum* and *H. suspectum*, differing in some respects from the descriptions of these Lizards given previously by Drs. Fischer and Shufeldt. The most interesting and important point was concerning the poison-apparatus. He believed that he had shown that in both species the ducts of the gland did not enter the lower jaw, but passed directly to openings

situated under a fold of mucous membrane between the lip and the jaw. He thought that the structures previously described as ducts were only the branches of the inferior dental nerve- and blood-vessels.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

January 21, 1891, the 58th Annual Meeting.—The Rt. Hon. Lord WALSINGHAM, M.A., F.R.S., President, in the chair.

An abstract of the Treasurer's accounts was read by Mr. Herbert Druce, one of the Auditors, and the Report of the Council was read by Mr. H. Goss. It appeared therefrom that the Society had lost during the year five Fellows by death and had elected twenty-seven new Fellows; that the volume of Transactions for the year extended to nearly 700 pages, and comprised twenty memoirs, contributed by seventeen authors and illustrated by twenty-one plates. It was then announced that the following gentlemen had been elected as Officers and Council for 1891:—President, Mr. Frederick DuCane Godman, M.A., F.R.S.; Treasurer, Mr. Robert M'Lachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. Ferdinand Grut, F.L.S.; and as others, Members of the Council, Prof. R. Meldola, F.R.S., Mr. Edward Saunders, F.L.S., Dr. David Sharp, F.R.S., Mr. Richard South, Mr. H. T. Stainton, F.R.S., Colonel Charles Swinhoe, F.L.S., Mr. George H. Verrall, and the Right Honble. Lord Walsingham, M.A., F.R.S. It was also announced that the new President had appointed Lord Walsingham, Prof. Meldola, and Dr. Sharp, Vice-Presidents for the session, 1891—1892. Lord Walsingham, the retiring President, then delivered an Address. After alluding to some of the more important Entomological publications of the past year, and making special mention of those of Edwards and Scudder in America, of Romanoff in Russia, of the Oberthürs in France, and of Godman and Salvin in England, the President referred to Mr. Moore's courageous undertaking in commencing his 'Lepidoptera Indica,' on the lines adopted in his 'Lepidoptera of Ceylon.' Attention was then called to the unusual development during the past year of the study of those problems which have been the object of the researches of Darwin, Wallace, Weismann, Meldola, Poulton, and others, and to the special and increasing literature of the subject. In this connection allusion was made to Mr. Tutt's 'Entomologist's Record and Journal of Variation,' to Mr. Poulton's valuable book 'On the meaning and use of the Colours of Animals,' and to the interesting and important papers and experiments of Mr. F. Merrifield on the subject of the variation in Lepidoptera caused by differences of temperature. After alluding to the International Zoological Congress held at Paris during the past year, and to the rules of nomen-

clature which had been once more reviewed and revised, the President concluded by referring to the losses by death during the year of several Fellows of the Society and other Entomologists, special mention being made of Mr. E. T. Atkinson, Mr. J. S. Baly, Mons. l'Abbé de Marseul, Mr. Owen Wilson, Mons. Lucien Buquet, Mons. Eugene Desmarest; Prof. Heinrich Frey, Dr. R. C. R. Jordan, Mr. W. S. Dallas, Dr. L. W. Schauffuss, Dr. Hermann Dewitz, Mons. Louis Reiche, and Herr Peter Maassen. A vote of thanks to the President for his services during the year and for his address was proposed by Dr. D. Sharp, F.R.S., seconded by Mr. M'Lachlan, F.R.S., and carried. Mr. M'Lachlan then proposed a vote of thanks to the other Officers of the Society, which was seconded by Mr. S. Stevens, and carried. Lord Walsingham, Mr. Goss, and Mr. Grut replied. —H. Goss, *Hon. Secretary.*

NOTICES OF NEW BOOKS.

The River-side Naturalist: Notes on the various forms of Life met with either in, on, or by the Water, or in its immediate vicinity. By EDWARD HAMILTON, M.D., F.L.S., F.Z.S. Illustrated with numerous Woodcuts. London: Sampson Low, Marston & Co. 1890. 8vo, pp. 400.

THE author of this book, an accomplished angler, has been so struck at the want of knowledge concerning common objects of the country, displayed by friends who have accompanied him in his "river-side rambles," that he has attempted to note down, for their benefit and for that of others, some of the many interesting observations which he has made by the river in the course of his own experience. The result is a very pleasant volume.

As may be gathered from the title, he deals with a great variety of subjects. Mammals, birds, reptiles, fishes, mollusca, crustacea, insects, and plants, are all dealt with, and the fishes naturally receive a large share of attention. There is perhaps not much in the text that will be new to naturalists of any experience; but then the book is intended obviously for the inexperienced, and is designed to show how wonderfully interesting a river-side ramble may become if the "contemplative man" who wields the fly-rod will but use his eyes, his ears, and his powers of observation and reflection.

We must confess that we should have liked the book better had Dr. Hamilton quoted less from other authors, and given us more of his own experience, especially as many of the volumes quoted are among the most familiar of text-books.

We are sorry to see old fables revived without any accompanying contradiction; as, for example, the story told by the credulous Jesse, of the brooding wild-duck which flew down from her nesting tree *with one wing*, while she held her young one under the other. How the bird contrived to do this without losing her balance, and perhaps her life, in falling from such a height, the reader is left to discover.

Dr. Hamilton's remarks are much more entertaining and novel when he gives us the result of his own observations. Thus:—

“Snakes will take small fish. We were sketching by the side of a lake when suddenly a commotion in the water near us attracted our attention. We saw a snake had seized a small bleak, and was swimming towards the shore with it in its mouth. The rest of the shoal were following and surrounding the snake, as if inclined to attack it; but it got safely to some hole in the bank, and disappeared from view” (p. 171).

As might be expected, from his proclivities as an angler, the author is at his best when discoursing of fish and their peculiarities (pp. 178—292). He discusses the questions “do fishes hear”? “do they sleep”? and “do they feel pain”? and describes clearly and briefly the structure and function of the swimming or air-bladder (p. 184), which, as he says, has a great deal to do with the movements of many species:—

“Whatever may be the shape, it serves a specific purpose, *viz.*, to alter the specific gravity of the fish, so that it may rise or sink in the water. By simply compressing this bladder by approximating the walls of the abdomen, or by means of a muscular apparatus provided for the purpose upon a principle with which everyone is familiar, the fish sinks in proportion to the degree of pressure to which the contained air is subjected, and as the compressed air is again permitted to expand, the creature becoming more buoyant, rises towards the surface. In many fish (*e.g.* the Perch) the air-bladder is closed, and there is no escape for the confined air; and in those fish with this form of bladder which live at great depths, the very bringing them up to the surface (the air or gas being no longer compressed by the weight of the water) bursts the swimming bladder. This is often seen in fishing for Cod.”

Referring to the visual organs of fish Dr. Hamilton says :—

“ It would be interesting to determine at what angle fish perceive objects behind them, or directly in front of them. It would appear in many that the vision is chiefly directed upwards and laterally, but how far their vision (particularly in fish which get their food chiefly on the surface of the water) extends backwards and forwards is not yet determined. An object placed laterally, or above, will almost immediately attract or scare. We have many times been able to get close to a Trout by approaching it directly from behind, when the slightest deviation laterally would send him away. In approaching fish, not sufficient consideration is given to the powers of refraction and the medium through which a fish sees ; and it should be remembered that fish do not see objects as we see them ” (p. 183).

The distinctions between the young or parr stage of the Salmon (*Salmo salar*), the Sea Trout (*S. trutta*), and the River Trout (*S. fario*), are thus summarised by our author :—

“ In the *Salmon parr* the body is long and graceful ; the head and snout longer ; the parr marks (transverse dark bands) very distinct and separated by broad intervals ; the pectoral fins narrow, and with the ventral and anal of a dusky hue ; the tail much forked.

“ In the *migratory Trout* the body is thick and short ; the head and snout more rounded ; the dorsal fin often spotted ; the pectoral broad, and with the ventral and anal orange coloured ; the adipose fin tinged at the end a light orange ; the tail but little forked.

“ In the *river or brook Trout* the body is long and not so shapely ; the head short ; the snout very obtuse ; the eye large ; the dorsal fin spotted ; the adipose fin with a scarlet red tip ; the tail square, and but little forked.

“ To the experienced, and even to some experts, the absolute certainty of the distinction is often a matter of difficulty.”

An interesting chapter is that on Eels (pp. 286—291), wherein the author discusses the species, migrations, and propagation of these fish, and the distinguishing characters of the sexes. Most writers on Eels have stated that they breed only in the brackish water of the estuaries of our rivers, but many good observers declare that some Eels do breed in fresh water, in ponds and lakes which have no connection with rivers that run to the sea. Dr. Hamilton does not inform us to which of these two views he is inclined, nor does he explain, if Eels do not breed in isolated lakes and ponds, how it is that the supply of these fish is maintained there. Many places might be named where from time immemorial fine large Eels have been taken when required for

the table, and yet there has been apparently no diminution in the supply, nor has any fresh stock been introduced.

In this chapter, though many other authorities are quoted, we are surprised to find no mention of one of the latest and best contributions to the literature of the subject, namely, Dr. Brown Goode's paper on the life-history of the Eel, published in the 'Bulletin of the United States Fish Commission,' vol. i., 1882, pp. 71—124, and containing a useful list of the most important papers concerning the Eel and its reproduction.

In the chapter on Fresh-water Mollusca, Dr. Hamilton describes some of the species most likely to come under the notice of an angler. He might have added something about the food which they furnish to many aquatic animals, besides fish. The Otter, for example, is very fond of Mussels. The Dipper devours quantities of the Fresh-water Limpet (*Ancylus fluviatilis*), the Little Grebe may often be seen picking off the thin-shelled *Limnea* and *Physa* from the floating leaves of the yellow water-lily (*Nuphar lutea*), while the fat Trout which our author is so fond of beguiling with his dainty flies may very likely owe much of its good condition to the abundant supply of small mollusca which it is able to find, and greedily swallows.

The worst feature in Dr. Hamilton's book appears in the illustrations, the majority of which are simply execrable; being badly drawn, and badly engraved. No "river-side naturalist" ever saw a Coot or a Little Grebe swim *on the surface* of the water, as depicted on pages 34 and 44, nor a Mallard sitting up like a Guillemot, as on page 47. Weasels and Stoats never show the entire length of their limbs, as displayed on page 10, nor have we ever seen an Otter with such a white face and throat as that depicted on page 6. Many of the figures (as on pp. 55, 84, 87, 101, 123, 149, 150, 153, 209, and 295) are quite unlike the species they are intended to represent. Dr. Hamilton, we feel sure, has too good an eye for the beauties of Nature not to be aware of this, but he has been unfortunate in his artists. Several of the cuts (as on pp. 67, 77, 81, 85, 103, 123, 125, 131, and 147) are too large for the page, being actually wider than the type,—a great eye-sore,—and should have been either cut, or vignettted, or, better still, omitted altogether.

Should a second edition be contemplated, it is to be hoped that these suggestions may receive consideration; and it would

certainly be desirable to correct the typographical errors, of which there is an unusually abundant crop. Here are a score of the most noticeable:—

Page 40,	for Metzzer	read Metzner
44, ,,	Doucher	,, Doucker
44, ,,	Podiceps	,, Podicipes
46, ,,	Boschas	,, Boscas
49, ,,	Tuberville	,, Turberville
59, ,,	Meyer	,, Meves
64, 74, 75,	for Willoughby,	read Willughby
76,	for aviarian	read avian
76, ,,	rustica	,, urbica
86, ,,	Yarrel	,, Yarrell
88, ,,	Shude	,, Lhude (<i>i. e.</i> , loud)
,, ,,	showeth	,, loweth
,, ,,	butter	,, bullock
,, ,,	Music	,, murie (<i>i. e.</i> , merry), and supply
two lines omitted from the old English ballad here quoted.		
Page 90, line 9,	for sacred,	read second
119,	for Estrenne,	read Estienne
125, ,,	Yaffel	,, Yaffle
126, ,,	Nurdis	,, Hurdis
145, ,,	Stapelgrove,	Staplegrove
146, ,,	sliding kite	,, gliding kite.

The author's observations on the systematic position of the Swifts and Swallows (p. 70) show that he has not read the latest and most important contribution to the subject, namely, Dr. Shufeldt's paper published in the 'Journal of the Linnean Society,' vol. xx. (1889), pp. 299—394, in which a different conclusion is arrived at to that which he himself has endorsed.

The Birds of Norfolk, with remarks on their habits, migration, and local distribution. By HENRY STEVENSON, F.L.S. Continued by THOMAS SOUTHWELL, F.Z.S. In three volumes. Vol. III. 8vo, pp. i—xii, 1—432. London: Gurney & Jackson, Paternoster Row. 1890.

THE long-expected third volume of 'The Birds of Norfolk' has at length appeared, and fittingly brings to a close the labours of the deceased author's lifetime. At the time of his death, in August, 1888, a certain amount of progress had been made with the MS., and 160 pages were printed off. It devolved on his

friend and fellow-citizen, Mr. Thomas Southwell, of Norwich, to complete the volume, and this, as it seems to us, he has accomplished in the most satisfactory manner. We can well believe that it entailed no slight labour to decipher all the author's fragmentary notes in a handwriting never very legible, and to collate, arrange, and supplement these so as to bring all up to date must have involved an expenditure of time and energy which few editors, even if they felt competent enough, would have been willing to undertake. The value of Mr. Stevenson's two former volumes was too well known and appreciated not to make it a matter of general regret that he did not live to complete the third, and if the universal gratitude of ornithologists can compensate Mr. Southwell for all his labour in bringing this important work to a conclusion, we feel sure that it will be accorded by acclamation.

To the majority of readers, probably, the present volume will be of greater interest than either of the two which preceded it, for it appeals to sportsmen quite as much as to naturalists, and deals with all the wealth of wildfowl and seafowl for which the county of Norfolk is so justly celebrated.

Geese, Swans, Ducks, Grebes, Divers, Terns, and Gulls are all dealt with in succession, and many interesting details are given respecting the breeding haunts of many of the wildfowl, and the occasional visits of some of the rarer species. In particular we would call attention to the account given (p. 233) of the Great Crested Grebe, a bird eminently characteristic of the Norfolk Broads, and of the famous "gullery" at Scoulton Mere (p. 327). It will probably be news to many readers that there was formerly another "gullery" on the borders of the county at Brandon, on a small mere perhaps half-a-mile from the Brandon and Mildenhall Road, and close to Wangford. In a note on p. 323, Prof. Newton communicates the fact that in 1853 he was informed by the warrener that the Gulls (*Larus ridibundus*) had left off breeding there several years before, in consequence (as the tenant of the warren asserted) of the owner "taking their eggs too close." Some interesting particulars are given (p. 323) of the former nesting of this species at Stanford, on Lord Walsingham's estate, where, some time after they had ceased to breed there regularly, they were one year induced to return by placing some Gulls' eggs (which had been brought from

Scoulton) in some old Coots' nests. An excellent idea is given of the appearance of a "gullery," when disturbed, in the frontispiece to this volume, which was sketched at Scoulton in June, 1872, by the masterly hand of Joseph Wolf.

It is satisfactory to learn that since a close-time for wildfowl has been fixed by Act of Parliament, the number of Ducks remaining every summer to breed has increased considerably. Duck and Mallard, Teal, Garganey, Pochard, Tufted Duck, Gadwall, and Shoveller now breed regularly in parts of the county where they are specially protected. In the summer of 1887, when visiting Lord Walsingham at Merton, near Thetford, the present writer had the gratification of observing broods of all these species (except the Garganey) swimming with their parents about the meres at Stanford and Tomston, in addition to Coots and Moorhens, Little and Great Crested Grebes.

The Sheldrake, or Burrow Duck, frequenting the sandhills on the coast, adds one more to the list of wildfowl breeding regularly in Norfolk, and a very interesting circumstance in connection with the former inland nesting haunts of this duck is made known in the present volume (p. 123). It would seem that in the days of Sir Thomas Browne of Norwich, that is, in the time of Charles II, Sheldrakes used to breed *inland upon the warrens*, and in this author's "Account of Birds found in Norfolk" he particularly mentions these "noble-coloured fowl (*vulpanser*), which herd in coney-burrows about Norrold [*i. e.* Northwold] and other places."

While on the subject of wildfowl it is of interest to note the coloured figure which is given of the duck known as Paget's Pochard (pl. iii., p. 208), and which is now generally regarded by ornithologists as a hybrid between the Common Pochard, *Fuligula ferina*, and the Ferruginous or White-eyed Duck, *Fuligula nyroca*. Nor can we pass unnoticed the description furnished by Mr. Southwell of wildfowl decoys in Norfolk, although (as the reader is informed on p. 172) the account previously published by him on this subject in the "Transactions of the Norfolk and Norwich Naturalist's Society" (vol. ii., p. 538), is "much more complete than space will here permit of."

One of the most interesting topics discussed and illustrated in this volume, is the occurrence in the county, so long ago as Oct. 1792, of the Wall Creeper, *Tichodroma muraria*. It was

shot at Stratton Strawless, near the house of Robert Marsham, who communicated the fact to Gilbert White in a letter dated 30th Oct. 1792, and subsequently sent him a coloured drawing of two quill-feathers (here reproduced pl. v, p. 381), which leaves no doubt as to the correct determination of the species.

Mr. Southwell brings the work to a close with four useful Appendices:—(A). Species to be added since the publication of the two former volumes, namely, *Aquila chrysaëtus*, *Lanius minor*, *Turdus varius*, *Hypolais icterina*, *Sylvia nisoria*, *Motacilla alba*, *Emberiza hortulana*, *Serinus hortulanus*, *Tichodroma muraria*, *Ægialitis asiatica* (Pallas), and *Somateria spectabilis*, of which a second specimen has been lately obtained. (B). Additional notes on rare species; including Pallas's Sand Grouse and the Great Bustard. (C). Five species whose reported occurrence in Norfolk admits of doubt, namely, the Short-toed Lark, Pine Grosbeak, Eastern Golden Plover, Great White Heron, and Green-backed Gallinule, *Porphyrio smaragdonotus*. (D). Species discarded altogether from the Norfolk List, namely, *Scops asio*, *Loxia bifasciata*, *Sturnella ludoviciana*, *Ardea garzetta*, *Ardea russata*, and *Scolopux sabinii*, which, being regarded as a melanism of the Common Snipe, takes rank only as a variety.

The evidence *pro* and *con* in regard to all these, will be found detailed in the Appendices.

Prefixed to the volume is a memoir of the author by Mr. Southwell, together with a portrait which we doubt not will be very acceptable to those who were acquainted with the genial and gifted naturalist who has passed away.

The Natural History of Selborne. By the REV. GILBERT WHITE, A.M. A new edition. Edited with notes by G. CHRISTOPHER DAVIES. London: Gibbings, 18, Bury St., W.C. 1890.

It is to be regretted that in the eleven years which have elapsed since Mr. Davies first attempted to edit 'The Natural History of Selborne,' he has not taken steps to rectify some at least of the many errors into which he then fell; errors which showed at that time his evident incapacity for the task which he had undertaken. In this lately published "new edition," all the

blunders which we formerly pointed out (Zool. 1879, p. 494) remain uncorrected, besides many others to which we did not advert. An editor who does not know a Red Deer from a Fallow Deer, a Shrew from a Water Shrew, or a Curlew from a Thick-Knee; who supposes that there is only one species of Newt in the British Islands; and that White's "little yellow bird which makes a sibilous shivering noise in the tops of tall woods" is most likely the Grasshopper Warbler (which, as every ornithologist knows, is not yellow, and does not sing in the tops of trees), is hardly the one to be followed as an exponent of White's delightful letters. Rather would we have a reprint without any notes at all (save those of White himself), than have thrust upon us such comments as Mr. Davies has supplied. Some of White's notes, we observe, have been omitted, and we are presented instead with the trivial information that when the editor was a small boy, he used to delight in playing with a large Ammonite belonging to his father (p. 11); that he used (also as a small boy) "to catch great numbers of 'bull-heads' to bait his eel lines with" (p. 41), and that when sitting one evening in Jesmond Dene, Newcastle-upon-Tyne (far enough from Selborne), a Robin hopped close to him and inspected him closely (p. 106), &c. His inaccuracy extends to his "Introduction," where he tells us gravely that the house in which White lived is now (1890) the property of an eminent naturalist, Professor Thomas Bell, being evidently unaware that the eminent naturalist referred to died more than ten years ago!

In the name of all that is accurate we protest against such versions as this of an English classic being foisted on the public at the present day, when our knowledge of the subjects which it embraces is so far in advance of what it was in White's time. Naturalists of mature age and experience will require no aid from a reviewer to form a proper estimate of the worth of this volume; but we should be wanting in the candour expected of a critic if we did not warn the rising generation of readers from placing reliance in an edition which, so far as we have cared to examine it, has seemed to us to be wholly unreliable.

It is but fair to the publisher to state that the book is well printed, and, on the whole, nicely illustrated. This makes it all the more regrettable that the editor's share in its production has not been more competently executed.

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THE LYME PARK HERD OF WILD WHITE CATTLE.

BY CHARLES OLDHAM.

THE white cattle of Lyme Park, Cheshire, have gone the way of all flesh, and the very memory of them bids fair soon to be lost, or at best to be numbered with the many legends and traditions already associated with Lyme, and the Legh family, in whose possession this property has been for nearly four hundred years.

Mr. James Croston states that, according to popular tradition, the white cattle were brought from the Lancashire forests by Sir Peter Legh, who was appointed Steward of Blackburnshire in 1505;* but it is more probable that the park animals were descended from those which formerly roamed over the wild country constituting the ancient Forest of Macclesfield, and which were imparked, together with the Red-deer, at the end of the fourteenth century.†

Bewick, writing in 1790, mentions the herd, but gives no particulars of it. The following account is from Hansall's 'History of Cheshire,' which was published in 1817:—"In Lyme Park, which contains about one thousand Cheshire acres, is a herd of upwards of twenty wild cattle, similar to those in Lord Tankerville's park, at Chillington (*sic*), chiefly white, with red

* 'Croston, 'Historic Sites of Lancashire and Cheshire,' p. 338.

† Lyme was granted by letters patent, dated at Chester, Jan. 4th, 1398, to Sir Piers Legh and Margaret his wife, for services rendered by Sir Thos. D'Anyers, Margaret's father. See Croston, *op. cit.*, p. 295.

ears. They have been in the park from time immemorial, and tradition says they are indigenous. In the summer season they assemble on the high lands, and in winter seek shelter in the park woods. They were formerly fed with holly branches, with which trees the park abounded; but these being destroyed, hay now is substituted. Two of the cows are shot annually for beef."

In 1859 a cow and a bull-calf, the last of the remaining animals of the Gisburne hornless herd, were brought to Lyme, but this cross was unsuccessful for several reasons; and the introduction of new blood, in the place of a bull from Chartley, about the year 1871, and subsequently a heifer-calf from Vaynol,* came too late to save the herd, already reduced to very narrow limits from utter extinction. The bull sent in exchange to Chartley was considered unsuitable as a cross, and was slaughtered. The head, I believe, is now preserved at Chartley Hall.

When the Rev. John Storer was at Lyme, in August, 1875, there were four animals besides the Chartley bull, and at the time of Mr. A. H. Cocks's visit, in June, 1877,† these were still alive, and two heifer-calves had been born, which with the Vaynol heifer made a total of eight head, *viz.* :—

(1). An old bull said to be dying of old age, and to be eleven or twelve years old, though referred to by Mr. Storer, in 1875, as three years old.

(2). A bull, brought from Chartley as a yearling.

(3). A cow, aged about ten.

(4). A black cow, out of the old cow, by the Chartley bull, rising or turned five probably.

(5). A heifer, about two years old, by the old bull out of the old cow.

(6). A heifer, about eighteen months old, out of the black cow by the old bull.

(7). A heifer calf, by the Chartley bull, out of a domestic cow.

(8). A heifer calf from Vaynol. ‡

In August, 1884, Mr. T. A. Coward found only three animals surviving:—the black cow (4); the cow (5); and a young bull, out of the black cow by the Chartley bull.

* Storer, 'Wild White Cattle,' p. 290.

† A. H. Cocks, 'Zoologist,' 1878, p. 278.

‡ For this list, see Report of Brit. Assoc. 1887, p. 139.

The old bull (1) died in the spring of 1880, and must then have been at least fourteen years old. The Chartley bull (2), whose temper rendered him too dangerous to keep, was shot in 1882 or 1883, and his carcass sold to the butcher. The old cow (3) was shot in the winter of 1883-4; she was then nearly seventeen years old, and very feeble. The skull of this animal is preserved at the Hall, and the skin, roughly dressed, serves as a rug in one of the bed-rooms at The Cage, an old hunting-tower, where in by-gone days the ladies of Lyme were wont to witness, without fatigue, the hunting of the wild bull, and other sylvan sports, secure from the danger which a more active part in the chase involved. The black cow (4),* and the cow (5), were shot by Haig, the shepherd, in November, 1885, and their carcasses cut up for beef; they were the last surviving animals in whose veins the blood of the old Lyme bulls ran, and when killed their ages were respectively twelve and nine years. I have not been able to trace the fate of the heifer (6), nor of the Vaynol heifer (8). I believe that the young bull which Mr. Coward saw in August, 1884, was steered, and fattened for the butcher. The heifer (7) was also fattened and killed, and, so far as I can learn, never ran with the herd.

I have been able to collect but little evidence as to the habits of the cattle. John Sigley, the old keeper, who would perhaps have been able to give me more information than anyone else, has been dead five or six years. Old Jim Arden, who has been at Lyme, man and boy, for seventy years or more, knew the cattle well, and remembers when the herd was as large as that at Chartley is now; he seems to have been particularly impressed with their grand carriage and action, and their superior size, as compared with the Chartley bull. He constantly spoke of the cattle as "wild beasts,"† a name probably in use since the time when they were at large in Macclesfield Forest. Mr. Jas. E. Pardey, the agent for the estate, told me that, between 1856 and 1860, there were from thirty to five and thirty head of wild cattle in the park; he described the black cow as having a very bad temper, which was confirmed by old Arden, who chuckled as he

* For a detailed description of this animal, see 'Zoologist,' 1878, p. 278.

† This term is also used in the neighbourhood of Chartley, see Storer, *op. cit.* p. 220.

related how Sigley had more than one narrow escape from her horns while feeding the cattle in the winter.

During the summer months the cattle occupied the wild and picturesque part of the demesne known as the Park Moor, in fine weather frequenting the higher ground, "up by the Knight's Castle and the Bow-stones Gate," as an old villager put it, but on the approach of rain they invariably kept to the sheltered valleys; and more than one person in the neighbourhood used to consult this natural barometer, just as the villagers of Chatton do the Chillingham herd on the sides of Rosscastle at the present day. In winter they were confined in a walled yard, containing ample sheds, and communicating with a large paddock,



Form of Horn prior to the Gisburne cross in 1859.

at a short distance from the Hall. Here they were fed with hay, but never had either cake or turnips.

The bulls were steered as calves. Had the wiser policy, adopted at Chillingham, of steering the animals when from two to four years old, and thereby ensuring a good bull selection, been practised at Lyme, the cattle might have survived till now, for one cause of the decline of the herd was the retention at one time of a single bull, which proved infertile.* When it was necessary to secure one of the animals for any purpose a strong rope with a running noose was thrown over its horns or neck, and the free end of the rope passed through an iron ring, made fast in a stone block in the floor of the yard. Owing to the strength and ferocity of the beasts, particularly if full grown, it was no safe nor easy matter to haul them up to the ring, where of course they were comparatively powerless, and Arden told me that, in his younger days, all the available men and boys about

* Storer, *op. cit.*, p. 249.

the place assisted in the task, and enjoyed the fun "as much as any wakes." A terror to poachers and others who invaded their haunts, the cattle retained their hereditary wildness and timidity to the last, and the discharge of a gun was sufficient to send them off at a rattling pace with heads and tails erected.

So long as the size of the herd permitted, one or two animals were shot at Christmas, and some of the beef (which has been described to me by those who have tasted it as beautifully marbled, and of excellent flavour) was always forwarded to Her Majesty the Queen.



Form of Horn after the Gisburne cross.

The Lyme cattle were larger than those of any of our existing park breeds, and are described as having been long in the body, with strong bone, much substance, and a large amount of flesh about the head and dewlap. They had an abundance of long rough hair, which was curly and mane-like on the head and fore-quarters in the males.* The general coloration seems to have been white, with black muzzles and hoofs, and frequently some black on the fore legs. The ears were black or red, but seem latterly, at any rate, to have varied considerably, and were occasionally, as at Chartley and Somerford, entirely white. Mr. Storer says there was a black circle round the eyes,† but no trace of this is present in either of the stuffed heads I have seen. There is no record of any departure from the legitimate white ground-colour, though Hansall speaks of the cattle as "chiefly white," until the birth of the black calf, so often mentioned in

* See Dr. Sainter's paper on Lyme Park, Proc. North Staffs. Field Club, 1877; and Harting, 'Extinct British Animals,' p. 241.

† Storer, *op. cit.*, p. 252.

these notes; and Arden and others, who had known the breed for many years, were not a little surprised when the old cow appeared on the moor with the little black creature at her heels. The further use of the Chartley sire was consequently looked upon with disfavour.

I am indebted to Mr. Legh for permission to make measurements and photographs of the skulls, horns, and stuffed head at the Hall, and I have also been able to examine a stuffed head in the possession of Mrs. John Legh, of Hall Barns.

Two skulls are preserved, the horn-sheaths being attached in each case. One, belonging to an old cow, was exhibited at Owen's College, at the Manchester meeting of the British Association in 1887; it has a very convex forehead, and is considered by Mr. Storer to resemble closely the skull of the Urus, especially in the way in which the horns are set on.* The other skull, belonging to the old cow shot in the winter of 1883-4, is narrower, and has comparatively a much longer face, with concave depressions on either side of the forehead, and a prominence in the centre. The horns in this skull are of the drooping, long-horn character, and exhibit the curious influence of the Gisburne cross.† (See woodcut, p. 85.)

MEASUREMENTS (IN INCHES) OF SKULLS.

	Length, from supra occipital ridge to pre-maxillary.	Width between bases of horn-cores.	Width between orbits.	Circumference of horn-cores.	Length of horn round outer curve.	Span of horns.
No. 1 (figured).	19.6	8.25	8.0	9.2	16.8	30.3
No. 2	19.9	7.2	6.5	6.3	17.8	10.8

There are three pairs of horns, one resembling those of the older skull (No. 1), and showing the form of horn prior to the Gisburne cross (see woodcut, p. 84); the second is distinctly of the long-horn type; and the third exhibits a very erratic character,

* Storer, *op. cit.*, p. 253.

† Storer, *op. cit.*, p. 251.

one horn being deflected, and the other raised; a cow's head with horns similarly curved is preserved at Chartley Hall.

The head at the Hall is but indifferently preserved, and has been over-stuffed. Mr. Cocks informs me that in 1877 it appeared to have been stuffed several years; the horns are of the long-horn type, showing the animal had Gisburne blood, and can hardly have been killed before 1863. (The Gisburne cow and calf came to Lyme in 1859.) The hair is rather curly on the poll, the muzzle black, and the ears white, inside and out. Mrs. Legh told me that the head at Hall Barns belonged to an animal (from the length of horn and comparative fineness of face, I think, a bullock), which was shot at Christmas, about forty-three years ago. The hair on the poll is curly, the ears chocolate-red inside, and for about a third of their length from the apex outside. One or two of the eyelashes, which time and ungentle usage have left, are red, and there are a few red hairs above the black muzzle, but they are scarcely comparable with the well-pronounced red line above the muzzle in the Chillingham breed. The horns, which are yellow tipped with black, decline outwards and forwards, and then slightly inwards. This head and the old skull are undoubtedly our best existing guides to the original character of the ancient Wild White Cattle of Lyme.

MEASUREMENTS (IN INCHES) OF STUFFED HEADS.

	Length of horn round outer curve.	Length of horn in a straight line.	Span of horns.	Across forehead between horns.	Length of head.	Circumference of horn at base.
Head at Lyme . .	25	13	9.5	10	21	—
„ Hale Barns	27	18.5	29.5	11	22.5	9.5

The measurements of the head at Lyme are those given by Mr. Cocks (Zool. 1878, p. 284), who says the head is that of a bull. Mr. Pardey, however, informs me it is a cow's.

THE DISTRIBUTION IN THE BRITISH ISLANDS
OF THE SPOTTED CRAKE.

BY O. V. APLIN. M.B.O.U.

SUPPLEMENTARY NOTES.

ON the appearance of my article on the Spotted Crake (Zool. 1890, pp. 401—417) I received from several correspondents some useful and interesting information upon the subject; and as I was desirous that my account of the distribution of this bird should be as complete as possible, I have decided to publish a further instalment of statistics. My request for additional information (Zool. 1890, p. 457) has brought me some valuable notes, and the Editor has handed me—for incorporation in this supplementary paper—three more which had been forwarded to him.

In the “Conclusion” (ii.) of my former paper (p. 413) the parenthesis “(except in one instance)” should be inserted after the word “breeding.”

NOTTINGHAMSHIRE.—Mr. F. B. Whitlock, of Beeston, near Nottingham, writes me word that all the Spotted Crakes he has met with or heard of in that district “have occurred in September and October.” In a subsequent letter, of 25th Nov., he writes:—“This morning my dog put one up almost at my feet: this is my latest date for this district. I clearly identified it as it swam across a drain.”

CHESHIRE.—Mr. E. Coomber records a specimen picked up under the telegraph-wires, close to Neston, on the 26th August, 1890 (Zool. 1890, p. 390).

LEICESTERSHIRE.—Mr. F. B. Whitlock writes:—“Would probably breed every year were it not for the spring floods. Later broods may get off, which may account for young birds being met with late in October. I killed one on the 25th, this year, near Barrow-on-Soar.”

NORTHAMPTONSHIRE.—I am indebted to Lord Lilford for the following note:—“Of late years I have come to regard this species as a not very abundant, but pretty regular, autumnal visitor to this immediate neighbourhood [Lilford]; but I have

not heard of even one this year (1890). This is no doubt owing to the extraordinary dryness of our meadows since the middle of August. I have only hitherto heard of one Water Rail; but this species, I feel sure, breeds with us, and does not regularly leave the country, as the Spotted Crake, *as a rule*, does."

LINCOLNSHIRE.—Mr. G. H. Caton-Haigh has been good enough to send me an interesting account of his experience of this bird in the Lincolnshire marshes. "It is very local," he writes, "and by no means abundant as a breeding species. In the autumn, however, a considerable immigration takes place, and the species is then much more generally distributed. The arrival seems between the beginning of September and the middle of October, after which date they rapidly become scarce, and the latest bird I ever met with I shot on October 27th, 1888. The number appearing in autumn is very variable. Thus in 1889 I frequently flushed five or six in a swamp of less than three acres, while this year I have only seen two or three altogether. The migratory Water Rails come in just in time to fill the place of the Spotted Crake, though I have sometimes found the two together. I consider this bird the easiest of all the Rails to flush, and I can generally succeed in walking one up. I have never seen one caught by the dog, an accident which often happens to the Waterhen, Water Rail, and Corn Crake." The scarcity of the Spotted Crake during the past autumn, alluded to by Mr. Caton-Haigh, has been noticed also by Lord Lilford, who attributes it to the dryness of the meadows; and I may add that during the past season I did not see a single specimen at the bird-stuffer's.

HUNTINGDON.—The reference in my paper to Whittlesea Mere (1890, p. 404), was left in with the Norfolk records by mistake. Anent this record Prof. Newton has been good enough to point out that a false impression is conveyed by my statement. He writes:—"You have been misled by a wicked comma, in the passage from Stevenson's 'Birds of Norfolk' (ii. p. 394, note) that has crept in. The statement should run . . . 'the last nest he has heard of near Whittlesea Mere was in' . . . I had not before observed the intrusive comma, which so entirely alters the meaning of the sentence, and was probably stuck in at the last moment by the printer, for I am sure if Mr. Stevenson had noticed it he would have struck it out." He adds that the

Mere was drained in 1851-2. Those who possess the volume referred to will be glad to correct the foot-note by deleting the offending comma.

CAMBRIDGESHIRE. — Professor Newton adds, in regard to this county, “If I am not mistaken I have had, or seen, eggs from Cambridgeshire since 1849, though none, I should say, for thirty years, or perhaps more.” Mr. G. J. Ground (11, Walpole Street, Chelsea) has favoured me with some valuable particulars respecting the Spotted Crake in the north of this county. He writes:—“From Whittlesea Wash, in Cambridgeshire, a tract of meadowy marsh land commencing near Peterborough and running east about fifteen miles, I obtained, in the autumn of 1873, four Spotted Rails: as far as I can remember, two were old birds, and two birds of the year. About ten years later, in 1883 or 1884, there was a late spring flood on the Washes, and, when walking on the South Bank one morning, I found the remains of two eggs of the Spotted Rail, which had evidently been carried there by a Crow and eaten. One was irretrievably wrecked; about two-thirds of the other remained. I mended it, and it is still in my possession. The eggs were both fresh, and had, no doubt, been exposed to view by the action of the water. They were most interesting to me, as proving, what I had always thought likely, that Rails nested in a strip of flag about seventy yards wide, extending for a mile or so by the side of the Cam. Cattle have the run of the sedge during summer, but that might not interfere with the nesting of Rails. It is probable that the Spotted Crake still nests in the locality I have spoken of. Almost every year I hear of some being killed. I obtained one in September, 1889—a young bird. I am hardly often enough in the district to say whether the species is increasing there, but my impression during the last few years has been that it is more often shot than formerly.”

NORFOLK.—Prof. Newton writes:—“I have known, or perhaps I should say have heard of, plenty of nests since 1849; indeed I believe this species breeds there every year.” The Rev. Maurice C. H. Bird, writing from Brunstead Rectory (Zool. 1890, p. 457), considers that in the Broad district the Spotted Crake is more common than the Land Rail, and more frequently breeds there. He mentions a brood of young hatched in his parish in 1889, which were unable to fly on the 29th August, and states, “The

latest and earliest dates I have for the occurrence of the Spotted Rail are as follows : Feb. 24th, Potter Heigham ; Nov. 5th, 9th, and 19th, West Somerton and Brunstead." Mr. J. H. Gurney, however, writes me word, " Joshua Nudd has not seen a nest on Hickling Broad for many years, and never did find but one : this was nineteen years ago, and on June 28th, 1889, Joshua and I searched the place where he took it ; of course we did not find one, but we found an abnormally small Moorhen's egg."

SUFFOLK. — The Rev. Julian Tuck writes to me about this county as follows :— " In the interesting article contributed by you to this month's ' Zoologist,' on the Spotted Crake, you have not given any particulars about Suffolk. But what holds good for Norfolk is, I think, about the same for this adjoining county. My old friend Dr. Hele, in his ' Notes about Aldeburgh,' writes, ' These birds are met with only during the autumn. . . . I am not aware of the nest having been discovered in the locality, but have little doubt they do occasionally breed in the fen. . . . The fen is so large, and so well-covered a tract of boggy marsh, that the finding of a Spotted Crake, without the assistance of a good dog, must always be a matter of the merest accident.' Dr. Babington, in his ' Birds of Suffolk,' writes, ' The bird is principally seen in autumn, and its nest is now rarely found.' "

Mr. G. T. Rope (Blaxhall, Suffolk) forwarded to the Editor the following valuable note, which has been handed to me for incorporation in this supplementary article :— " In Mr. Aplin's interesting paper on the Spotted Crake, and its distribution in Great Britain, although its occurrence both in Norfolk and Essex is referred to, the intervening county of Suffolk is altogether left out in the cold. A reference to Dr. Babington's ' Birds of Suffolk' will, however, show that this species frequents many parts of the county, where the nature of the ground is suited to its habits. It lingers here very late in the year, many examples having been obtained during November ; while in one instance, quoted by Dr. Babington, a Spotted Crake was shot as late as December. As to its breeding in Suffolk, the same writer, quoting Sheppard and Whitear's ' Catalogue of Norfolk and Suffolk Birds,' says, ' Eggs and young found in considerable numbers in the neighbourhood of Yarmouth ' (a statement which, in all probability, is intended to refer to both counties, Belton being afterwards given

as a locality).* 'Mr. T. M. Spalding has taken its eggs in the Blythburgh fen; Westleton, nests, rare (F. Spalding MS.)' My brother, Mr. A. M. Rope, and I had the good fortune to find a nest on May 28th, 1872, in a large bed of reeds (since drained) close to the Minsmere sluice, near Leiston. The old bird was on the nest at the time, but slipped off directly. She seemed to be at the point of hatching; the nest containing six chicks, one of which was dead, and three eggs. The young ones scrambled out, and squatted about singly round the nest. After watching unsuccessfully for some time near by, in the hope of again catching a glimpse of the old bird, we looked a second time into the nest, and found the chicks had all five climbed in again. They were covered with blackish down, except on the top of the head, which was bare. The colouring and markings of the beak were very beautiful—a combination of black, pearly white, and coral-red. The nest was like that of a Waterhen, and was well raised above the wet swampy ground by its own thickness. It was composed almost entirely of sedges, and admirably hidden, having been built under cover of a mass of dead sedges, &c., which rested lightly upon the growing herbage, having probably floated there during the winter floods. One of the eggs, with a coloured drawing of the dead chick, was sent to the Editor of 'The Field.' A Spotted Crake was killed in the same bed of reeds on Sept. 18th, 1873; another in October, 1878. Two were flushed there in November, 1879, one of which was shot; and another obtained Sept. 29th, 1881. Among the reeds, bulrushes, &c., which fringe the River Alde, between Snape and Langham bridges, this interesting little bird is not uncommon, though, from the nature of its habits, one does not often get a sight of it. I occasionally see one cross the river from one reed-bed to another. On the wing it is readily distinguishable from the Water Rail by its comparatively short beak. As far as I am aware, no instance has been recorded of its occurrence in Suffolk during January or February; the month of March being the earliest date cited by Dr. Babington: in fact, its habits as regards this particular

* This of course refers to many years ago, the Catalogue in two parts having been read before the Linnean Society in April, 1824, and in May, 1825, and published two years later in vol. xv. of the 'Transactions' of that Society.

county seem on the whole to confirm Mr. Aplin's apparent conclusion, *viz.*, that the Spotted Crake arrives very early in the spring, and departs as late in the autumn." The nest found by Mr. Rope near Leiston was recorded by him in 'The Zoologist' for 1878, p. 454.

KENT.—In reply to my request for information (Zool. 1890, p. 457), Mr. W. Oxenden Hammond, of St. Alban's Court, near Wingham, has been good enough to send me the following note:—"I can give none with reference to its breeding in this neighbourhood, although in the wet summer of 1860 (I think that was the year), I remember killing one in the flooded marshes at Stodmarsh, near Canterbury, in July, the marshes being full of Snipes. From the season, this bird had probably bred. I have killed several at different times in the marshes near Wingham. It is rather a curious coincidence that, having read your article on this bird in 'The Zoologist' in the evening, I went to shoot Snipes the next morning (Nov. 1st), and in the course of the day killed a Spotted Crake."

SOMERSET.—The Rev. Murray A. Mathew, in a long and very interesting letter, says of this county:—"I have long since come to regard it as one of our resident birds. At one time I used to shoot Snipe throughout the winter on the peat moors between Highbridge and Glastonbury. The Spotted Crake was one of the characteristic birds of that strange district, well-known to the gunners, who shot Snipe to sell them, by the name of "Jacky-mo." I never was on the ground without coming across several, and did not molest them, as I had discovered from experience that they were not worth anything for the spit. An old setter I had used to drop to his points, and once or twice I have seen the unconscious "Jacky-mo" pecking on the ground between his fore legs. In any of the winter months you would be sure to come across Spotted Crakes on this snipe-ground. I have often regretted that I have never done any bird-nesting in the peat-moor district, as not only nests of *Porzana maruetta* might be found, but those of rare aquatic warblers. The Shoveller, and perhaps the Garganey, would nest regularly if the gunners would only leave them alone. I possess an egg of the Shoveller taken on North Curry Moor some years ago. Broods of Spotted Crakes used to be common in the neighbourhood of Weston-super-Mare

in the beginning of August. A good setter I had used to point them, and I have watched them running in the herbage like rats, occasionally coming out from their shelter, with the utmost tameness, to squat in some tump of grass at my feet. I had no doubt these birds had been hatched close at hand."

DEVONSHIRE. — Of this county the Rev. Murray A. Mathew writes:—"We used frequently to flush Spotted Crakes in clover-fields when Partridge-shooting in September, and, at the time we rented the shooting on the Braunton Burrows, were wont to come across them when Snipe-shooting in the winter, during the months of December, January, and February. I have in my collection a very beautiful adult male Little Crake, which I saw my brother shoot on Braunton Burrows on February 4th, 1876. Like the Spotted Crake, this smaller bird is probably also a resident, in limited numbers, but, from the extreme difficulty in flushing it, it escapes detection. On the Braunton Burrows I have on several occasions seen small Crakes run into rat-holes for shelter, and at the time could not determine whether they were *maruetta* or *parva*." The bird shot as above stated, on February 4th, 1876, is included by Mr. Pidsley in his work on the 'Birds of Devonshire' (p. 121), as Baillon's Crake (*P. bailloni*) and was so recorded in 'The Zoologist' (1876, p. 4844); but Mr. Mathew informs me, by letter, that it is "a very perfect adult male Little Crake" (*P. parva*).

Mr. W. S. M. D'Urban (Moorlands, Exmouth) has forwarded to the Editor a note (handed to me for incorporation) as follows:—"I saw a specimen of this bird, recently mounted, in a bird-stuffer's shop-window, killed at the end of October, 1890, in the marshes behind the railway-station at Exmouth. Mr. R. P. Nicholls, of Kingsbridge, writes me word that he had two specimens sent to him last autumn from Wadebridge, Cornwall, in which county he thinks it is more numerous than in Devon. At Kingsbridge, according to Messrs. E. A. S. Elliot and R. P. Nicholls, this species is 'rather rare, but several have been shot in the district.' The late Rev. R. A. Julian says, in 'The Naturalist' (vol. i. p. 87), 'Very rare. Is occasionally seen in the months of September and October in Efford Marsh, where one specimen was obtained. The Rev. C. Bulteel also has a specimen in his collection, which he shot near Ermington.' It has occurred several times at Plymouth. One shot Nov. 10th,

1855, and others seen (Zool. p. 4946) ; and one Oct. 13th, 1873 (J. Gatcombe, Zool. s. s. p. 4253). In my youth it was common enough, on the estuary of the Exe, to be known to gunners as the 'Silver Rail.' I shot one myself, near Topsham, Sept. 17th, 1855 (Zool. p. 4895), and have seen others. Two occurred in Braunton Marshes, North Devon, in September, 1874, and it was thought to be numerous there (G. F. Mathew, Zool. s. s. p. 4253), It is an occasional visitor to Lundy Island. The specimen mentioned by Mr. E. Parfitt, in his "Birds of Devon," published in the 'Transactions of the Devonshire Association' (vol. viii.), and alluded to by Mr. O. V. Aplin in 'The Zoologist' (1890, p. 411), notwithstanding an apparent discrepancy in the date, is doubtless the one recorded by the late Mr. J. Gatcombe as having been found dead on the railway near Tavistock, in October, 1863 (Zool. p. 8832). It is sometimes obtained very late in the year, and, besides the specimen killed at Plymouth, Nov. 10th, 1855, a male was killed at Kingsbridge, Nov. 3rd, 1875 (Zool. s. s. p. 4763), and the Rev. M. A. Mathew saw one, Nov. 19th, 1873, on the north coast of Devon (Zool. s. s. p. 3826). It seems to be more plentiful in some years than in others. In Mr. W. E. H. Pidsley's recently published 'Birds of Devonshire,' p. 120, I find the Spotted Crake included as "an autumn and spring visitant, met with in sparing numbers between August and November. Dr. Elliot considers that it may be termed 'rare' in Devon."

WILTSHIRE.—"In the Albert Memorial Museum, at Exeter, is a specimen from Mr. Robert Cumming's collection, which was killed at Devizes, Wiltshire, June 4th, 1849" (Mr. W. S. M. D'Urban, in above note).

WARWICKSHIRE. — Mr. Coburn reports that "On the 19th Sept., 1874, one was shot by Mr. Only, at Marsden Green, Warwickshire;" and he remarks that these are the only fresh-killed specimens of *Porzana maruetta* which have passed directly into his hands during the past twenty years.

WORCESTERSHIRE.—The following note was received by the Editor from Mr. F. Coburn, Holloway Road, Birmingham:—'In Mr. O. V. Aplin's interesting paper on the Spotted Crake, in 'The Zoologist' for November last, there is no mention of Worcestershire. On the 29th August, 1889, I received a specimen which had been caught alive at Bromsgrove, in that county. The

man who caught it said that there were others about which he expected to secure, but I heard nothing more from him."

PEMBROKESHIRE.—The Rev. Murray A. Mathew writes:—"I was much surprised, when shooting over very suitable ground, in this county, never to come across a Spotted Crake. It would appear to be a rare bird here. It has occurred once or twice to my friend Mr. Hugh Owen, in the neighbourhood of Fishguard; but in my eight or nine years of Snipe-shooting, over bog and moor, I never encountered a single example." Mr. Mathew adds:—"I have no doubt that, on the whole, the conclusions you have drawn at the end of your paper are correct; that *P. maruetta* is in some parts of England an early migrant, remaining until late in the autumn, and nesting in suitable localities; while in some few districts the birds are resident throughout the year, being, perhaps, more numerous during the summer, when migrating birds have joined them."

ABERDEEN.—The last-named correspondent adds:—"I have seen one shot in Aberdeenshire, near Aboyne, in the month of August. It was considered rare, and I was asked to skin it for the shooter."

ON THE GREAT GREY SHRIKE, *LANIUS EXCUBITOR*.

By REV. H. A. MACPHERSON, M.A.

THE Grey Shrikes, as most readers of 'The Zoologist' are probably aware, are represented by several specific forms in the colder regions of the Old World, the largest being that described by Prejevalsky as *Lanius giganteus*; on the other hand, the species most widely distributed, so far as I can ascertain, is the well-known Pallas's Great Shrike, *L. major*, the range of which extends from Britain, across Europe and Asia, into China (Swinhoe, Proc. Zool. Soc. 1871, p. 375). It was this last named which for many years attracted the attention of English ornithologists as a doubtful form, possibly identical with the nearctic *L. borealis*, a well-known bird, until Mr. Seebohm announced that the single-barred birds found in Britain should be referred to *L. major*. Gould had at one time informed the late Mr. Gatcombe that the possession of a double white alar band was characteristic of the male only of *L. excubitor* (Pidsley, 'Birds of Devonshire,'

Introduction, p. xxi). It remained then for Prof. Collett, of Christiania, to show, as I think, conclusively ('Ibis,' 1886, pp. 30—40), that in North-western Europe, at any rate, the two forms, *L. excubitor* and *L. major*, are so nearly related that a hybrid race prevails. Apparently, when we cross the Urals, we only meet with the typical and thorough-bred single-barred bird known as *L. major*.

But the birds which visit Great Britain from Scandinavia and Western Russia are so much cross-bred that it is almost impossible to distinguish the immature and female specimens. It seems to me that we should accept this fact, and abandon the attempt to distinguish between the two forms, which, according to Prof. Collett, interbreed to so large an extent. Whatever decision may be arrived at by others, I propose, in the present paper, to treat the two species as one. This renders it possible to speak of the immigration into Britain of what may be simply designated *L. excubitor*.

I have carefully examined all the instances recorded in 'The Zoologist.' Excluding from consideration numerous cases in which writers have not taken the trouble to state the arrival of Shrikes with scientific precision, I find a balance in our favour of eighty-nine distinct occurrences between 1843 and 1882. Apportioning the numbers to the months, the following results are reached:—January, nine birds; February, eight; March, six; April, six; May, one; September, one; October, seventeen; November, twenty-six; December, fifteen. It would be supposed from this that the largest number arrive in November, and this is possibly the case. Yet we have it, on the authority of Mr. Cordeaux, that in 1876 no less than fourteen Grey Shrikes were identified at Spurn (twelve of the number having been shot) during October (Zool. 1877, p. 10).

Another fact brought out by these statistics is that this Shrike is very variable in regard to the numbers in which it annually visits us. Whilst a few individuals occur along favourite "fly-lines" every year, in some years their number is increased tenfold. Those which winter with us for the most part lead lives of solitude, frequenting a particular beat of country for a week or two at a time, during which the familiar outline of the Butcher-bird may at any time be detected upon the top of some naked tree; scouring the hedgerows for field mice, shrews, and

small birds, until failure of supplies or desire of change impels each individual Shrike to seek some fresh hunting-ground. The flight may be very high, or very low, but is always undulating. With the arrival of spring the Grey Shrike moves eastward to the coast, from which it takes its departure in March or April, a few stragglers wintering here until May, or even electing to pass the summer with us.

The stories that are told of flocks of Shrikes being seen inland appear to me to be unworthy of credit. One such is alluded to in the 'Birds of Herefordshire' (p. 39). The birds are chiefly solitary, as their manner of life, indeed, almost necessitates. Like Hawks, they associate in flocks to meet the exigencies of travelling long distances; but that at other times they live gregariously I do not believe, though of course old and young remain together at first, after the latter are fledged. There is the statement of a Mr. George Goddard to the late Dr. Lamb, of Newbury, that six Grey Shrikes were seen together on August 5th, 1810, near Newbury (Zool. 1880, p. 315). This I can well believe. It is also possible that some of these birds had been reared in Britain. One reason why this Shrike has never been proved to breed in England may well be that very few Englishmen know where to look for the nest; but I should be more disposed to think that the Newbury birds had migrated from abroad. In 1886, Great Grey Shrikes visited the island of Heligoland on the 14th, 15th, and 16th of August. Early-hatched birds would be able to fly strongly by the middle of June, and the distance from Holland, where this Shrike is not rare, to Berkshire presents no insurmountable objection to the hypothesis that the birds came from abroad as a family party.

Of the habits of this Shrike the most accurate account given by early writers that I have seen is that of Turner, who became well acquainted with the species in Germany.* I, too, have studied this Shrike, as well as limited opportunities rendered possible, in Germany, spending day after day in the observation of its light and graceful movements, principally on the right side of the Rhine near Mulheim. Out in the open plain, where few trees, except poplars, stud the roadsides, not a Shrike was to be

* 'Avium præcipuarum quarum apud Plinium et Aristotelem mentio est, Historia.' 1544.

found, unless a stray pair of the Red-backed species, *L. collurio*, chanced to nest in a lowlier bush than is usually chosen by this bird. The scarcer Woodchat, *L. pomeranus*,—a local, indeed in my experience a rare bird,—prefers to nest in the orchards. The Great Grey Shrike selects the forest, not venturing into tangled coverts or dense jungle, it is true, but choosing for a nesting-place some big tree standing on the edge of the forest. Naturally there is no hard and fast rule as to the position of nests. In Holland Mr. Seebohm obtained a nest of this Shrike from the top of a Scotch fir.* On the Tana river, Mr. A. C. Chapman took another nest from a birch tree, about ten feet from the ground.† In Central Europe I found that big oaks were the favourite trees, though I have seen the nest of a Grey Shrike built in quite a small tree—an exceptional case. In the district I investigated the nest was usually placed at the apex of a forked bough, a long way out from the main trunk, built *on*, not *in*, the fork, at a probable elevation of thirty-five or forty feet.

The nest itself is a bulky structure, composed of fine twigs interlaced with a few stout straws, bents, and fibres. Within, it is quilted with a profusion of soft substances, feathers of the pheasant and buzzard, a little of the white fur from the belly of a hare, a little of the shed coat of the roe-deer, sheep's-wool, or any convenient substitute.

The young are carefully tended by their parents, and live together for a few weeks after leaving the nest, the old birds foraging for their brood long after the latter are able to fly.

I have never been fortunate enough to hear this Shrike sing, but the observations of Mr. Kerry have placed the fact upon a basis of truth (Zool. 1880, p. 70). The only sounds that I have heard were the loud and angry notes of birds which detected and denounced my presence, and the shrill cries of the young.

Some years ago I described the deft and handy fashion in which a Grey Shrike in my aviary decapitated its victims; bolting the head first as a *bonne bouche*, it proceeded to suspend the carcase of its prey in such a way as best forwarded the flaying of the body. I lately came across an old American note, reproduced in the 'Annual Register' of 1801: afterwards I found that Dr. Elliott Coues had also noticed it; therefore I need only

* 'British Birds,' i, p. 601.

† 'Rambles in Lapland,' p. 170.

remark that one John Heckewalder was much exercised to know why an American Grey Shrike impaled its prey. He came to the conclusion that the object of its impaling grasshoppers was to bait the twigs for smaller insectivorous birds, on which the Shrike himself might subsist in turn.

But it must not be supposed that Shrikes always impale their prey. As I have mentioned, in Pidsley's 'Birds of Devon,' I once watched a family party of *L. collurio* glutting themselves with caterpillars, which they picked off the nettles at the roadside near Brixham and swallowed whole. In the same way precisely, I have watched wild Grey Shrikes picking beetles to pieces, holding the insect between the toes of one foot, while resting on the tarsus of the other foot.

Should anyone wish to really understand the habits of this handsome Shrike, he must be content to spend plenty of time in the observation, for it is naturally suspicious, and generally on the alert; at least in those districts in which it has found, by sad experience, that every man's hand is against it.

NOTES AND QUERIES.

MAMMALIA.

Hybernation of Squirrels. — I am pleased to see that Mr. A. Lister (p. 61) has raised this interesting question. Bell states that the Squirrel "remains during the great part of the winter in a state of *almost complete torpidity*, coming abroad, however, on the occurrence of a fine day." This, I think, states the real case fairly, and certainly does not imply "hybernation," which I take to mean lying up in a *completely torpid condition* during the winter months. I have seen Squirrels abroad on fine days in, I think I may say, every one of the winter months; and while Pheasant-shooting near here on a sunny day, the 6th January last, which was about the middle of the most severe frost we have had for many years, with several inches of snow on the ground, I saw a Squirrel jumping from tree to tree, before the beaters, in the most lively condition. As to a case of total hybernation I am afraid I cannot supply Mr. Lister with one, as all my observations and enquiries would tend to show that the Squirrel only *partially* hybernates during the coldest dull weather. — JOHN R. B. MASEFIELD (Rosehill, Cheadle, Stafford).

I am glad your correspondent, Mr. Lister, has drawn attention to this subject (p. 61), for the information and evidence in support of

the theory that Squirrels become torpid during the winter-time appears to be very meagre. In Bell's 'British Quadrupeds' (2nd edit. p. 277) it is stated that the Squirrel "remains during the greater part of the winter in a state of almost complete torpidity, coming abroad, however, on the occurrence of a fine day." My own experience is that the Squirrel does not by any means restrict his winter wanderings to fine days. I have frequently seen Squirrels abroad in the middle of the winter, when there has been deep snow on the ground and a keen frost in the air. I remember once seeing a Squirrel abroad during a severe storm of sleet and rain in winter-time, and he appeared to be not at all inconvenienced by the rough weather. I may mention that I saw a Squirrel abroad on Dec. 17th, 1890; and it will be remembered what a cold spell of weather we were having at that time. At p. 278 Bell says, "The female brings forth three or four young in the month of June." I would refer your readers to 'The Field' for March 6th, 1886, where a correspondent records finding young Squirrels, "nearly as large as a rat," in the second week of February, "in a peculiarly inclement and backward season." We may assume those Squirrels were born some time in January. In this neighbourhood I have three times come across nests of young Squirrels, on each occasion at the beginning of April; they appeared to be several weeks old, and must have been born at least as early in the year as the month of March. It appears to me very strange that an animal that "remains during the greater part of the winter in a state of almost complete torpidity" should produce young in January, February, or March. The position of the new-born young when their mother hibernates must be a very unenviable one! Perhaps somebody will tell us that the difficulty is got over by the young ones hibernating too! My own idea is that the Squirrel probably does sleep a good deal more in winter-time than in summer, as do many other wild animals, but that he has to be continually waking up and taking nourishment: thus it is that we find him abroad during severe weather, as well as "on a fine day." Compared with the lethargic condition in which Bats and Dormice, for instance, spend the winter, this can hardly be called an "almost complete state of torpidity." It would be interesting to learn the evidence of somebody who has actually found a Squirrel in a torpid state.—E. W. H. BLAGG (Cheadle, Staffordshire).

[Our own experience is opposed to the testimony of Bell, both as regards the alleged torpidity in winter and the time of producing the young. When covert-shooting during the winter months we have repeatedly seen Squirrels abroad and active, sometimes searching on the ground for food, at others passing from tree to tree at a great pace in front of the beaters. As regards the question of reproduction, we have notes of finding newly-born Squirrels on the 21st March (three young), 9th April (three young), 26th April (four young), and 29th April (two young). Those

found at the end of March and beginning of April were naked and blind ; those taken at the end of April were about three parts grown. The old Squirrels, in case of danger, remove the young from the nest, or "drey" to some hole in a tree, whither they carry them one by one in the mouth, just like a cat carries her kitten. One of the prettiest sights in the world is to see an old Squirrel teaching a young one to jump. Of this we may give some account later, in a paper on the Squirrel which is in preparation.—ED.]

Wolves in France.—During the year 1890 it appears that 515 Wolves were killed in France, at a cost to the Government of £1480. This is slightly in excess of the number destroyed during 1889. The rewards paid for the destruction of these animals varies from 30s. for a young Wolf to £4 for an old one which has attacked and killed any person.

BIRDS.

The Great Frost in the S.W.—In East Somerset the departure of all the Redwings, Fieldfares, and Peewits, at the end of November, and the large flocks of Sky Larks which early in December were seen passing in a continuous stream towards the south-west, indicated that the frost would be both severe and protracted ; and so it proved. Deep snow covered the ground for six weeks, and the frost—with a break of a day or so—lasted for full two months. It is not to be wondered at that there was a great destruction of bird-life. Among other birds we lost nearly all our Owls, to our great regret. I myself saw four White Owls lying frozen upon the snow, and heard of others, and of some Brown Owls also having been picked up dead. Several poor Owls are said to have flown into houses in search of shelter. A great many of our Partridges succumbed. Rooks were found lying beneath the trees, having dropped frozen from their perches. Small birds of many kinds lay dead on the ground beneath the hedges. Many Bitterns have been shot. I have heard of eleven ; two of them close to the town of Frome at the beginning of the frost, one of them turning up at such an unlikely spot as the town sewage-works. From North Devon, Swans, White-fronted Geese, Canada Geese, Smews, one Eider, besides a multitude of commoner wildfowl, are reported. The Canada Geese had, of course, escaped ; and the Swans were frozen-out tame birds, though one is said to be a Whooper. Although Pembrokeshire escaped the snow, the frost there was severe, and several flocks of Swans were noted—some of fifty and more. These were probably all *Cygnus Bewickii*, the commonest of the Swans visiting Ireland in the winter, and not un-seldom seen in the S.W. of England and Wales. One shot at St. David's, and sent in to Haverfordwest, proved to be a young Bewick's Swan. An Eider was obtained at Milford Haven. The coverts throughout Pembrokeshire were full of Woodcocks. In some small woods of only twenty-five acres, in the north of the county, forty were found by me one morning in mid-

December. In North Devon Woodcocks were also plentiful. One market-day upwards of a hundred were offered for sale at Barnstaple, brought in by the farmers' wives. In this district most of the hedgehogs have perished; I have found their remains in nearly every field.—MURRAY A. MATHEW (Buckland Dinham, Frome).

Lines of Migration.—In his interesting "Notes on the Ornithology of Northamptonshire" (p. 52) Lord Lilford says, "I am of opinion that the valley of the Nene, from the Wash as far as Thrapston, is certainly a much-used line of migration; but I believe that the majority of our autumnal migrants leave the valley somewhere above that town, and strike across the country for the eastern affluents of the Severn." There can, I think, be no doubt that Lord Lilford is perfectly correct in this opinion, founded as it is on long and careful observation, and in corroboration I quote the following extract taken from the Migration Report (1886), East Coast of England:—"The returns from the north of Norfolk are poor, but there are indications in the heavy returns annually sent from the Llynwells, Dudgeon, Leman and Ower, and Happisburgh light-vessels, that a closely-focussed stream pours along the coast from east to west, to pass inland by the estuary of the Wash and the river systems of the Nene and Welland into the centre of England, thence probably following the line of the Avon, the north coast of the Severn and Bristol Channel, and eventually striking across the Irish Sea to enter Ireland by the Tuskar Rock off the Wexford coast. This route is undoubtedly the great and main thoroughfare for birds in transit across England to Ireland in the autumn."—JOHN CORDEAUX (Great Cotes, Ulceby).

The Recent Visitation of Bustards.—The visits of the Great Bustard, *Otis tarda*, to England are now-a-days so few and far between, the species having long since ceased to reside and breed in this country, that any facts concerning its appearance deserve to be placed on record. The Bustard, like the Bittern, has now come to be regarded as a winter visitor, though why, it is not easy to explain; for one would rather expect that, like other species which were formerly more abundant in the breeding-season (the Dotterel and the Stone Curlew, or Thick-knee, for example), they would make some attempt to revisit their old nesting-haunts in the spring of the year, especially since they are not, as are many wild-fowl, natives of more northern countries, driven southwards by snow and ice with the advent of winter. The fact, however, remains, that both Bustards and Bitterns are now to be looked for during the winter months, though with this difference,—that while the latter may be regarded as annual visitors, in some years more numerous than in others, with the former the case is far different. I have notes of more than fifty Bitterns shot, alas! in different parts of the country during the present

winter. The recent visitation of Bustards was heralded in 'The Field' of the 20th December last, by an announcement from Mr. William Sewell, of Tillingham Hall, Essex, that a Great Bustard had been shot on Dec. 9th, by the bailiff to Mr. Robert Page, on Bridgewick Farm, Dengie, Southminster, and had been forwarded for preservation to Mr. Ashmead, of Bishopsgate Street. It proved to be a hen bird, weighing 8 lbs. 5 oz., and was in good condition. (2.) "During Christmas week," as I am informed by Dr. John Lowe, a Great Bustard was shot at Llanrhwdd, near Llanelly, in Carmarthenshire, and was taken to Mr. Hugh Nevill, of Llanelly, for identification. He reported it to be a female bird, weighing between 8 and 9 lbs., and in very fair condition. It was forwarded for preservation to a birdstuffer at Carmarthen. Mr. Nevill writes that it was found close to a river, where he believes he saw it himself one evening about a fortnight previously, when returning home in the dusk; but the light failing, he was unable to make certain of the species, which attracted his attention by its conspicuous size. (3.) On January 2nd Mr. J. Bourne, of Ampfield House, Romsey, Hants, was out Partridge-shooting, and, on taking up his position for a Partridge "drive," on the edge of a kohlrabi field, was surprised to see what appeared to be a Wild Goose rise from the centre of the field, and fly in the opposite direction very slowly. About half an hour later the same bird came over his head about twenty yards high, affording an easy shot, and was bagged. He found it to be a hen Bustard, which was subsequently ascertained to weigh 10 lbs., and measured 5 feet from tip to tip of wing. He announced these facts in 'The Field' of Jan. 10th last. (4.) We next hear from several correspondents of a Great Bustard in Sussex, variously reported to have been shot in the marshes "near Rye," "near Winchelsea," and at "Westfield" ('Field,' Jan. 24, 1891). It appears on further enquiry that the actual locality was Pett Level, between Winchelsea and Fairlight ('Field,' Feb. 7, 1891). It was shot on Jan. 6th by Charles Cooke, who sold it to Mr. E. Vidler, of Havelock Road, Hastings, and this also proved to be a female bird, weighing 7 lbs. 10 oz. It was in plump condition, the crop containing dry grass. (5.) In 'The Field' of Jan. 24th, Mr. H. H. B. Law, of Burgh Hall, Melton Constable, Norfolk, reported that a *Little* Bustard was caught in a field at Stiffkey; but in the following issue of that journal (Jan. 31st) several correspondents—viz. Mr. Southwell of Norwich, Col. Feilden, Mr. T. J. Mann, and Mr. Law himself—wrote to correct this statement, and gave further particulars. From their letters it appears that on Jan. 19th a female *Great* Bustard was picked up dead in the "drift" or roadway leading from Stiffkey windmill to the marshes. It had been shot at by a Stiffkey man, whose dog afterwards found it, and it was then purchased by Mr. S. J. Bell, of Stiffkey, who presented it to Mr. T. J. Mann, of Hyde Hall, Sawbridgeworth. By the time it reached its destination, however, it had been too long dead for pre-

servation, and, decomposition having set in, Mr. Mann was only able to save the wings and sternum. It then weighed from 8 to $8\frac{1}{2}$ lbs., the wing measurement being 59 inches. (6.) On Feb. 4th, as I am informed by the Rev. A. C. Smith, of Old Park, Devizes, a Bustard was shot near Chippenham, Wilts, by a Mr. Wood, and was sent by him for preservation to Foot the birdstuffer, at Bath. It measured 5 feet from tip to tip of wing, and weighed 9 lbs. (7.) The latest Bustard of which I have received any information was killed in Mildenhall Fen, Suffolk, on the 5th February last. The fenman who shot it had no idea what it was, and disposed of it to Mr. Howlett, the birdstuffer of Newmarket, who, in a letter to 'The Standard' of Feb. 7th, announced the occurrence, and stated that the bird was a female, weighing about 18 lbs. On the 9th Feb., the Rev. Julian G. Tuck, of Tostock Rectory, Bury St. Edmund's, having just seen it, wrote to inform me of the fact, confirming the statement that it was a hen bird, although from the unusual weight (nearly twice that of any of the other female Bustards recently obtained) I had surmised that it was perhaps a young male without the well-developed vibrissæ which characterise the adult cock bird, and might consequently have been mistaken for a female. Mr. Howlett subsequently informed me, in reply to my enquiry, that the weight was 13 lbs., and had been misprinted 18 lbs. We thus have notice of seven Bustards procured between Dec. 9th and Feb. 5th, and it is remarkable that every one of them has proved to be of the female sex. Is this to be attributed to the greater wariness of the male birds which (if any have visited us) have contrived to keep out of harm's way? or are we to infer that the sexes separate in winter (as is the case with some other species), and that a small herd of hen Bustards has come over here, become scattered, and by this time probably annihilated? The last immigration of Great Bustards took place in the winter of 1879-80, and the occurrence of eight or nine of these fine birds, of which only one was a male, will be found to have been recorded in the latter year in the pages of this journal. But although no specimens have been procured since that date, one is reported to have been seen in Dorsetshire in May, 1888. In the 'Proceedings of the Dorset Nat. Hist. and Antiquarian Field Club,' vol. xi. (1890), it is stated (p. xviii) that "a keeper in the employ of Sir Richard Glyn first saw the bird on May 17th, 1888; it could run (he said) at a fast rate, but did not seem to fly with ease. The last time he saw it was on Compton Down; it then flew on to Melbury Down, beyond Whitworth's Bushes. It did not fly high, nor more than a mile from where it rose. The observer never approached nearer than 150 yards." The President (Mr. J. C. Mansel-Pleydell) added that this description coincided with Chafin's account of the flight of Bustards which he witnessed on the Downs near Woodgates Hill, near Salisbury, 100 years ago. The reference is obviously to Chafin's 'History of Cranbourne Chase' (1818, pp. 90, 91).

If no mistake was made in regard to the species, the middle of May is now-a-days a remarkable date at which to meet with a Bustard in England. It is to be hoped that, should any more of these fine birds be still roaming about the country, they may be allowed to go unharmed. It should be remembered that the Bustard is a game bird, still protected by existing game laws (1 & 2 Will. IV. cap. 32) between the 1st March and the 1st September; and any person killing one between those dates renders himself liable to prosecution and fine, besides having to pay costs.—
J. E. HARTING.

Blackcap in Wiltshire in Mid-winter.—By the same post which brought my copy of the February No. of 'The Zoologist,' containing an account of the remarkable appearance of the Blackcap on several occasions during the late inclement weather, came a small box wherein lay a dead Blackcap, a male in good plumage, which was forwarded to me for identification,—it having found its way, on February 1st, into a bedroom at the Rectory, Clyffe Pypard, in this county, and there breathed its last. How the poor bird survived during the extraordinarily severe weather we have lately experienced, whence it came, and what drove it to undertake so fatal a journey, we cannot tell. Perhaps, as unprecedented cold and snow have appeared this winter in Algeria, the astonished bird may have intended to move farther south, but, mistaking its course, reached the downs of Wiltshire, the temperature of which during the last two months has been somewhat different from that of the Sahara. But be that as it may, its occurrence here in mid-winter seems worth noting.—ALFRED CHARLES SMITH (Old Park, Devizes).

Great Flight of Small Birds to the Westward.—*Apropos* of this subject, on which some interesting details are given pp. 63—66, the following notes were written down from the narration of Mr. W. W. Lloyd, and approved by him:—"At Castle Townsend, on the south coast of Co. Cork, there was a heavy snowstorm, accompanied by a strong easterly wind, all day, on Dec. 31st, 1890. The snowstorm was sufficiently heavy to prevent two American liners from putting into Queenstown. They had to make for Liverpool direct. During the whole of that day a continuous stream of birds—chiefly Starlings, with Fieldfares, Finches, and other small birds—kept passing westwards across the harbour, and surging up over the hill at Castletownsend amidst the blinding snow. Mr. Lloyd saw a Snipe or two among them. Whenever the snow cleared a little he saw packs of Lapwings at a much greater height, all passing westwards, but sometimes turning and facing the storm, and then, as it were, swept away by it again. The same day he went up the harbour, when he observed a number of Stonechats (probably driven in from the open country to the east) in a half-famished state. He caught one which perched on his boat,

and then, on being liberated, went into a nook of a fence, where it immediately put its head under its wing and roosted. "During frost at the end of November he saw a Swallow." In this part of Co. Waterford where I live, no snow has lain on the ground all through this winter. We have had fieldfares here, sometimes in flocks of forty, since Nov. 7th. Some writers say none appear here except on the exposed uplands. I have never seen so many except in severe frost and snow. Blackbirds and Redwings, too, have been unusually plentiful this winter. Every evening they come from far and near into the evergreen plantations about my lakes, where, crowded in company with Starlings, they keep up a tremendous noise and stir. There seems to have been an immigration of Bramblings this winter into the South of Ireland. My servant, who caught some in January and February, 1888, reports that they roosted with Chaffinches every evening near his lodge. I received a Brambling from Dr. Donovan, shot by him near Bandon on January 6th; and another from Mr. John Norman, a gardener near Thurles, taken by him about the same time. In 1887-8 we were visited by Bramblings, but they are not common in the South of Ireland. —R. J. USSHER (Cappagh, Co. Waterford).

The account given in 'The Zoologist' for February (pp. 63—66) of the "Great Flight of Small Birds to the Westward" is so interesting that perhaps I may be allowed to answer the Rev. E. C. Spicer's question as to "where the birds went." The frost in the Co. Wexford (or at least in this part of it) was not nearly so severe or protracted as it was in England. Thus, though we had frost and snow on Nov. 26th and following days, the cold was succeeded on the 30th by extremely mild weather, which lasted until Dec. 5th. The next very severe frost (on Dec. 21st) was followed by rain on the 25th; after which the frost and snow returned on the 28th, lasted till the 31st, and was followed by fine dry weather until Jan. 16th, from which date up to this time (Feb. 14th) the weather has been for the most part warm and spring-like. Thus it will be seen that we have not had a week's continuous hard frost. It might therefore be reasonably expected that the flocks of birds seen at Brighton, Lyme Regis, and in Devonshire, were making for the south-east of Ireland; and this is borne out by the facts. Sky Larks were numerous about the Hook Lighthouse "at the end of December and beginning of January," as I learn from the lightkeeper, Mr. D. Hawkins. On Dec. 12th, Linnets and Sky Larks were noted "about the light" all night, and one of each was killed, the wind being S.E. On Dec. 15th, Thrushes and Blackbirds were "about the light" all night (wind N.N.W.), and one Song Thrush was killed. At Fethard (also on the coast) flocks of birds were noted by a correspondent, passing, for the most part, westward or southward, at intervals, throughout December. These were chiefly Wild Geese, "Mountain Thrushes" (*i. e.*, Redwings and Fieldfares), Lapwings, and Golden Plover. The principal migration seems to have taken place

on Dec. 30th, when my correspondent "saw some hundreds of flocks of Green Plover and Golden, all flying from north to south; they did not alight. Two flocks of Geese or Swans going the same way. Wind E.N.E.; sleet." On Dec. 31st the wind was S.E., and there was a thaw, and all the birds were noted as "all going back north." I was in England until Dec. 25th, and on my return to Kilmanock I found Redwings and Fieldfares extremely numerous, but most of them left with the cold weather about the middle of January. I have no reports from other light-stations on the coast, but if procurable they will probably be found to confirm these observations. — G. E. H. BARRETT-HAMILTON (Kilmanock, New Ross, Co. Wexford).

Notes from Wales.—Whilst on a fortnight's visit to the west coast of North Wales, in the beginning of July last, and on several occasions in previous summers, I found certain birds common, which, although land birds, are rather rare in the inland but not far distant county of Brecon. Among these are the Red-backed Shrike, Corn Bunting (*Emberiza miliaria*), and Nightjar. Possibly a supply of food which does not exist in the adjacent inland districts is found near the sea, and is an attraction to these birds. The Red-backed Shrike is common along this coast, frequenting the bramble thickets and hedgerows. The Corn Bunting is abundant in the cultivated belt between the sea and the hills, especially about Towyn, and attracts attention by its rather harsh song, delivered generally from the top of a stone wall. The Nightjar is common near the sea, about the rocky, wooded hill-sides, where I could always hear its note in the evening. I have several times seen this bird at dusk hawking over the sand-hills near the sea about Barmouth. On the Merioneth coast the commonest bird seems to be the Stonechat; the Kestrel is very common about the cliffs, and I have now and then seen the Buzzard about the mountains above Barmouth. I saw, in the collection of a naturalist living at Barmouth, eggs of the Peregrine Falcon, Chough, and Manx Shearwater, all taken from a certain cliff on this coast; also local eggs of the Buzzard and Golden Plover. On July 17th I made the ascent of the "Bird Rock," near Towyn, the well-known breeding-place of the Cormorant and other cliff-nesting birds. With the aid of an aneroid, I made the highest point of this picturesque crag to be about 650 ft. It certainly does not look so high, but the mountains by which it is surrounded no doubt detract from its apparent height. The perpendicular part of the rock on the north side, where the Cormorants nest, is probably about 500 ft. high. The ascent from the west side is easy; I went up by this route, which winds up a rocky slope. The commonest birds here were Stonechats and Wheatears, and I saw a few Ring Ouzels about the rocky hollows, and a few Kestrels were screaming overhead. I saw no Peregrines, but it is commonly stated that a pair nest yearly on the cliff. About a dozen Cormorants were flying about the face of the precipice, the whitish

under-parts of the young birds being conspicuous. In Breconshire the Raven still holds its own as a resident. I had the pleasure of seeing three occupied nests of this bird last spring. On March 28th a nest on Talsarn Mountain contained four young birds about a week old. This nest is built on a ledge of a cliff, and is rather inaccessible; according to the statement of a shepherd living at the foot of the mountain, the young birds have been allowed to leave the nest unmolested for the last ten or twelve years at least. On April 1st a nest on the Brecon Beacons, built on an ash tree growing out of the face of a precipice, contained two young birds a few days old, which I believe were safely reared. This nest is not easy of access, but can be well seen from a tree a few yards higher up, and nearly over it; from this spot I was able to make a rough sketch of the nest and its contents. The Raven must be a wonderfully hardy bird; on March 4th, at Brecon, we had fifteen degrees of frost, the lowest temperature of the winter, and the weather was so severe that skating was going on, yet these two birds must have been then sitting, and hatched most, at any rate, of their eggs. Another Raven's nest was placed at the top of a Scotch fir, about 70 ft. from the ground, in a cultivated part of the county. I have seen an egg which was taken from this nest about the 1st of April; it is a fine light blue specimen. Is it not very unusual at the present time for the Raven to build in such a situation? The Buzzard nests rather commonly in the wild districts in the west of this county. On April 26th I found one of their nests on a slope of a hill called Mynydd Eppynt, placed in a fork of a larch tree some forty feet from the ground. We found the bird sitting on two nearly fresh eggs, one of which I have in my collection; it is a handsome specimen, the blotches having a lilac tinge. The nest was flattish, in shape like a Sparrowhawk's, but of course much larger: it was made of larch-twigs, and lined with dry and green bracken and green spruce-twigs. Another pair was evidently nesting in an adjoining wood. On April 28th I found a Buzzard's nest in an oak-wood about three miles from Brecon; it was placed in a very stout oak, the lower twenty feet of which were branchless, forming a difficult climb, but by ascending another tree I could see an egg in the nest, and perhaps there were others also. In this case I could see the bird on the nest, which it did not leave till I was at the foot of the tree. Last summer the Grasshopper Warbler visited a fresh, and, for this district, an unusual locality,—namely, a dry hedgerow close to this town. Here its note was heard for several days in May. Its usual haunts here are swampy, rushy alder covers: the three nests I have found here were all in places of this kind. The Cirl Bunting visited this neighbourhood in some numbers last summer. Including the specimen I obtained on June 4th, I was able to make out five male birds in song, and no doubt there were others about the country. This bird retains its song much longer than most birds; one, in particular, frequenting some tall whitethorn-bushes near the river Usk, was

to be heard singing during the greater part of August. I last heard it on the 24th of that month.—E. A. SWAINSON (Woodlands, Brecon).

Ornithological Notes from Devon.—The frost set in here on the 26th Nov. 1890, and immediately Brent Geese and various kinds of Ducks made their appearance on the Exe Estuary. Between the 26th and 28th the temperature was very low, falling to 12° in Exeter, and the wind was very cold from the N.E. We had little snow here, but the Haddon Hills were covered with it. Great numbers of Sanderlings and Dunlins (very grey in plumage, with unusually long bills), some Coots, Brent Geese, Wigeon (young males), and Goosanders were on the river, and large flocks of Ring Doves, Lapwings, and Gulls (Common and Black-headed) on the surrounding fields at the beginning of December. I saw numbers of Bramblings near Topsham on the 8th; and a Purple Sandpiper, Sheldrake, and two Slavonian Grebes were brought to a birdstuffer in the town. On the 14th I observed a large flock of Godwits flying over Budleigh Salterton, a rather unusual sight at this time of the year. On the 18th a fine male Pintail Duck in full plumage, a Bittern, and an adult Gannet were brought to the birdstuffer, who had also a Reeve and a Redshank, lately shot. On this day (18th) snow fell at Honiton, and it was very stormy here in the evening, with heavy rain from the S.W., and on the 20th the wind blew from N.E., four inches of snow falling in the evening, and by next morning it lay to the depth of eight or nine inches. The first thing I saw on waking, soon after daylight, was a continuous stream of birds arriving from the east—Redwings, Fieldfares, Starlings, Larks, and Lapwings—and they continued passing away to the westward for hours. Later in the day I saw a few Cirl Buntings feeding with very small-sized Larks in my field; and near the sea there were numbers of Linnets, very tame and so weak that they could hardly fly, so that they fell easy victims to some men and boys that were knocking them down with branches. Some that I approached within a few feet were picking up grass-seeds. On the 21st I think I saw three Green Sandpipers on the beach. The snow cleared off in a few days; but on the 24th the Fieldfares began to succumb, and the Song Thrushes, which were in great numbers in the fields,—being more numerous than I ever before saw them,—were also in a bad way. I have since found many of them dead, as also Missel Thrushes (which usually survive all the other Thrushes), Blackbirds (males only), Redwings, and Larks. The Starlings have not suffered so much as in 1888, when thousands died. The Rooks were hard pressed for food, and I saw one pegging away at a dead Thrush which was frozen hard: it returned to its “cold collation” at intervals for several days until the whole of the fleshy parts of the Thrush had been eaten. A flock of Larks has fed continuously ever since the snow cleared off on my lawn, and are at work without cessation from daylight to dusk pecking at the grass, which they have quite denuded in some spots. On

the 29th I saw great numbers of Thrushes, Fieldfares, and Redwings feeding on some holly trees in one of the suburbs of Exeter. The end of the year was intensely cold, with bitter east winds. In the first week of January, the weather becoming a little milder, Lapwings were flying back to the eastward. More Sheldrakes occurred on the Exe, one being a very fine adult; and Woodcocks were plentiful in the poulterers' shops; they have been extraordinarily numerous in Devon this winter, though they arrived late, hardly any being seen before Nov. 10th. Another Goosander occurred on the river. About the 5th there was a great increase in the number of Ducks on the river, and many male Wigeon, some adult Scaups, a female Goldeneye, a young Sheldrake, and a White-fronted Goose were shot. I saw many Bar-tailed Godwits and a Grey Plover in the poulterers' shops. About this time a few Wild Swans (Whoopers) were obtained at Bude on the north coast. I hear from Messrs. E. A. S. Elliot and R. P. Nicholls, of Kingsbridge, that there have been vast numbers of wildfowl on the Leys in their district this winter. Several Bitterns have been killed, and Mr. Walter Toll saw more than two hundred Shovellers together on Slapton Ley. Redwings, Fieldfares, Larks, Tree Sparrows, Bramblings, and Woodcocks have been very numerous; the Larks were by thousands. Mr. Elliot killed a Bean Goose on the Estuary on Dec. 29th; there was only one other bird with it. Eleven Geese—believed to be White-fronted—were also seen. A female Smew was shot on Slapton Ley in Mr. Toll, who killed a female Summer Duck there in December; the latter, no doubt, had escaped from some ornamental water. Sheldrakes, Scaups, Long-tailed Ducks (immature), one Pochard, Goosanders, Northern and Red-throated Divers, and Grebes have also occurred near Kingsbridge. On Dec. 31st a Knot was brought to Mr. Elliot—a very unusual occurrence for the time of the year. By the local newspapers, I see that a great flight of birds was seen on Dec. 21st crossing the Bridgwater flats in Somersetshire in a south-westerly direction, and appears to have proceeded down the valleys of the Culm, Exe, and Otter to the south coast, keeping on till the birds reached the South Hams of Devon, where they congregated by thousands. Mr. Lipscombe, at East Budleigh, observed this flight, and says it consisted entirely of five species, Redwings, Fieldfares, Starlings, Larks, and Lapwings, and was coming down the valley of the Otter. Large numbers were also seen streaming to the south down the valley of the Axe. In that part of Devon the Larks are described as having descended on the kitchen-gardens like a flight of locusts; and to have devoured all the green food to be had. At Southampton, Larks, &c., were seen coming in from the sea, having apparently crossed the channel. — W. S. M. D'URBAN (Moorlands, Exmouth).

Grey-headed Wagtail in Warwickshire and Worcestershire.—On May 3rd, 1887, I received three Wagtails which had been shot in a meadow

at Sheldon, Warwickshire. One of the three you have identified for me as *Motacilla flava*. There was a considerable flock of these birds, as the farmer who shot them told me at the time that they were "dotted all over his meadow amongst the cows," and were very tame. After the second day they all disappeared and did not return. About the same time (the 5th or 6th May), whilst digging in my garden at King's Heath, Worcestershire, one of these elegant little birds settled so close to me that I could clearly see the characteristic pale eye-streak, and its glistening black eye. It returned repeatedly during the day to the little heap of manure on one of the beds, and on the following day disappeared. It was undoubtedly one of the Sheldon flock, for King's Heath, in Worcestershire, is not more than ten miles, as the crow flies, from Sheldon, Warwickshire, the two counties adjoining. All four birds were apparently immature.—F. COBURN (Holloway Head, Birmingham).

Sabine's Snipe in Ireland.—I obtained a very fine specimen of this variety from a lot of Snipe sent into our market on the 17th January last. The whole plumage of the bird is sooty black, with minute markings of yellowish brown over head, neck, wings, and back: no indications of the stripes on back or head so conspicuous in the common form; the under wing-coverts and axillary feathers are plain black—no dappling or bars whatever. The bird proved, on dissection, to be a male, in good condition, weighing $4\frac{1}{2}$ oz., and measured, from front of bill to extremity of tail, 11 in.; bill, $2\frac{3}{4}$ in., which, with the legs, were greyish black.—EDWARD WILLIAMS (2, Dame Street, Dublin).

Pied Flycatcher near Harwich.—On the 12th May, 1890, two Pied Flycatchers, *Muscicapa atricapilla*, were seen in a garden at Dovercourt: and the male was shot by a boy scaring birds. This is the first instance that I know of its having occurred in this neighbourhood. I have only once before seen this species in the eastern counties; that was a solitary bird, some years since, at Northrepps, near Cromer, in Norfolk.—F. KERRY (Harwich).

Rose-coloured Pastor in Warwickshire.—On the 10th November last an immature female of *Pastor roseus* was shot from a flock of Starlings at Sutton Coldfield. The bird had commenced the moult into the adult plumage, the black feathers just appearing amongst the primaries, tertiaries, central tail-feathers, and under tail-coverts. The rest of the plumage is greyish or slaty brown, with indications of buff under the tips of the feathers on breast and back. There is no white on throat, the colour being the same greyish brown as on the head and neck.—F. COBURN (Holloway Head, Birmingham).

Parrot Crossbill in Ireland.—It is a curious fact, and perhaps worth recording, that all the examples of Crossbill which I have received for

preservation during the past six months from different parts of Ireland have all belonged to the thick-billed form, *Loxia pityopsittacus*. From the recent scarcity of specimens sent in, it would seem that the great immigration of these birds has now ceased (Jan. 17th), although in a few districts some appear to have permanently settled.—EDWARD WILLIAMS (2, Dame Street, Dublin).

Notes from the North of Ireland.—The recent severe weather has brought in some uncommon birds, and the following have come under my notice:—A Bewick's Swan was shot at Lissanoure Castle, Co. Antrim, on Dec. 17th. Two fine male Goosanders were shot on the River Derg, Co. Tyrone, on Jan. 12th, and were sent to Belfast to be stuffed: they were shot by an old sportsman, who states that he only once saw two similar birds there, about sixteen years ago. On Jan. 20th a beautiful male Smew was shot on Lough Neagh, near Lurgan, and was examined by me. Two days later a second one—also a male, in equally good plumage—was shot about the same place on Lough Neagh. These birds are very rare here. On Jan. 30th an immature female Sea Eagle was shot at Mountstewart House, Co. Down, by Mr. N. N. W. Apperly, private secretary to Lord Londonderry. I saw this bird in the flesh; it measured 7 ft. 6 in. from tip to tip of wings, and weighed 9¾ lbs. A second Eagle, but a good deal smaller, was seen with it. For some time a flock of fourteen Wild Swans have been seen flying backwards and forwards between the sea and a mill-dam near Donaghadee, Co. Down; and on Feb. 10th Major Delacherois shot one on the dam, after a difficult stalk: it is a Bewick's Swan, and weighed 13 lbs.—ROBERT PATTERSON (1, Windsor Park Terrace, Belfast).

Mortality of Small Birds during the recent Frost.—I have just heard of a curious circumstance which occurred during the recent frost at Farringdon, Hants, the adjoining parish to Selborne. On Dec. 30th a barley-rick was taken in, and on turning over the bottom, which was composed of hop-bines, 125 birds were found. Of these, seven or eight were Blackbirds and Thrushes, a like number of Starlings, and the rest Greenfinches and Chaffinches. I suppose that these birds crept in for warmth, and, being near the ground, were killed by the frost. Near this place, also, some Starlings, which went up to roost in some ivy by a house, were all found dead in the morning, frozen, with their heads under their wings. In his account of the great frost 102 years ago, Gilbert White has described many of the phenomena which I have noticed this winter in connection with birds in general.—W. H. TUCK (Tostock House, Bury St. Edmunds).

Hybrid Turtle Doves.—An account of the interbreeding of the Turtle Dove, *Turtur communis*, and the Barbary Turtle Dove, *T. risorius*, may perhaps interest the readers of 'The Zoologist.' Late in the summer of 1889 I took three young Turtle Doves, which I at first had to feed by

hand. As soon as they could feed themselves I turned them into an out-door aviary, where were several of the Barbary Turtle Dove, both the ordinary variety and also the white variety, popularly called "White Java Doves." The Turtle Doves stood the winter very well, and after they had moulted I saw that there were two cocks and one hen, though I had been fairly sure of their sex for some time before; for the two cocks, much to my surprise, frequently "cooed" during the winter while still in their nestling plumage. Towards the end of last March I noticed the odd cock Turtle Dove "kissing" a young white hen, so I at once removed them into an aviary, where there were no other doves except one cock Barred Dove. The young white hen had laid twice already, but she had not secured a mate, and her eggs proved unfertile on each occasion. On the 20th May I found that the white hen had laid two eggs in a nesting box lined with hay; the cock Turtle Dove sat during the daytime and the hen at night, as is usual with *Turtur risorius*, and probably also with *T. communis*. During the period of incubation I noticed one very curious circumstance: both birds, but especially the white hen, were very shy about being seen on the nest; during the first week the hen would fly off whenever I appeared, whereas, when she was sitting on the two previous occasions, she used to strike at me with her beak and wings whenever I touched her. On this occasion, up to the very last, even when the eggs were hatched, she would never stay on the nest long enough to let me touch her, though it is usual for all my *Turtur risorius* to sit as closely as a brooding fowl. Does not this shyness suggest that the bird herself was well aware that she was doing something rather out of the common? Her two eggs nearly came to grief, for one day I found a small indentation and crack in the shell of each egg, made by the beak or claw of some bird: however, the skins of the eggs were not broken, so I mended them with plaster-of-paris, gum, and tissue-paper! Finally, after fourteen days' incubation, two very dark-skinned little birds appeared: they grew very rapidly and fledged well, and in about three weeks' time left the nest, and began catering for themselves. They now looked like pure-bred nestlings of the Turtle Dove, except that they already had the black and white patch on the sides of the neck, nearly as distinct as in old birds, whereas in the pure-bred young of the Turtle Dove this patch does not appear till after the moult, and in the young of the Barbary Dove the black colour is very indistinct till after the moult; in the adult white doves one can see, so to speak, where the collar ought to be; the white feathers there look quite different to those on the other parts of the bird. In the young white dove one can hardly see any trace at all of the collar. It appears to me very curious that the young hybrids should have had a well-developed neck patch, which the pure-bred offspring of each parent bird are without at that age. The birds have got into their full plumage now, and resemble a pure-bred Turtle Dove very

closely: they are without the black-brown splashes on the upper parts of the Turtle Dove; their foreheads are very light grey, and generally they are slightly lighter coloured than pure Turtle Doves. A few weeks ago I had the pleasure of seeing three hybrids bred between a cock Turtle Dove and a hen Barbary Turtle Dove of the ordinary variety. As might be expected, these birds are exactly like my hybrids, except for being slightly darker. One had been bred in 1889, two in 1890; the two were still in nestling plumage, and these again showed well-developed neck patches. The birds were all together in a small enclosure, and the owner assured me that the 1889 bird had not been at all vicious with its parents during the last summer. I mention this fact because it is often thought that hybrids are always particularly quarrelsome. My white hen laid again towards the end of September, but the Turtle Dove refused to help her to incubate, and after she had been sitting alone for a week I found the eggs were unfertile, and took them away. Do any readers of 'The Zoologist' know of an instance of cross-bred doves breeding either amongst themselves or with the parent species on either side? My two birds appear, from the difference in their size, and also from the depth of the vinous coloration of the breast, to be cock and hen. I shall do my best next summer to prove whether they are fertile or not; and, inasmuch as hybrid pheasants and waterfowl are fertile, I think the doves will probably prove to be so too.—E. W. H. BLAGG (Cheadle, Staffordshire).

Ornithological Notes from Harwich.—During the month of August last, a number of Greenshanks frequented the mud-flats of the rivers Stour and Orwell; there were quite fifty in one flock, out of which three were killed at one shot, as they were feeding on the ooze. There were also several family parties of Green Sandpipers, many more than usual, and Common Sandpipers were everywhere. In September many Little Stints and Curlew Sandpipers appeared, and six of the former were shot; Godwits were fairly common, but Knots, on the contrary, were scarce; one old bird, with a good red breast, was shot on the mud-flats of the river Stour on the 6th October; this, I think, is a rather late date for this bird to retain its breeding plumage. On the 8th the Hooded Crows arrived, as usual; on the 11th many Golden Plover appeared; on the 13th two Shore Larks were shot on a piece of waste land quite near the town; five were shot on this same piece of land on the 12th December, last year. During the stormy weather about the 15th October several Skuas were seen, and one, a female Pomatorhine Skua, shot; on the 18th, Bramblings, Goldcrests, and Jack Snipe appeared; on the 22nd a pair of Tufted Ducks were shot on the river Stour; the ova of the female were well-developed, some as large as No. 2 shot. On the 2nd November a flock of Snow Buntings, in all stages of plumage, were seen on the beach at Dovercourt.—F. KERRY (Harwich).

Notes from Essex.—On visiting our local birdstuffer, Mr. Pettitt, on Dec. 6th, I saw some fresh arrivals, mostly in the flesh; and although none of them were very rare, they may be of sufficient interest to record in 'The Zoologist.' The first, an immature specimen of the Sea Eagle, *Haliaetus albicilla*, was shot somewhere in this locality; but he could not say where, as the owner had not informed him. A Shore Lark, *Otocoris alpestris*, shot at Burnham, Essex. A Bittern, *Botaurus stellaris*, killed at St. Osyth. Two Bewick's Swans, *Cygnus Bewicki*, killed near Brightlingsea: I hear that there were five killed at one shot, and that several have been seen. One Smew, *Mergus albellus*, also killed near Brightlingsea. One Great Northern Diver, *Colymbus glacialis*, shot near the same place; and one Black-throated Diver, *C. arcticus*, shot near Mersea. — HENRY LAYER (Colchester).

Curious resting-place for Kingfisher.—On Nov. 26th, whilst walking on the shores of Lake Lemman, a Kingfisher passed me, and flew up into the paddle-box of one of the lake steamers lying in the dock at Ouchy for the winter. The presence of several men working all about the steamer at the time did not seem to frighten the bird in the least. Kingfishers are not uncommon here, and may often be seen on the artificial breakwaters along the shore.—G. H. EASTWOOD (Closelet, Lausanne).

Bittern in Glamorganshire.—Since noting the occurrence of the Shoveller, *Anas clypeata*, here, the Rev. H. Morgan-Stratford, of St. Athan Rectory, near Cambridge, has written to tell me that a Bittern, *Botaurus stellaris*, was shot on Dec. 16th, 1890, on the Tregough Moors, near Cowbridge, by a farmer living near the village of St. Athan. He gave the bird to Mr. Morgan-Stratford, who is having it preserved for his collection — DIGBY S. W. NICHOLL (The Ham, Cambridge).

Bittern in Somersetshire.—On Dec. 2nd I saw a Bittern, *Botaurus stellaris*, in the hands of a birdstuffer at Bridgewater. It had been shot that morning at Huntworth, about two miles from the town, and sent to him for preservation.—H. St. B. GOLDSMITH (King Square, Bridgewater).

Grey Phalarope in Essex.—A specimen of the Grey Phalarope, *Phalaropus fulicarius*, was shot on the marshes near Stratford on Nov. 8th. It is in the hands of Mr. Murray, taxidermist, Stratford, for preservation. —ARTHUR F. GATES (Marsh Gate Lane, Stratford).

Osprey in Warwickshire.—On the 20th of September last a friend and I observed an Osprey soaring over Longmore Pool, without success, although he cast longing eyes into a fisherman's punt not thirty-five yards below him. Thence he flew to Powell's Pool, and out of sight, and I trust out of danger. —J. S. ELLIOTT (Sutton Coldfield).

Albino Ring Ouzel.—On October 15th, 1890, the Torquay Natural History Museum received a perfect albino Ring Ouzel. The bird was young,

well nourished, and was shot by Mr. Wolfe on Dartmoor.—GEO. A. MUSGRAVE (Furzebank, Torquay),

Spotted Crake in Somersetshire.—Five of these birds were brought to me lately, the last so recently as Dec. 8th, which seems very late for a bird which is generally considered to be a summer migrant. The five examples were all killed within a few miles of Weston-super-Mare.—F. A. KNIGHT (Weston-super-Mare).

[Possibly they were all individuals of a late brood.—ED.]

Spotted Crake in Staffordshire.—On the 3rd of November I killed a male specimen of this bird, whilst feeding on the edge of a pool. Its gizzard was full of seeds.—E. TYE (Handsworth, Birmingham).

The Dartford Warbler in Dorset.—The Dartford Warbler usually survives the cold of our winters, but the extreme severity and long-continued snow of 1880 and 1881 killed off every Dartford Warbler from this district (Lyme Regis). Year by year I have searched localities where this bird was abundant before those two disastrous winters, but have not met with a single individual. I am told that they have appeared in some parts of the county since that date, but they have not extended to these parts. It would be interesting to learn the experience of observers of this bird during the past winter, in districts where it may yet survive.—ARTHUR LISTER.

Common Skua in Leicestershire.—On Sept. 16th, 1890, a Common Skua, *Lestris catarrhactes*, was picked up dead, near the pool in Bradgate Park, by Mr. Sharp. I saw it at Pinchen's, taxidermist, Leicester, to whom it had been sent for preservation. He reported that it was uninjured, and appeared to have died from starvation. There are two previous doubtful notes of its occurrence in Leicestershire, but I believe this is the first authentic record.—THOS. MACAULAY (Kibworth).

Goosander in West Sussex.—A fine male Goosander, *Mergus merganser*, was shot at West Harting, on the western Rother, by Mr. Charles Harris, of Durford, on Jan. 16th, and has been sent to Mr. Pratt, Brighton.—H. D. GORDON (Harting Vicarage, Petersfield).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

February 5, 1891.—Prof. STEWART, President, in the chair.

Messrs. Richard Bentley and E. S. Goodrich were admitted; and Messrs. T. F. Bourdillon, C. T. Keane, and Prof. A. Milnes Marshall were elected Fellows of the Society.

Mr. Clement Reid exhibited and described some recent additions to the fossil arctic flora of Britain.

Mr. Thomas Christy exhibited and made remarks on some specimens of honey:—(1), "Arbutus honey," from Turkey, said to produce great drowsiness and sleep; (2) "Eucalyptus honey," from Mount Barker, Adelaide, said to possess valuable therapeutic properties; and (3) so-called "Wool honey," from the Euphrates, collected by natives from the leaves of the oak, which would be more properly termed "honey-dew," being formed by aphides, and not by bees.

Mr. J. E. Harting exhibited a living albino example of the Common Frog, *Rana temporaria*, captured in Wiltshire in September last, and remarked upon the infrequency of albinism amongst the Batrachia and Reptilia, of which he had only been able to find four or five recorded instances.

On behalf of Mr. Gammie, of Sikim, Mr. C. B. Clarke gave an abstract of an interesting paper on the Tree Ferns of Sikim, in which several moot points were discussed and difficulties cleared up.

The next paper was one by Prof. W. A. Herdman, on a revised classification of the *Tunicata*. Taking as a basis the scheme of classification adopted in his Report on the 'Challenger' collection, he incorporated the various known genera and species not represented in this collection, and discussed the general principles to be recognised in classifying the *Tunicata*, especially dwelling on the value of the various modifications of the branchial sac, and of the tentacles. The polyphyletic origin of the group *Ascidia composita* was pointed out, and the relations between simple and compound Ascidiarians were shown by means of a phylogenetic diagram.

A paper was then read by Prof. G. B. Howes, in which he gave a description of the genitalia of six hermaphroditic Codfish examined by him, and a *résumé* of what is known on the general subject of hermaphroditism amongst fishes, more particularly referring to the *Teleostei*, which exhibited the most nearly primitive condition of the genital gland realised by living Vertebrata. He regarded the genital duct of the *Teleostei* as homologous in both sexes, representing a primitively hermaphroditic duct of the ancestral chordata. He sought to homologise it with the proliferating mass described by Balfour and Sedgwick, Fürbinger, and others, as entering into the formation of the base of the Müllerian duct proper, and regarded it as having been replaced by that structure on the advent of uni-sexuality. Several other points were touched upon of special interest to physiologists.

ZOOLOGICAL SOCIETY OF LONDON.

February 3. 1891.—Prof. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of January, 1891; and called special

attention to a Yellow-crowned Penguin, *Eudyptes antipodum*, from Stewart Island, New Zealand, presented by Sir Henry Peek, Bart., new to the collection.

A letter was read from Dr. Emin Pasha, dated "Bussisi, Oct. 6, 1890," announcing the despatch to the Society of a collection of birds which he had made on his way up from the coast.

The Secretary exhibited, on behalf of Mr. J. W. Willis Bund, a specimen of the Collared Petrel, *Æstrelata torquata*, which had been shot off the Welsh Coast in Cardigan Bay, in December, 1889, and was new to the British Avifauna. This is the specimen which was exhibited by Mr. Harting at a meeting of the Linnean Society on the 6th November last, and of which a detailed account was given ('Zoologist,' 1890, p. 454).

A communication was read, from Dr. R. W. Shufeldt, containing remarks on the question of saurognathism of the Woodpeckers, and other osteological notes upon that group.

Count T. Salvadori pointed out the characters of two new species of Parrots of the genus *Platycercus*, which he proposed to call *P. xanthogenys* and *P. erythropeplus*, both believed to be from Australia.

Mr. P. L. Sclater gave an account of a collection of birds, from Tarapacá, Northern Chili, which had been made for Mr. H. Berkeley James, by Mr. A. A. Lane. Fifty-three species were recorded as represented in the series, amongst which was a new Finch, proposed to be called *Phrygilus coracinus*.

Mr. F. E. Beddard gave an account of the pouch of the male Thylacine, from a specimen recently living in the Society's Menagerie. Mr. Beddard also described the brain of this animal, and pointed out its differences from the brains of other marsupials.

ENTOMOLOGICAL SOCIETY OF LONDON.

February 4, 1891.—Mr. FREDERICK DUCANE GODMAN, M.A., F.R.S., President, in the chair.

The President nominated the Rt. Hon. Lord Walsingham, M.A., F.R.S., Professor Raphael Meldola, F.R.S., and Dr. David Sharp, F.R.S., Vice-Presidents for the Session 1891-92.

Dr. Thomas A. Chapman, M.D., of "Firbank," Hereford; Mr. Horace St. John Donisthorpe, of "Belvedere," Crystal Palace Park Road, S.E.; Mr. F. W. Frohawk, of 9, Dornton Road, Balham, S.E.; Mr. E. Ernest Green, of 10, Observatory Gardens, W.; Mr. G. F. Hampson, B.A., of Thurnham Court, Maidstone; Mr. Frederick J. Hanbury, F.L.S., of 69, Clapton Common, Upper Clapton, N.E.; and the Hon. M. Cordelia E. Leigh, of Stoneleigh Abbey, Kenilworth, were elected Fellows of the Society.

Mr. C. J. Gahan called attention to a larva which he had exhibited at the meeting of the Society on the 1st October last, when some doubt was expressed as to its affinities. He said that Prof. Riley had since suggested that the larva was that of a dipterous insect of the family *Blepharoceridæ*; he was quite of the same opinion, and thought it might probably be referred to *Hammatorrhina bella*, Löw, a species from Ceylon.

Mr. Tutt exhibited a long series of *Agrotis pyrophila*, taken last year by Mr. Reid, near Pitcaple, in Aberdeenshire, and remarked that this species had been commoner than usual last year in Scotland, the Isle of Portland, and the Isle of Man. He also exhibited long and variable series of *Melitæa aurinia* (*artemis*), *Triphæna orbona*, *Abraxas grossulariata*, and *Melanippe fluctuata*, all from the same locality in Aberdeenshire.

The Rev. Canon Fowler exhibited a cocoon of *Deiopeia pulchella*, recently received from Lower Burmah.

Mr. C. O. Waterhouse exhibited specimens of *Scyphophorus interstitialis*, a Mexican species, and *Aceraius comptoni*, a Ceylon species, recently taken by Mr. Bowring in his greenhouse. He also exhibited, on behalf of Miss Emily Sharpe, a specimen of *Daphnis hypothous*, Cramer, a native of Borneo, Java, and Ceylon, caught some years ago at Crieff, N.B. The specimen had long been confused with *Chærocampa nerii*, under which name its capture was recorded in 'The Entomologist,' xiii. p. 162 (1880).

The Rev. Dr. Walker exhibited a collection including many species of Orthoptera and Scorpions recently received from Jerusalem.

Mr. Frederick Enock read an interesting paper entitled "The Life-History of the Hessian Fly." This paper was illustrated, by means of the oxy-hydrogen lantern, with a number of photographs of original drawings showing the fly in all its stages and transformations. Mr. G. H. Verrall said he believed the Hessian Fly was no more a recent introduction into this country than the Cabbage White Butterflies. The discussion was continued by Mr. Godman, Mr. Enock, and others.

Mr. Roland Trimen communicated a paper entitled "On some recent Additions to the List of South African Butterflies."

Mr. H. W. Bates communicated a paper entitled "Additions to the Carabideous Fauna of Mexico, with remarks on species previously recorded."

Mr. W. F. Kirby read a paper entitled "Notes on the genus *Xanthospilopteryx*, Wallgr."

Dr. D. Sharp contributed a paper entitled "On the Rhyncophorous Coleoptera of Japan," Pt. 2.—H. GOSS & W. W. FOWLER, *Hon. Secretaries*.

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NOTES ON THE SEAL AND WHALE FISHERY OF 1890.

BY THOMAS SOUTHWELL, F.Z.S.

ALTHOUGH not equal to the returns of the previous two years, the take of Seals at the Newfoundland Fishery in the season of 1890 was fairly successful, the total catch by the same nineteen vessels which were present in 1889 having been 209,000, against 303,287 in the previous season. Of these, six vessels returned with fewer than 8000; seven with over 8000 but less than 15,000, and the remaining six from 15,000 upwards. The 'Neptune' took the lead with 22,000; followed by the 'Falcon,' 19,000; 'Terra Nova,' 18,100; 'Rasager,' 17,000; 'Wolf,' 16,000; and 'Greenland,' 15,000—an average of 17,833; the total average of the nineteen vessels being 11,000, against 15,963 in the season of 1889. None of the vessels were "clean," and only one, the 'Kite,' made a second trip, for 800 Seals. Four Dundee vessels were present—the 'Terra Nova,' which took 18,100; 'Aurora,' 12,500; 'Esquimaux,' 10,100; and the 'Polynia,' 7400: these 48,100 Seals are included in the previous total. Capt. Milne, of the 'Esquimaux,' arrived at Dundee on April 16th for repairs, and reports that after leaving St. John's, on March 10th, he "encountered very heavy ice, so that progress was slow. After taking advantage of all the available lanes in the ice, the 'Esquimaux' got within twelve miles of a body of Seals to the north-east of Funk Islands. Pushing onwards, the main body of the Seals was struck on March 26th, and during two days nearly 10,000 "harps" were taken on board. The Seals were in prime condition,

the pelts averaging 53 lbs. each. On March 28th it was found that the vessel had sustained serious injury to her bows,—a number of the ice-plates having been carried away and the wood-work cut through, so that the vessel was leaking,—Capt. Milne was therefore reluctantly compelled to relinquish fishing. Temporary repairs were effected, and the vessel steamed back to St. John's. On the way a large body of old Seals was found, and 400 were taken on board, when the leak broke out afresh, and the passage had to be resumed, St. John's being reached on the 31st March. . . . Capt. Milne reports the death of one of his crew, Robert Peterson, a native of Shetland. On March 26th, Peterson was sealing by himself at a distance from any other men, and unfortunately slipped through a hole in the ice. He caught hold of the edge of the ice, but was unable to raise himself. One of the crew of the steamer 'Wolf' happened to come upon Peterson, who was still clinging to the ice, but by that time he had suffered so much from exhaustion and cold that the efforts to resuscitate him failed. He was taken on board the 'Wolf,' where he died, and his body was subsequently transferred to the 'Esquimaux' and buried at sea." Such are some of the dangers of sealing on the Newfoundland ice.

The young sealing in the Greenland Seas was a perfect failure, owing to the exceptional weather experienced, of which I shall have more to say further on. Both Scotch and Norwegian vessels entirely missed the breeding pack, and many of them were frozen fast in the ice for six to eight weeks. On their release they were scarcely more successful with the old sealing: there were plenty of Hooded Seals seen, but owing to the nature of the ice they were too much exposed to be approached successfully, and took to the water on the approach of the boats.* The total number of Seals brought home by seven vessels from Greenland was 4376 only, and from Cumberland Gulf the sailing ship 'Alert' arrived with 2227, making a total of 6603 only, against 15,079 in the previous season. This section

* Nansen ('The First Crossing of Greenland,' chapter vi. p. 158) is of opinion that the recent scarcity of Hooded Seals is more apparent than real; he believes that these animals, which were formerly found near the sea edge of the ice, have changed their habits in consequence of the persecution to which they have been subjected, and now frequent the ice lying nearer the shore, and unapproachable by the sealers; and in such situations he found them in undiminished numbers.

of the voyage, it will be seen, resulted in a very serious loss, which was not retrieved—at least so far as the British vessels were concerned—by the Right Whale and Bottle-nose fishery in the same waters which followed.

The total produce of the Newfoundland and Greenland old and young sealing was 54,686 Seals, yielding 647 tons of oil (against 91,365 Seals and 1062 tons of oil in the previous season); these at £21 per ton of 252 gallons, and, say, 6s. per skin, would probably realise about £29,993, against a similar estimate of £59,000 in 1889, but of course the great bulk of this was earned by the Newfoundland vessels.

The total number of vessels which left Dundee for the Seal or Whale Fishery was ten, the same ships as in the previous year; from Peterhead there were seven—the ‘Eclipse,’ ‘Hope,’ and ‘Perseverance,’ screw steamers, and the ‘Traveller,’ ‘Baltic,’ ‘Alert,’ and ‘Perseverance,’ sailing vessels; the ‘Baltic’ went to the Bottle-nose fishery, and returned “clean,” and the two latter returned from Cumberland Gulf.

The Davis Straits fishery has again been a fairly successful voyage, five vessels returning with 18 Right and 806 White Whales, yielding 387 tons of oil (about 124 tons of which would be white whale oil), worth £22 per ton, and 13½ tons of bone. The late Capt. Adams, whose sad death I shall have to mention further on, was exceptionally successful, killing six Whales, which produced 100 tons of oil and 117 cwt. of bone; these, I believe, were procured in the middle ice about the end of June. By the beginning of July the ice had all cleared away, and later on not a particle of ice was to be seen in Davis Straits. I am informed that the vessels fishing in Prince Regent’s Inlet got four Black Whales and 806 White Whales before mentioned, and that the three vessels remaining out till the fall got five Whales amongst them, all fine fish; also that there were plenty of Whales seen, but owing to the absence of ice and the boisterous weather which an open season produces, the Whales would not lie, and the boats could not get a fair chance.

The following extract from the ‘Dundee Advertiser’ of the 17th Nov. 1890, will serve to show the character of the Davis Straits voyage of the past season:—

“The steamer ‘Polynia,’ belonging to the Dundee Seal and Whale Fishing Company, arrived at Dundee on Saturday afternoon from a

successful voyage to Davis Straits, her cargo consisting of 127 tons of oil and $3\frac{1}{4}$ tons of whalebone, the produce of five Black and 317 White Whales. In the spring the 'Polynia' was engaged at the Newfoundland Seal fishing, and, after having returned to Dundee, she was equipped and left for Davis Straits on 24th May, in place of the 'Esquimaux,' which was so seriously damaged by ice that she could not be repaired in time. A smart run was made to Cape Farewell, and few obstructions were encountered during the northward passage along the east coast. Capt. Milne states that very little difficulty was experienced in crossing Melville Bay this season. Icebergs were numerous, but there was very little pack-ice. This season has been characterised by the exceptionally small amount of pack-ice in the Strait, the result being that the Whales kept out in the open sea, and were exceedingly difficult of approach. According to Capt. Milne, this has been the most open season he has ever experienced at Davis Straits. After getting through Melville Bay, the 'Polynia' went to what is known as the "middle ice," where a large Whale was captured about the middle of June. A visit was next made to Pond's Bay, and the 'Polynia' subsequently passed through Lancaster Sound to Prince Regent Inlet. Here the condition of affairs was reversed, for the Inlet was so full of pack-ice that although Black Whales were numerous only two were captured. A considerable addition to the cargo of oil was made here by the crew falling in with a school of White Whales, of which 317 were killed. After returning from Prince Regent Inlet, Capt. Milne tried all the fishing stations from Pond's Bay southward along the west coast. At Pond's Bay he was visited by Olnik, the Eskimo who came to Dundee with Capt. Adams. He was in good health and spirits, his party having had a very successful fishing season, and he asked Capt. Milne to remember him to his friends in Dundee and Broughty Ferry. He was then unaware of the death of Capt. Adams, and expressed the hope that he might make another trip to this country on board the 'Maud.' Capt. Milne states that many Whales were seen while coming down the west coast, but owing to the absence of ice they generally kept from twenty to fifty miles off the land, and could scarcely be approached. The crew succeeded in killing a Whale off Cape Eglinton, and another off Cape Cater, which made up the cargo. During the latter part of the season the weather was squally, with frequent snow storms, and on the 30th October the 'Polynia' bore up from Exeter, the run home being accomplished in fifteen days. The voyage will prove remunerative to the owners, as the whalebone is worth over £6000, having been sold to arrive at £2050 per ton."

Owing to the great scarcity of bone it has been fetching enormous prices, one parcel having been sold at £2400 per ton, and I am informed that a re-sale of part of that brought home by the 'Maud' took place at £2550 per ton. I believe that none has produced less than £2000. In addition to the sixteen Black and 806 White Whales ninety Walruses were killed in Davis Straits.

The Whale fishery in the Greenland Seas proved an absolute failure, the only produce which was brought home by the Scotch

ships being $13\frac{1}{2}$ tons of Bottle-nose oil, the yield of eighteen of these animals killed by Capt. David Gray, of the 'Eclipse,' and worth £25 per ton. Capt. Gray saw only two Whales, one of which he got fast to, in lat. $79^{\circ} 39' N.$, long. $4^{\circ} 16' E.$, but the harpoon drew, and altogether there were only six Whales seen by the whole of the vessels; these were in the early season, and not one was met with in the South Ice.

The reason of the want of success both in the Seal and Whale fishery in the Greenland Seas was the enormous accumulation of ice; this was in consequence of the exceedingly fine weather which prevailed during the whole season, calms and light easterly winds prevailing with severe frost in the spring, during which time the young ice continued to accumulate, there being no wind to break up and disperse it; the usual southerly drift was absent during the whole season. Mr. R. Gray constantly mentions, in his Log, the vast numbers of Little Auks which frequented the ice edge, the open floe-waters which usually form their feeding places, being probably frozen over. This disastrous termination to the Greenland voyage will be productive of serious consequences to the owners of the vessels, most of which will probably succumb to the series of bad years which they have experienced or pass into the hands of other owners. The Norwegians had a successful season with the Bottle-nose fishery, some fifty vessels killing about 2000 of these animals.

I have mentioned the death of Capt. Adams, of Dundee: this took place immediately after the arrival of the 'Maud' in August last; he was landed seriously ill at Thurso, and died before reaching Inverness. Capt. Adams was one of the best known and most successful whaling captains sailing from Dundee. He had been twenty years in command, and during that time had killed about 190 Whales, all, I believe, in the Davis Straits fishery. It was with Adams that Capt. A. H. Markham made a whaling voyage to Baffin's Bay and the Gulf of Boothia in 1873; he then commanded the 'Arctic,' but left that vessel after the voyage of 1883, and joined the 'Maud' in 1886, which he continued to command till his last voyage.

The large number of Whales seen in Davis Straits will probably attract an increased fleet from Dundee in the coming season; but the continued want of success in the Greenland Seas is likely to produce a contrary effect in that direction.

The absence of Whales in those seas during the past season is certainly exceptional, and probably arises from the peculiar conditions of the ice; but I am informed that the failures, in some at least of the previous years, have been, in a great measure, due to the vessels cruising about in fleets, to the great disturbance of the Whales, instead of pursuing their search singly; the Whales have thus been rendered very shy, and when seen have proved quite able to take care of themselves. The fitting out of a whaling vessel has now become a very costly matter; added to which the high rate of wages demanded by the men renders an unsuccessful voyage a heavy loss; but it is the opinion of a Commander of great experience that there are still sufficient Whales in the Greenland Seas to pay for their pursuit, provided too many vessels do not take part in the fishery, and that each "steers by its own compass," otherwise this branch of the fishery must soon come to an end.

THE BIRDS OF PAPA STOUR, WITH AN ACCOUNT OF THE LYRA SKERRY.

BY HAROLD RAEBURN.

THE following account of the birds of Papa Stour is necessarily a very imperfect one, from the difficulty of obtaining reliable information as to the winter visitors. This defect is very general in accounts of the Ornithology of our outlying islands which are not lighthouse stations, or which have not been so fortunate as to possess—like Unst—such an enthusiastic and able resident naturalist as the late Dr. Saxby.

Saxby apparently never visited Papa Stour, for in his 'Birds of Shetland' he does not even mention this island, and the references in other and earlier writers are few and brief. My acquaintance with the island and its bird-life was made in the course of two visits paid in June, 1887, and again in June, 1890; and Mr. W. Eagle Clarke has kindly given me a list of species observed by him on Papa Stour and the Ve Skerries in June of last year (1890), which enables me to add one or two species not observed on my visit.

Papa Stour (*i. e.* Pope or Priest Island, and Norse *Stor*, large)

is one of the minor islands of the Shetland group. It forms the southern point of that large and many-voed inlet of the Atlantic, St. Magnus Bay, and is the most westerly, with the exception of Foula. The Sound of Papa, which separates it from the mainland, is only about a mile and a half in width; but through this rushes, at certain states of the wind and tide, one of the worst of the many "roosts," or tide-races, round these coasts.

Despite its magnificent caves, fantastically-shaped stacks, and fine cliffs covered with sea-fowl, Papa Stour has received perhaps less attention from travellers and naturalists than any other of the islands. This has no doubt been owing to the difficulty of access, the nearest village on the mainland—Sandness—being until recently separated from Walls on the south by eight miles of roadless hill and bog, and from the central highway to the east by a perfect labyrinth of lochs of all sizes and levels. Now, however, a road connecting Sandness and Walls has just been finished, so that it is possible to drive right from Lerwick to Sandness if a little jolting be not objected to.

One of the principal reasons for my visit to "Pāāpa," as it is called by the natives, was to ascertain if the accounts of the old writers on the Ornithology of Shetland, with regard to the great colony of *Puffinus anglorum* on the Lyra Skerry, held good at the present day, since in Shetland at all events—whatever may be happening elsewhere—my experience points to a great recent decline in the numbers of this species.

The earliest ornithological writer who mentions Papa Stour is Brand (1701): he, however, never visited it, and is generally quite unreliable. He says of it:—"The Isle of Papa Stour is said to be the pleasantest little isle in all this country. Two miles long, and well furnished with fewel, grass, corn, rabbets, &c. . . . Nigh to this Isle lyes the Lyra Skerries, so called because the lyres (those fat fowles spoken of in our description of Orkney) do frequent this Skerry."

That accurate and most painstaking naturalist and microscopist, the Rev. Geo. Low, visited Papa Stour (1770) on his Shetland tour, and says of the Lyra Skerry, it is "inhabited by vast numbers of Shearwaters—lyries." I can discover no more recent reference to the Ornithology of the island than this.

The surface of Papa Stour, so far from being "well furnished with fewel, grass, &c.," is, to a large extent, almost totally devoid

of any vegetation at all. All the peat has been burned long ago, and the people have to bring their "fewel" from the Island of Muckle Røe, at the head of the bay. The only part of the island where any soil exists is the low-lying ground to the south, and the fields there have been chiefly "built" by "scalping" the rest of the island. This part contains all the houses, the population—as Stour is an important fishing-station—being considerable, amounting to over 250 at the last census. This fertile part is the haunt of most of the few land species of birds which breed on the island.

From here the slope is up to the N. and W., attaining a height of 288 feet at Virda Field, N.E. of the "Horn," a huge spur of rock which projects in a striking and picturesque manner above the face of the overhanging cliff. These northern and western cliffs, along with the numerous fantastically-shaped stacks, and the two larger islets, Fogla and Lyra, are the principal haunts of the sea-fowl.

Four and a half miles N.W. lie the low wave-washed rocks called the Ve Skerries (Norse *Ve*, Woe).

The inland barrens are almost totally devoid of life; an occasional pair of Ringed Plovers, or the still less frequent Wheatear, is all that breaks their dreary stone-strewn desolation. In the old times the men of Papa had a reputation as climbers little inferior to those of Unst or Foula, but for many years past climbing has been almost entirely given up, and I was informed that only two men on the island are now able to make the ascent of the Lyra Skerry. I was fortunate enough, on the occasion of my second visit, to secure the services of the best of these men. He rejoices in the name of "Long Peter," and certainly deserves the adjective, standing some 6 ft. 3 in. in his "rivlins" (raw cowhide shoes worn by the Shetlanders). I had a good illustration, during the course of the day, of the great advantage his enormous reach gives him in cliff climbing.

On Friday, June 13th, 1890, the wind being favourable though rather strong, Mr. Scott, of Melby, and I crossed the Sound, and landed in Papa, but it was not till 4 p.m. that arrangements were completed for a visit to the Stacks. We pulled out of Hamna Voe in a light "sixern," keeping well in shore to avoid the wind, which was getting rather strong, and passing on our way several pinnacled stacks, each usually with its pair of *Larus marinus*

nesting on the grassy summit, and any shelves on the side occupied by the piles of seaweed and dried grass forming the nests of the Shag. Rowing through a narrow chasm between Sula (query, has this any connection with *Sula bassana*: see Sulasgeir Suli-skerry) and Asha stacks, we came in sight of the two Skerries.

Fogla—Fowl-a—is an islet of considerable size, grazing a large number of sheep, which are landed on it by being thrown out of a boat on to the rocks at the only possible landing-place: this is a narrow ridge of rock, between two enormous chasms, which slopes up to the top of the islet. Though the ascent is not at all difficult, a man lost his life here—as many sheep are often lost—by slipping off the ridge into the chasm below. His body was never seen again. I had been questioning the men with regard to the birds to be found on these islets, and especially with regard to the Shearwater or Lyrie, but they did not appear to be at all acquainted with it, and evidently were ignorant of its breeding habits.

We landed on Fogla without much difficulty, and I made a hurried examination of the island, which is about a quarter of a mile long. The Shearwater certainly does not breed here, for there are no burrows of any kind on it. I saw many nests of *Larus fuscus*, and obtained one of *L. marinus*, perched—very characteristically of that bird in this region—on the top of a semi-detached pillar of rock. Peter also brought me three eggs of the Guillemot, and asked if those were Lyrie's eggs! The men also found a few Eiders' eggs, and many eggs of the Lesser Black-backed Gull, but most of the nests contained only one egg, this islet being too easy of access. I found a different state of things to exist on the summit of the all but inaccessible Lyra Skerry. This, to which we now pulled, is very incorrectly termed a skerry, which means, strictly speaking, a low wave-washed rock. It is really a huge "stack" of porphyritic rock, 180 feet high and about a quarter of a mile in circumference. It lies between Fogla and the cliffs of Papa, from which it is distant about a furlong, and has two fine outlying stacks or pillars on either side, called respectively "Snolda" and the "Fit." Lyra is perpendicular, or overhanging, on all sides except one small portion at the S.E. corner, just to the right of the magnificent sea-floored cavern that passes through the island. This was pointed out to me as "the road up."

Peter now took a coil of codline in his hand, and, watching his opportunity as the light boat rose on the swell, jumped clear of the water on to a dry ledge. Though I did not relish the look of the said "road up," there was no other way of getting to the top; so I followed him. Peter now explained to me that there were only two "bad bits"—one about half-way up, and the other just at the very top. The first of these is where the rock projects so far as to overhang the sea below, and from where—the men were careful to inform me—a climber had fallen some years before, but, striking the water, was picked up by his comrades in the boat, escaping with a broken arm and a severe shock from a fall of 90 feet. They added, perhaps unnecessarily, that he did not again attempt the ascent.

The last fifteen feet, however, according to Peter, was the only really difficult bit. I had on a pair of indiarubber shoes, which are capital for rock climbing *as long as they are dry*; but when I had got up fifty feet or so I followed Peter's example and took to stockings, as they afford much greater freedom for the toes.

The ascent for the first 90 feet is, comparatively easy, for the rock, though almost perpendicular, is firm. At this place occurs the first "bad bit," as it is necessary to round a point which projects clear over the water, and the ledges have a nasty outward slope. However, the finger grip is good, and, watching where my guide put his feet, we were soon both past this. Above this part the climbing is comparatively easy till the top is neared. Here, within fifteen feet of the summit, we brought up against what appeared to me a totally unscalable piece. We were clinging in a sort of shallow niche of the cliff, which above our heads narrowed to a crack about eight inches wide. If it had been a foot wider the ascent would have been comparatively easy by bracing the body against the sides, but its narrowness precluded this. I now watched Long Peter's movements with interest, and here was the point where his great height and long arms stood him in good stead, for, stretching himself up the left-hand edge of the crack, he seized a small ledge nearly eight feet above the niche we stood in, and slowly and carefully he drew himself up, finding a crevice for his toes, and, getting another grip higher up, he was at the summit in a few seconds. He then passed the doubled codline down to me, which I fastened under my arms, and, Peter putting a 56 lb. strain on it, I swarmed up the edge of the crack,

and stood beside him on the top. The sight to an ornithologist was worth the climb. From out the hollows between the luxuriant grass tussocks, uncropped since the world began by the hungry teeth of the Shetland sheep, swarms of Lesser Black-backed Gulls were rising, while all around, with hoarse deep bark and threatening swoop of his wide pinions, *Larus marinus* showed his displeasure at our intrusion, and in threes and fours the heavy Eider Ducks fluttered off their downy nests, and disappeared over the edge of the stack. I paid no attention to these, however, but at once proceeded to hunt for the Manx Shearwater.

The summit of the stack is about three acres in extent, roughly bean-shaped, with the concavity towards the north. It slopes gently up from S. to N. The vegetation is of extraordinary luxuriance, many of the grass tussocks rising to the height of two feet, with deep hollows covered over with tangled herbage lying between. The bladder campion was especially rank. These hollows I now explored for the Shearwater, but without success. Many promising-looking tunnels I found led a foot or so in to the nests of the Eider, with its three, four, or five eggs, most of them apparently incubated, while the more open hollows very frequently contained nests of *L. fuscus* with eggs or newly-hatched young.

After a long and careful search I failed to find a single genuine burrow, and not a trace of any such bird as the Manx Shearwater was to be seen or smelled. Nor does the bird nest upon the sides of the stack, for these are of solid rock, so smooth and perpendicular that a few Guillemots, Razorbills, Shags, and Kittiwakes can barely find foothold.

Thus, despite Low's account and the name of the stack itself, no Lyries now breed here. The colony of *L. marinus*, "Swabie" as it is called, is, however, a very fine one,—by far the largest in Shetland, with the exception of that upon the totally inaccessible "Holm of Noss" near Lerwick. I counted twelve nests of this fine bird (nearly all with three eggs) placed at intervals of a few yards in a row along the N.W. edge of the stack; there were about as many on the N.E. ridge, and several others scattered over the stack.

L. fuscus is much more numerous,—about ten or twelve pairs of the smaller to each of the larger kind.

I did not identify any Herring Gulls as belonging to Lyra, though several were seen in the vast cloud overhead: but these might have come either from other stacks, or from the cliffs of Papa Stour. One would wonder how, amongst such a swarm of confirmed egg and chick swallows as the two species of Black-backed Gull, the Eiders can manage to raise a brood at all; but that they do manage it is an evident fact. They do not, however, escape without paying toll, as was evidenced by the number of sucked egg-shells strewn about the edge of the cliff. The Eider always covers her eggs when leaving, and these nests being so snugly concealed in the deep hollows between the tussocks, is the only explanation of the fact that many of the nests of the Eider contained four eggs, apparently almost hatching. The ducks were very tame; one, indeed, permitted me to lift her off her nest, which, curiously enough, contained only one egg.

If any doubt now existed as to the fact that the Eider Duck often *carries* her young to the water, these nests would be quite proof enough, as a jump of nearly 200 feet would certainly be too much for the young to take alone.

The view from the summit of the stack is grand in the extreme. Facing north, on the right, we have the coast-line of the finest cliffs in Papa, with the giant "Horn" projecting many feet over the restless ocean, now beginning to break heavily beneath the rising wind. To the left, about five miles distant, lie the low wave-washed Ve Skerries, the last remnant of land in this direction, and the most westerly rocks in Shetland except the Island of Foula, which rises dim and vast on the southwestern horizon.

But Peter was back with his jersey crammed with eggs, and it was time we were off: to carry anything down the way we came up would be an utter impossibility; but here the codline came into play, for Peter, walking to the extreme edge of the cliff just over the archway through the island, signalled to the boat to be ready, and lowered his harvest swiftly and steadily straight into the boat,—doing the same with the fishing-basket containing my more modest, if safer, selection.

My enjoyment of the scene upon the summit had been somewhat dashed by thoughts of the descent; but, with the aid of Peter's codline for the top piece, it was soon accom-

plished, and I was exceedingly glad to again jump on board our boat.

Mr. Scott told me that while Peter and I were up the stack a "Mallie" (Fulmar Petrel) had been seen circling round it; but whether this points to the possibility of a new colony of this evidently extending species, or whether the bird was only a straggler from Foula, where the Fulmar has been established for about eighteen years, I was not able to ascertain.

The men all assured me that this was the first time that Lyra had been ascended by anyone not a native; and this being so, I regret that I did not obtain specimens of the plants growing there, as places inaccessible to sheep are scarce in Shetland, and here, if anywhere, one would expect to find survivals of different climatic conditions to those which now prevail over the islands.

Though rabbits are plentiful on Papa and the islets in the Sound, fortunately there are no rats; nor, indeed, are there any of these destructive animals in the whole district of Sandness, on the opposite shore of the mainland.

We disturbed many Seals on Fogla, but all those I saw were of the common species, *Phoca vitulina*. *H. gryphus*, however, frequents the Ve Skerries in some numbers.

LIST OF THE BIRDS NOTED, WITH THE NATIVE NAMES.

Saxicola cenanthe, Wheatear (Steinkle). The most generally diffused land bird.

Troglodytes parvulus, Wren (Robin). Not common.

Anthus obscurus, Rock Pipit (Bank Sparrow). Fairly abundant on the cliffs; observed on Fogla, but not on Lyra.

Hirundo rustica, Swallow. Several were seen for about a week, about Sandness and the Sound of Papa, in May, 1890.

Passer domesticus, Sparrow. Abundant, nesting in the thatch of the houses and sheds.

Acanthis flavirostris, Twite (Lintie). Not very numerous. I found a nest with young in 1887, on Papa.

Emberiza miliaria, Common Bunting. Common round the crofts.

Sturnus vulgaris, Starling (Starn). Abundant.

Corvus corax, Raven. One or two pairs breed. Mr. W. E. Clarke saw five near the "Horn," in June, 1890.

Corvus cornix, Hooded Crow (Craa). Common.

Alauda arvensis, Sky Lark (Lavrock). Not very numerous.

Asio accipitrinus, Short-eared Owl. This is probably the "Hoolet" that comes in the autumn. It does not breed, however, and in fact very rarely does so in the Shetlands.

Haliaëtus albicilla, Sea Eagle (Erne). Is occasionally seen; there is an eyrie at no great distance from the island.

Falco peregrinus, Peregrine (Goshawk). A pair nest just under the "Horn." I put the female off the nest in June, 1887, and Mr. W. E. Clarke noted them there in 1890.

Phalacrocorax carbo, Cormorant (Scarf). Scarce.

P. graculus, Shag (Scarf). Very abundant. Nesting on all the stacks, as well as on the cliffs.

Anas boscas, Mallard (Wild Duke). Mr. W. E. Clarke detected eleven on one of the lochs in 1890. I did not observe this species.

Mareca penelope, Wigeon. Mr. Clarke also observed a male Wigeon on one of the lochs; not noted by me.

Somateria mollissima, Eider (Dunter). Very numerous on Lyra; a few on Fogla. One nest with sucked eggs found by Mr. Clarke on the Ve Skerries, June 11th, 1890.

Mergus serrator, Merganser. Male and female on loch, W. E. C., June 4th, 1890. One in Hamna Voe, H. R., June 13th, 1890. Rare.

Columba livia, Rock Dove (Doo). Very abundant. I obtained a nest in a crack of the cliff on Papa, on June 7th, 1887. The Papa Stour Doves are very troublesome in the garden of Melby House, on the other side of the Sound.

Ægialitis hiaticula, Ringed Plover (Sandyloo). Scattered over the stony barrens.

Streptilas interpres, Turnstone. About two dozen were seen on the Ve Skerries, June 11th, 1890, by W. E. C.

Hæmatopus ostralegus, Oystercatcher (Shelder). Fairly common, nesting on the edge of the cliff at broken parts, upwards of 100 feet above the sea. A pair on Fogla. Several nests on Ve Skerries, found by W. E. C.

Tringa alpina, Dunlin. A few adults on Ve Skerries, W. E. C.

Sterna macrura, Arctic Tern (Tirrack). Breeds on the small flat islets; but on June 7th, 1887, and also on June 13th, 1890, —though I saw the birds,—they evidently, from their behaviour, had not yet laid. The Rev. Stephen H. Saxby, editor of his

brother's work on Shetland birds, has noted the enormous number on the Ve Skerries; but Mr. W. E. Clarke, who, with Mr. J. A. Harvie-Brown, visited these rocks on June 11th, 1890, states that only a few were seen. No eggs on any skerry. The birds had probably not yet settled down for the season.

Larus canus, Common Gull (Small Maw). A few pairs only nest on the islets in the Sound of Papa. Mr. Clarke found a single nest with one egg on the Ve Skerries.

Larus argentatus, Herring Gull (White Maw). Breeds commonly on the cliffs and stacks, but, contrary to the usual rule throughout Shetland, is far outnumbered in this district by the next species.

Larus fuscus, Lesser Black-backed Gull (Saith-foul). Very abundant, especially on Lyra and Fogla.

Larus marinus, Great Black-backed Gull (Swabie, contr. for Swartback). Almost every rock pillar has its pair of these magnificent Gulls besides the large colony—unusual in Shetland—on Lyra Skerry.

Rissa tridactyla, Kittiwake (same). Abundant on the cliffs of Papa Stour. A few nest on Lyra Skerry, and I took a nest with one egg before ascending the stack.

Stercorarius crepidatus, Richardson's Skua (Allan). On June 7th, 1887, I saw a solitary individual sweeping over Papa Sound, but this bird does not breed in the neighbourhood.

Alca torda, Razorbill (Wilkie). Fairly abundant on Stour; also breeds on Lyra and Fogla.

Lomvia troile, Guillemot (Longie). Abundant on Stour; and also breeds on the Skerries, Lyra and Fogla.

Uria grylle, Black Guillemot (Tystie). Nests all round the island. I saw several fly out of their breeding-places, 100 feet up the cliffs; also noted by W. E. C. off the Ve Skerries, where it no doubt breeds.

Fratercula arctica, Puffin (Norie). One solitary bird seen by Mr. Eagle Clarke off the Ve Skerries, June 11th, 1890.

Fulmarus glacialis, Fulmar Petrel (Mallie). One seen by Mr. Scott, of Melby, and the men, circling round Lyra, while Peter and I were engaged in the ascent.

Procellaria pelagica, Storm Petrel (Swallow). Nests abundantly in many places, but does not arrive at its breeding-haunts until the last few days of June.

ORNITHOLOGICAL NOTES FROM NORFOLK.

BY J. H. GURNEY, F.L.S., F.Z.S.

DURING the latter half of 1890 the following notes were made by me in Norfolk, and may perhaps be of interest to readers of 'The Zoologist.'

Col. Feilden reports that, on July 31st, seven pairs of Sheld Ducks were hatched out near Wells.

On August 25th Mr. H. R. Leach heard and saw four Sand Grouse at Morston, and the same afternoon four were seen at Wells, as he informed Mr. Southwell, who has no doubt that they were correctly identified. A Pectoral Sandpiper, *Tringa maculata*, Vieillot, was shot at Yarmouth on September 10th, respecting which, and two others subsequently, Mr. Southwell has sent the following note:—"On the 10th Sept. Mr. B. Dye, of Yarmouth, sent me, for determination of species, a Pectoral Sandpiper which had been killed on Breydon the same morning. It proved, on dissection, to be a male, the striated markings on the throat and chest and the wing-coverts broadly margined with chestnut seeming to indicate immaturity. On the 13th of the same month Mr. Lowne, of Yarmouth, was kind enough to inform me that he had received two other specimens of this bird, which were seen together, on the 12th, on a marsh between the North River and Breydon; one was killed and the other wounded, and found the next day near the same spot still alive. I examined these at Mr. Lowne's shop a few days after, and found them in the same state of plumage as Mr. Dye's specimen, and was informed that they had proved by dissection to be a male and female. The first mentioned example is in Mr. Dye's collection, and the two others were purchased by Mr. Bellin, for whom they were set up by Mr. Lowne."

On Sept. 13th a female Red-breasted Flycatcher, *Muscicapa parva*, Bechstein, was shot at Cley by Mr. Ogilvie, the eighth on record, Cornwall being accredited with four, Ireland one, Berwickshire one, and Yorkshire one, which last was shot at Scarborough, Oct. 23rd, 1889, the same day of the same month as the Irish example in 1887—history often repeats itself in matters ornithological. Although this Flycatcher was immature, judged by its

plumage, Mr. Gunn, from an examination of its ovary, formed an opinion that it was an adult.

Mr. R. J. Purdy, on Sept. 29th, saw an Alpine Swift hawking along the edge of Cromer Cliffs with some Martins: he watched it at intervals for more than half-an-hour, sometimes within a few yards of him. According to a Norfolk paper, one was killed a few days afterwards in Essex, but Mr. Christy cannot trace its whereabouts, and on the 24th of the same month another was picked up on Scarborough Spa, Yorkshire.

On October 10th a Bernicle Goose was shot by Mr. Pollock on the beach at Cley. About the same date Mr. Howlett, of Newmarket, received a Whiskered Tern, *Hydrochelidon hybrida*, Pallas, from the neighbourhood of Dersingham; but it was not until February last that it came under the notice of the Rev. J. G. Tuck, who at once saw that it was a rarity, and its identification was independently confirmed by Mr. Harting, to whom Mr. Howlett sent it to be named.

On November 5th Col. Feilden saw an Eagle at Wells, and a young King Duck was sent, in the flesh, from Hunstanton to Mr. Southwell, who has already given some particulars of it (Zool. 1890, p. 463). A second King Duck, believed to be an adult female, was sent on the 15th to Mr. Southwell from Hunstanton by Dr. Whitty. Mr. S. thinks there must have been a small flock of them, and possibly others may have been killed, for in female plumage it is difficult to distinguish from the Eider, and would be sure to be set down as such by anyone who did not examine the bill. A Dunlin—a very unexpected visitor so far from the sea—was shot on Nov. 28th, by the river at Keswick, Norwich. At the same time there were a number of Snipes, and they remained with us for at least a week.

On December 2nd Mr. Pashley obtained an adult Glaucous Gull at Cley. A Scaup Duck for some time during December frequented a pond in a garden at Bolwick, and close to a house, fully ten miles from the sea. At the close of the month this species was abundant at Cley and Yarmouth, and one was killed so far inland as Edgefield. In a protracted frost Scaups seem to suffer more than any wildfowl. On the 13th fourteen Wild Swans passed over Col. Feilden at Fulmondston.

A Shoveller was seen on Dec. 20th in Yarmouth Market by Mr. Patterson, together with twenty-three Scaups, twenty Tufted

Ducks, and sixteen Pochards, a sharp frost soon filling the stalls. Hundreds of Dunlin were shot, and other birds suffered in equal proportion. Mr. Monement reports that at Morston a number of Mallard came to feed where a stack had been thrashed. He also observed a herd of eleven Swans, and about the same time three Swans, perhaps out of the same flock, were shot. Many Kingfishers, Green Woodpeckers, and Barn Owls—the last named fat, the others very poor—were brought to our birdstuffers. On the 20th also, Mr. Patterson saw seven Wood Larks at Yarmouth, which a market gardener had just shot in the snow.

Mr. G. Smith wrote from Yarmouth, Dec. 28th, that, owing to the prolonged frost, the poor Black-headed Gulls were ready to do anything to get food, and that a great many had been caught in nets; one bird-catcher took fifty-six in one pull with a clap-net, and altogether about 150 starved Gulls were brought to Mr. Smith. Many of the ravenous birds were fed by the charitable, and no one remembered to have seen them so daring in approaching houses.

ON THE HERPETOLOGY OF THE GRAND DUCHY OF BADEN.

BY G. NORMAN DOUGLASS.

(Continued from p. 59.)

3. *Lacerta vivipara*, Jacq.—Of this lizard comparatively few Baden specimens have passed through my hands, and they differed little in their coloration from others found on the Scotch moors or in England. Though exhibiting a good deal of slight individual variability, the only distinct variety in this part of Germany which has attracted notice is the light-coloured *L. montana*, Mikan, reported as occurring at Rippoldsau, in the Schwarzwald. I made an excursion for the purpose of obtaining adult specimens of this form, but the weather proved unfavourable, and the few young I succeeded in capturing resembled the typical form.

The viviparous lizard appears generally distributed throughout the Black Forest region (*i. e.*, as far north as the River Alb, which flows within a mile of Karlsruhe), continuing its range, after a considerable break, in the Odenwald. It is found plentifully all round Baden-Baden (Teufelsmühle, Herrenwies, Hornis-

grinde, Wildsee), as well as further south, in the neighbourhood of Freiburg (Feldberg, &c.); further eastwards its range extends, I believe, as far as Donaueschingen. On the Kaiserstuhl, and in all districts where the vine is cultivated, this species is replaced by *L. agilis*, which shows less antipathy for human proximity, and it may be worth noticing that in Baden it does not seem to frequent moist low-lying districts as in other parts of Germany and elsewhere. In the hilly country of the Southern Palatinate this species is also found, at least if I may rely on the statement of an exceptionally intelligent peasant, who surprised me by describing accurately all the native reptiles, and, most of all, by designating *L. muralis* as the "Italian" lizard.

In point of size this species is smaller than *L. agilis*, and of more delicate build. The extreme length may be put down to 17 cm., very few, even full-grown specimens, attaining more than 16 cm.

Being found at altitudes where snow lies for six months in the year, this lizard must necessarily be of very hardy constitution, and in the Schwarzwald it may be seen up to the end of October on ground already covered with hoar frost. It often emerges as early as March. The dark coloration sometimes exhibited by this species has led to some speculation as to its probable cause, and a good deal of evidence has been adduced to show that both here and with *Anguis fragilis* this "melanism" has resulted from moisture of the surroundings. But the effects of this are easily over-estimated in dealing with the number of similar cases for which no explanation has hitherto been attempted. Referring to *L. nigra*, Wolf, it has also been suggested that its dark colour is in some manner connected with the "high altitudes" at which this lizard is often found, while it remains obscure what "moisture" and "altitudes" should have in common in order to be able to influence the colour of this and other species in an analogous manner.* In the Alps

* Unless I am mistaken, two distinct melanistic varieties of the Rattlesnake have been discovered in N. America; one, *Crotalophorus Kirtlandi*, inhabiting swampy districts, the other confined to portions of the White Mountains. Some cases might be quoted to show that a sudden change to moisture has been temporarily followed by a general darkening of the ground-colour; on the other hand, a peculiarly light coloration has been attributed to the same cause.

the phenomenon of black or sombre tints is so common with widely-separated classes of animals that we are driven to assume some general cause producing it. And, by way of hypothesis, to explain some of these facts, Prof. Eimer has suggested the direct effects of the "former dampness"* in the atmosphere, and is evidently disposed to see in the present colour of the embryo of *L. vivipara* (which has been "retained" by the melanic adults) that of its ancestors in the post-glacial period. But in the case of several higher alpine animals which equally tend to "melanism," this can hardly be admitted a *vera causa*, and it is almost as easy to imagine—while we are *in nubibus*—that in this instance the glacial epoch itself favoured, indirectly, the production of black, by preserving those individuals who could best retain warmth through means of dark-coloured fur. At the cessation of extreme cold the majority would re-assume more protective coloration, while those remaining in the Alps and other secluded localities would continue less liable to lose this tendency. Perhaps in this period can be placed the acquisition of viviparous habits by *Pelias berus*, as well as the origin of the singular development of *Salamandra atra* and other peculiarities of alpine forms. With *L. vivipara*, as well as *Anguis fragilis* and *Pelias berus*, the females incline more to variability of this description, and in the first-named it is therefore easy to assume a tendency to revert to ancestral coloration, though this hardly explains the matter satisfactorily. And, speaking of reptiles in general, we are unable in the vast majority of cases to account for the frequent appearance of "melanism." We see that there are many grades of this condition, from a scarcely appreciable difference in the normal coloration to complete blackness, and that all these gradations are frequently displayed by one species; and further, that while most species exhibit some individual variability of this character, the tendency has in others led to the production of melanotic varieties, possessing often a local preponderance over the typical form. It also becomes evident that this form of coloration spreads over the body in different ways, and is induced or favoured by various, not always external, causes, for the investigation of which the microscope alone is of little value.

* 'Variieren der Mauereidechse,' p. 200.

Perhaps the most intelligible of dark-coloured varieties are those formed through adaptation to the environment (such as many varieties of the Wall-lizard on the islands and continent of Italy), for there is no difficulty in understanding how on black volcanic ground, for instance, a dark race should have been gradually preserved through the action of natural selection. But in other melanic island forms of the same lizard (such as *L. Lilfordi*) the colour is no more protective than in the many analogous forms of other reptiles which are repeatedly being discovered, but is due to an entirely different cause. Unfortunately, all anatomical investigation has yet obtained but negative results, but I venture to think undue importance has in some of these cases again been attached to "moisture," whose effects must necessarily be either more universal or *nil*. In some more isolated instances of "melanism" among European *Lacertidæ*, the dark colour may possibly have been produced by change of food, or some other physiological derangement, but it appears to have spread over the body by the same method as in the cases above alluded to, that is, by the gradual darkening of the ground-tint, and not through the broadening out and fusion of the original markings.*

The var. *nigriventris* of *L. muralis* may be cited as an example of partial melanism, for here, as the name indicates, the dark colour is confined to the lower parts. In tracing out its course of development, we see that the black is first visible in the shape of minute spots on the throat, each scale of the collar being often prettily marked with a black centre-piece. In Germany it is frequently found in this stage of development, and sometimes also in the next (transitional) stage, which consists in the entire under surfaces being thus covered with minute spots, which afterwards, in the true *nigriventris*, Bonap., expand to the exclusion of all other colouring. It is noticeable that, in localities where this variety has become dominant, the first gradation of colour-development has been abbreviated, and the young already

* Thus Gachet's black *L. viridis* is not an "advanced" *maculata*, if we may judge by what he says:—"Après avoir été plongé pendant plusieurs jours dans l'alcool, . . . les grosses taches noires, dont on ne voyait que des traces, sont devenues très-apparentes" (Act. d. l. Soc. Linn. de Bordeaux, 1833, p. 168).

display the intermediate stage, the adults passing on to the extreme *nigriventris*.

The facts of the distribution of this form—it occurs in patches, as it were, on the mainland and islands of Italy, sometimes exclusively, sometimes promiscuously—prove that we cannot turn to the all-explaining “external influences” for the cause of this coloration. As the initial tendency is on the part of the male, and an identical development of colour has taken place with the var. *rubriventris*, where again the throat is the first part of the body to be “ornamented,” there is reason to believe that the black here, unornamental as it appears, may be due to sexual selection. To this subject I hope later to refer at more length, and will here merely remark that I am using the term strictly in the sense attached to it by Wallace, as it appears improbable that in different localities the same variety of one species should have been formed through the action of female choice.

With *Anguis fragilis*, dark-coloured individuals are occasionally met with, and here, in as many cases as have come under my notice,* the black pigment is concentrated on the under surfaces, diminishing towards the throat and tail (only in one instance the tail-end, above and below, was coloured black). The incipient “melanism” proceeds thence up the lateral portions, each scale in its turn receiving a small black central spot, till it reaches the darker zones which usually border the upper parts. Its progress may therefore be quoted as an exemplification of the “infero-superior” development, mentioned by Prof. Eimer in another work. Another process of colour-development, the “postero-anterior,” is illustrated in the case of the melanic Ringed Snake, *Tropidonotus natrix*, var. *minax*, Bonap., where the black colour advances equally along both surfaces, “supra et subtus ater, concolor,” as it is described. In the “*carbonarius*” variety of *Zamenis viridiflavus*, it is developed on the upper parts only: “supra ater, concolor, subtus griseus. . . .” In the last-mentioned cases the dark colour does not, as with *L. Lilfordi*, diminish its intensity under the influence of alcohol, a fact which may be of importance as

* For with many reptiles two or more distinct melanotic varieties have been described.

bearing on its origin; nor can it be attributed to reversion, as in the case of *L. vivipara nigra*. It seems rather to be a recently-acquired coloration. With *Zamenis viridiflavus* the black, which may be regarded as an accentuation of the normal brownish tint, is attained by a series of imperceptible transitions, the speckled immature markings—*cf.* the ontogeny of the Blackbird—lingering longest about the head and neck. Viewed side by side, an adult “*carbonarius*” and a young individual of the same species offer an interesting study for the evolutionist. The tendency exhibited by many Colubrine Snakes to uniformity of coloration, which has led to the abolition of the brighter immature patterns and markings, has here and in some analogous instances proceeded, apparently, a step too far. It may be doubted whether the apparent advantages which a uniform tint would confer are now gained, and it remains a matter of speculation what the purpose of this innovation may consist in. In spite of some evidence of a similar nature,* I am disinclined to call to aid the cumulative effects of female preference, for it can hardly be supposed that a simultaneous and almost identical change of æsthetic tastes should be taking place in many of the females of several distinct species. And the fact that this form of coloration is most strongly pronounced in the oldest male seems sufficient to account for its successful *début*, since in all probability this new variety—whatever its original “cause” and present advantages—will, as such, possess greater vigour and fertility. The few well-known cases of melanism briefly referred to will serve to show that the causes producing this condition are in Herpetology no less obscure than in other departments of Zoology, and that, like albinism, it may still be called a dark chapter in Biology. It is less commonly accompanied by pathological symptoms than albinism in its various forms, whether innate or acquired. Indeed, the only case in Herpetology of melanism occurring (perhaps) as a disease which I have met with was a *Triton*

* Poulton, ‘Colours of Animals,’ p. 303. It has also struck me that the “*carbonarius*” variety of this species is even more lively than the older form, but its extreme wariness may be due to the instinctive knowledge that the black colour renders it more conspicuous. And perhaps for this very reason it has not been more universally adopted by other snakes who equally incline to this coloration, but who are inferior to *Zamenis* in point of agility.

alpestris, captured near Dieppe, whose lower surfaces were discoloured by dark brown patches—akin, possibly, to the human melanism. And it may be doubted whether here the normal health of the individual was in any way affected.

AUTUMN NOTES FROM THE NORFOLK COAST, 1890.

By O. V. APLIN, M.B.O.U.

I WAS at Cley from the 1st to the 9th September, 1890, without seeing any remarkable migration of small birds, although this is usually the best time for meeting with the rarer migrants on that coast. My brother, Mr. F. C. Aplin, who was there a week earlier and a few days later, only noticed one decided case of immigration, *viz.* on August 29th, when there were a great many Willow Wrens and one or two Redstarts in the scrub. After I left I had news of a considerable "rush" of small birds, &c., about the 20th Sept., comprising Pied Flycatchers, Ring Ouzels, Garden Warblers, Willow Wrens, Chiffchaff, as well as Peregrines, Merlins, and some rarer species, of the occurrence of which I hope their fortunate captors will not keep ornithologists in ignorance. No Bluethroats, however, so far as I can learn, were observed this year, the explanation of which is probably that, in the absence of winds favourable to their striking the English shores, these birds passed straight on to their southern winter quarters. The unfavourable winds and fine summer-like weather of September probably also accounts for the comparatively small number of *early* autumn migratory land-birds which were observed here last season, and for the short time they stayed.

During the time that I was at Cley the wind and weather, although thoroughly enjoyable for boating and lying up to watch, or wait for, the birds, was most unpromising for bringing in any migrants or getting near the shore-birds which were already in the marsh. What waders we saw were accordingly wild, though high tides on the first few days helped us considerably.

The following diary of the weather speaks for itself:—
1st, bright, still and hot. 2nd, S.W., moderate, overcast. 3rd, S.W.—W., moderate to very light; dull. 4th, S.W.—W., light; dull, wet until 2 or 3 p.m., then dull, hot and close. 5th, N.W.,

light to calm; hot. 6th, fine and hot, W.—N.W., light to calm; thick white mist over fresh marshes at evening, cleared at night. 7th, fine and hot, N.E., light. 8th, blazing hot; wind light, N.W. and by E. to S. at night, as it did yesterday (N.B., the wind has probably blown from S. during the last three nights). 9th, bright and hot. What we wanted was a fresh N.W. breeze all night; and we never got it.

Small birds, as might be expected, were conspicuous by their absence. On the 2nd there were a few Larks, but no Wheatears or Pipits, and no birds in the scrub save one or two Linnets. On the 3rd two Wheatears about the beach, very few Larks, one Linnet, no Pipits. 5th.—On this day a few birds had dropped in. A few Wheatears about the beach and at the Point; a flock of Linnets feeding on the seed-heads of the docks on the beach; two Ray's Wagtails on the beach; a Reed Bunting and a Willow Wren in the scrub, and a skulking Song Thrush in the grass-clumps and bushes on the beach. Sand Martins in the harbour on 3rd and 5th. Many Swallows and Martins hawking low over the marsh, flooded by the high tide, in front of the village on the 2nd. 6th.—Three or four Willow Wrens in the scrub; some flocks of Linnets and a few Meadow Pipits. 8th.—A few Meadow Pipits, one in the scrub, and one Willow Wren secured by another collector: I saw none.

Kingfishers seem to come down to the salt-marshes at this season; I saw two together near Morston on the 3rd, one in the watch-house creek on the 5th, and two towards Salthouse (in the reclaimed marsh) on the 7th. Of hawks I only saw a Merlin on the wing in Blakeney Marsh on the 3rd, and on the 9th, inland, between Morston and Stiffkey, a Buzzard of some kind on the wing, followed by Rooks: it was light brown, and very pale underneath. The Rev. Julian G. Tuck kindly wrote me word of a Honey Buzzard he had seen in the flesh, shot in Cambridgeshire on October 2nd, and remarks, "Possibly it was the identical bird you saw," I having hazarded a guess that my bird was of this species; and indeed I do not think it could have been anything else, although I never saw the Honey Buzzard on the wing before, to my knowledge.

Perhaps the most remarkable feature about the wader migration on the east coast in the *early* autumn of 1890 was the abundance of the Curlew Sandpiper. On the 2nd and 3rd

I noticed them in flocks of from half-a-dozen or so, up to twenty and even fifty. In singles and twos and threes also they haunted the creeks at low tide, either by themselves or with one or two Dunlins and Ringed Plovers. Mixed flocks also of Pigmies and Dunlins were also met with. The note of the Pigmy uttered on the wing has been said to have a resemblance to that of the Dunlin. It is quite different, and by the note you can tell the species composing the little bunches of Stints or Pigmies which come bowling along over the muds long before they are near enough for the large size, lighter colour, and white rumps of the Pigmies to be distinguished. The Dunlin's call is "treee, treee," a monosyllable. The Pigmy's is "tirr-eee, tir-ee," a dissyllable; but the space between the syllables is short, and perhaps rather the most emphasis is laid on the second, which is prolonged a little. During the days when the grassy marshes inside the sand and "marram" bank, which divides them from the mud-flats, are kept wetted by high tides, Pigmies love to feed on this ground, and continue to haunt it until a day or two of low tides and hot sun have dried them. These marshes are covered with very short turf (on which sheep come when it is dry), interspersed with plants of thrift, sea-lavender, spurrey, &c. Here and there are shallow pools, and in the wetter spots the glasswort grows. Further in, the little creeks, with a border of atriplex, begin to run down to the main one. While lying on the bank among the "marram," I watched the Pigmies on this ground through the glasses. They often assumed a very upright position as they posed beside a pool. Much less restless than Dunlin or Ringed Plover, they do not run about so much, and when a Pigmy and one or two Stints and Dotterel have lit together in a creek, or elsewhere, the latter begin to run quickly as they feed, but the former is much quieter and more sedate. This fact has been previously recorded, but it is so noticeable a trait that it is worth repeating when treating of the habits of a bird about which too much has not been written. On one day at least (3rd) Curlew Sandpipers were far more abundant than Dunlins in the marsh. All that I met with were young birds of the year in the speckled dress, but I saw in the birdstuffers' shops three fine specimens in red dress, with only a few light feathers beginning to show, shot early in August. Apropos of this, I was rather

surprised to find that Major J. Biddulph, writing "On the Birds of Gilgit" in 'The Ibis' (1882, p. 288), says that *Tringa subarquata* shot on Sept. 4th had completely assumed the winter plumage. According to Messrs. Gurney and Southwell's list (Trans. Norfolk & Norwich Nat. Soc. 1886-7), Norfolk has never produced "one in adult winter garb." The adults (which seem to arrive very early in autumn) probably go on before the season is far advanced, but Sept. 4th seems an extraordinarily early date for them to have acquired full winter dress, and, coupled with the early far southward migration of the adults, is a curious and interesting point in the life-history of this Sandpiper, about which we know so little at present. The fact that the old birds shot early in August already showed a few light-coloured feathers also points to a remarkably early assumption of the winter dress.* The early date at which the adults go south, of course, accounts for the fact stated by Messrs. Gurney and Southwell; but it appears that young birds of the year (as is the case to some extent with the Dunlin) do not assume winter dress until a considerable time after the adults. But although the young stay much later in Norfolk than the adults, I believe that it is very rare for even the former to assume the grey winter dress in that county, though some occasionally remain into October, and I have seen one myself in the marsh as late as the 8th of the month.† But I merely judge of their plumage in the autumn from the local specimens I have seen at the birdstuffer's (all of which retained the speckled dress), and have never handled an October example in the flesh. In length of beak the Curlew Sandpiper presents considerable variation. I measured nine birds which we got one day. The beak of one measured 1.65 in.; of another, 1.5 in.; and those of the remainder between 1.4 and 1.35 in. The first bird was decidedly larger in the body than the others.

In other seasons when Pigmies have been numerous, Little Stints have followed suit, but last year proved an exception. A young bird was secured on the 2nd, and I saw another up the harbour channel the next day. The other waders met with

* Some adult Dunlins will not have changed at all nearly a month later.

† Qy.: Do they assume full winter dress the first year? Probably not.

will perhaps best be noticed as they were observed and set down in my note-book:—

On 2nd Ringed Plover very numerous and shy; one very young bird puzzled us all by a curious variation of its note, a loud, clear "peep," as it sat out on a bare and very soft mud-flat. Whimbrel, fifteen in one lot, and many others. Bar-tailed Godwit, a few. Dunlin, small bunches; single birds and twos and threes were tame; adults still very little changed, and those in first dress not at all. Knot, a bunch of eleven and a few others; the big flocks which arrived early in the season have been pretty well exterminated. Turnstone, only one seen. Curlew, herd of thirty at flight time and others. Ruff, two about upper end of Morston Creek. Peewit, considerable flock on green marshes. Greenshank, one (shot). Redshank, a good many about creeks; Heron. 3rd, Whimbrel in fair numbers; one Knot, flying with a dozen Godwits, was the only bird to fall out to a shot; another single one on beach edge; a Greenshank in creek between Morston and Stiffkey; Common Sandpiper, one near Stiffkey Sluice; Grey Plover, one. 4th, Common Sandpiper, one came right up round the bend of the harbour to Cley; Turnstones, a few (one swam, when wounded, with ease); Peewits. 5th, Turnstone, a good many at the Point (all seen at close quarters were young, but some changing); Sanderlings, two up the channel in afternoon, when the dead low tide had uncovered the sandy banks: I do not think they ever come up at other times, as they dislike mud, and do not come on it; Heron. 6th, Sanderlings, a little flock along the beach in afternoon; Common Sandpiper passing west along beach late in afternoon, calling. 8th, Peewits, a great flock, two long lines, below Stiffkey; Godwits, a few: these birds are often tame when feeding in very still, hot weather; Dunlin, one quite half changed to winter dress on back—quite an exception to the other examples handled; Sanderling, a flock of fifteen or twenty flew up at dead low tide and lit on a sandbank, where they remained feeding for some time: two shot afterwards from the flock were birds of the year, but the buff on the neck had nearly disappeared, and the upper parts were merely checkered black and white—very pretty little birds. A Golden Plover with breast rather more black than white was shot by a gunner to-day.

It was too early in the season for many ducks. On the morning of the 2nd we saw five Sheld-duck on the mud-edge

at Blakeney: they were very wild, but, as far as I could see with the glasses, they were all young birds, probably bred on the "meals" towards Wells. The next morning two Shovellers flew in, apparently from the sea. From the position of their wings, which are set on very far back, I guessed what they were, and in the afternoon they passed close enough for us to see them, and their large, ugly beaks, plainly. One Teal was seen the same day.

Most of the Terns had left; but we saw seven or eight Common Terns on the 2nd, and two on the 8th. Lesser Terns were met with on the 2nd, 3rd, 5th, and 8th; five on the first day; one adult shot was losing the black on the crown. An immature bird shot on the 5th was—according to the local stuffer—in a plumage in which they are not often procured there. So perhaps the young birds go south soon after they can fly. This idea is borne out by what I have observed in the case of Common Terns shot in Oxfordshire: there they often occur rather late in autumn, and the specimens procured at that season are almost always adult birds.

During this visit I noticed a good many Great Black-backed Gulls. Eleven, chiefly adult birds, sitting on the green marsh on the 3rd looked almost as large as sheep. Common Gulls in grey dress were numerous. F. C. A. shot one which was only just fledged and had quite a soft beak. A good many Herring and some Lesser Black-backed Gulls. Black-headed Gulls in swarms; all adults had lost the black hood. On the 6th, in the still, hot afternoon these birds were hawking flies, with the motions of Starlings under the same circumstances, over the starwort-grown mud. The same day Gulls (a good many of them Great Black-backed) were passing west all the afternoon.

There were some Razorbills off the beach on several days. On the 5th I saw one, in summer dress, going west. On the 6th one, an immature bird, quite close to shore, and another further out, going in the same direction. The next day there were several a little way out. I was assured that they constantly occurred when still in down, and I have seen a very young one, procured off the beach, preserved. A careful observer assures me he once saw an old Razorbill there accompanied by *two* young ones, and that she looked from side to side at them, and took great care of both. An old Great Crested Grebe appeared off the

shore on the afternoon of the 6th. It had a good crest, and remains of the rufous on the cheeks and ruffs. I watched it for a long time through the glasses, and then went over the pebble bank. Some time later I came back (it being then nearly low water), and then saw it close in shore. I waited until it dived, then ran down the beach and lay down until it came up and went down again, then ran again. The third time, unfortunately, it came up rather quickly, and saw me moving. Down it went, of course, and I am sure did not show itself again until it was about 200 yards from the beach.

To say much about the wonderful migration which affected the Norfolk coast in October would be out of my province. I hope to see a full account of it by a Norfolk ornithologist; but in the meantime extracts from three letters from a resident on the coast may be interesting to your readers. Skuas seem to have been unusually numerous:—"This morning I had three Skuas. . . . I think two are Richardson's, and one, very much smaller, is, I fancy, Buffon's. There were twenty in a flock, one with very long tail [adult Buffon's], and one very large [? Great Skua; or, more probably, only Pomatorhine] (2nd Oct. 1890). . . . This wind [North in Oxon] has brought a great many wildfowl over." My correspondent had lying before him eight Skuas—Pomatorhine, Richardson's, and one Buffon's. "For the last two days the ducks and geese have been passing in packs of hundreds, closely following each other." Pintail and Long-tailed Ducks brought in among others. "Gulls, Dunlins and other small birds in thousands are passing to-day" (Oct. 18th). Had several Purple Sandpipers this season; "two others came in last night." On the 1st Nov. a Ring Ouzel. A Bewick's Swan on 20th October. "I never saw [during late high winds] such a migration of Rooks, Jackdaws, Grey Crows, Starlings, Larks, and Finches down to the tiny Goldcrest. There have been more Woodcocks this year than usual" (6th Nov. 1890).

NOTES AND QUERIES.

MAMMALIA.

Deer and other Animals eating Yew.—It seems to be a well-established fact that Goats will eat the foliage of the yew with impunity, whilst other creatures, some closely allied, are poisoned with it immediately. Knowing that a doubt exists in the minds of some people as to the deadly effect, or otherwise, of the yew when eaten by Deer, it may be of interest to quote an incident of comparatively recent occurrence. During the severe weather of December and January last most wild creatures suffered more or less from the inclemency of the season, and at the end of December, when a fallow doe was found dead in the forest, its decease was at once attributed to the cold, and the scanty fare. Early in the new year, however, a fine buck was found dead, but apparently in plump condition, and this led to the supposition that it had eaten something to cause its death. On opening it, the stomach was found to contain a quantity of yew leaves with which no doubt it had been poisoned. In speaking of the subject to a gentleman whose knowledge of Forestry is considerable, he expressed an opinion that, as a rule, truly wild creatures were not affected by eating yew so readily as domesticated ones; though where the difference lay he did not hazard a guess. From experience he knew that if clippings of yew—if only a day severed—were eaten, they were more deadly and rapid in their effect than the growing foliage, and that, whilst the latter was certain death to some creatures, Rabbits and Hares would eat it with impunity. He had known yew-shrubs completely destroyed, and even the bark eaten off, by these Rodents, without any apparent injury or inconvenience to themselves. Can this be confirmed or denied by readers of 'The Zoologist'? If correct, it but proves the truth of the saying of one creature's meat being another's poison.—G. B. CORBIN (Ringwood, Hants).

[Some correspondence on this subject was published in 'The Zoologist' some years ago. See the volume for 1878, pp. 177, 206, 253. Several instances of Pheasants having been poisoned by yew have been reported. See 'The Field,' Nov. 25 and Dec. 2, 1876; and Dec. 20, 1890.—ED.]

Hybernation of Squirrels.—If any further evidence is wanted to prove that Squirrels remain active during the coldest weather, I am able to state that during the whole of the recent severe and prolonged frost several Squirrels, which had been accustomed to climb to the nursery window of Drakelowe Hall, Burton-on-Trent, where they were fed, continued their visits during the whole of the time, and seemed to be as lively as usual.—PHILIP B. MASON (Burton-on-Trent).

Hybernation of Squirrels.—With regard to the hybernation of Squirrels, which is just now receiving attention in 'The Zoologist,' I would mention that here,—in this part of the country, at any rate,—I would undertake to find the traces of the Squirrel in the snow whenever the ground is covered with it. My belief is that Squirrels dislike damp and wet much more than cold.—F. P. JOHNSON (Castleheads, Brampton, Cumberland).

BIRDS.

The Lesser Kestrel in Ireland.—On the 20th of February last, Mr. Tank, of Aungier Street, brought to me, for identification, an adult male of the Lesser Kestrel, *Falco cenchris*, freshly killed. He had just received it from Mr. W. H. Cowell, to whom it had been presented. Mr. Michael Carr informs me that he shot it on the 17th of February, on his farm at Woodford, near Shankill, Co. Dublin. When killed it was feeding upon earthworms, on freshly ploughed ground. My friend Mr. James Johnston, of Bray, has very kindly made enquiries in the neighbourhood, and has ascertained some interesting particulars concerning the habits of the bird since its first arrival, which I proceed to quote from his letter—"It first appeared at Glenamuck (George Byrne's place) early in November, about the 8th or 10th of the month. The ploughman told Mr. Byrne that a Hawk had followed him during the afternoon. Mr. Byrne at first took no notice, but, hearing of it on several evenings, he went one day to the field where the plough was at work, and saw the bird; it was then very tame. Next day he brought down a gun, and, when the bird returned, he fired and missed it. This shot made it very wary on sight of a gun, so that, although it still fed close to any of the workmen, yet, if a man appeared with a gun, it was off at once. January 4th was the last day it was seen at Glenamuck. On that day a brother of Mr. Byrne followed it, but to no purpose. After this I have two records of its being observed by a sportsman named Sutton, who had previously, on different occasions, seen the bird at Glenamuck, and tried to get a shot at it. Sutton is himself a farmer, and his last observations were both made on newly-ploughed land. During the snow the bird was not seen, but, after the thaw, when ploughing was resumed, it appeared again. Its manner of feeding was something like that of a Gull,—at one time walking along the furrows, busily working the freshly-turned sod, again rising on the wing, and quartering behind the workmen until a fat worm appeared, on which it would immediately drop. The bird usually fed from about eleven o'clock until evening." It only remains to add that the only occasion on which Mr. Carr saw the bird was on the 17th of February, the day he shot it, and that it was a couple of hours about the place before he secured it. Thus it appears that this little Hawk remained in the same neighbourhood, on the borders of Dublin and Wicklow, for at least three months.—A. G. MORE (74, Leinster Road, Dublin).

Lesser Kestrel at Scilly.—A male specimen of this falcon, *Falco cenchris*, was shot during the first week in March on the island of Tresco, Scilly, and was forwarded for preservation to Mr. Burton, of Wardour Street, London.—J. H. JENKINSON (Ocklye, Crowborough, Tunbridge Wells).

[We have seen this bird, and it is a very good specimen of an adult male. The Lesser Kestrel is not recognised as a British species in the latest edition of "Yarrell," but will be found described and figured by Mr. Howard Saunders in his 'Illustrated Manual of British Birds,' wherein it is stated that two examples were already known to have occurred in England; one in Yorkshire, in Nov. 1867; the second near Dover in May, 1877. This number is now doubled by the accession of the two specimens here recorded from Ireland and Scilly.—ED.]

Lines of Migration.—*A propos* of the suggested line of migration from the Wash to the Severn, it may be of interest to note the frequent passage of Sea Gulls across Warwickshire from east to west, and *vice versa*. My notes have been taken from a point six miles north of Warwick, and again from a point on the borders of Warwickshire and Staffordshire, and in both places I have observed for many years the passage of small flocks of Gulls. My notes unfortunately only record a few of the flocks I have seen, and these were chiefly seen in April, I find, and were all, with one exception, going in an easterly direction. I have frequently seen them going in an opposite direction, but I have no dates. They appear to be all of the same species (Kittiwakes?); but once I saw what appeared to be a large Black-backed Gull soaring up in circles at a great height, and finally going away in a north-easterly direction, in a strong east wind. This was also in April.—DOUGLAS BRODIE (Wellesley Grove, Croydon).

[We have received another communication on this subject from Mr. F. B. Whitlock, which stands over for want of space.—ED.]

Smews in Bucks and Oxon.—A young female Smew, *Mergus albellus*, was brought to me to identify, by a fisherman, from whom I purchased it, on January 12th. He reported that he had shot it that morning near the river just below Marlow, close to the Brewery sewage-ground, and that it had been solitary. Wing, $6\frac{7}{8}$ inches. The only other instance of this species in this county that has come to my notice was an adult male, said to have been shot on, or close to, the river, about half a mile below here, opposite Stonehouse (and therefore a Buckinghamshire specimen), in January, 1876, which was likewise brought to me to identify. A few days after obtaining the above specimen I received a message, asking me to call at a local birdstuffer's to identify some birds, which proved to be likewise Smews—an adult and young drake. These were shot at Sonning (Oxfordshire), by Mr. J. L. Hill, son of the Rev. W. Hill, of Medmenham, who wrote me word that four birds came over his son, who secured these

two, right and left. One of the survivors was subsequently shot by someone else at Sonning, but lost; and the fourth was seen later again, and shot at unsuccessfully. From Capt. Clark Kennedy's 'Birds of Berks and Bucks,' and from Mr. Aplin's recent 'Birds of Oxfordshire,' it will be seen that the occurrence of this species is worthy of record.—A. H. Cocks (Great Marlow).

Destruction of Kingfishers.—On visiting a local birdstuffer's to identify the above-mentioned Smews, he showed me a pair of Kingfishers he had just set up, telling me that he had had nearly a hundred sent him during the past year, and remarked what a shame such a slaughter was. Shooting on the river, or tow-path, is now prohibited by the Bye-laws of the Thames Conservancy, and it would be interesting to learn how many (if any) of these beautiful little birds had been killed legally.—A. H. Cocks (Great Marlow).

Great Grey Shrike at Spurn.—With reference to Mr. Macpherson's statement (p. 97), on my authority, that fourteen Great Grey Shrikes were identified at Spurn in the autumn of 1876, twelve of the number having been shot during October (Zool. 1877, p. 10), I wish to point out that this is an error, the printer having substituted *ten* for *two* written by me. The mistake was corrected in the following number of 'The Zoologist' (1877, p. 59).—JOHN CORDEAUX (Great Cotes, Ulceby).

Nesting of the Blue Robin in Confinement.—Instances of the nesting of the common Blue-bird of N. America in aviaries are not uncommon; but few persons take the trouble to watch the whole process from the time when the cock bird first begins to feed the hen until the young have moulted into their adult plumage, and therefore the records of the nidification of this bird are—so far as I have been able to judge from such as I have seen—imperfect. My Blue Robins made friends early in June, the cock bird giving every insect he got hold of to the hen, to induce her to receive his attentions; the hen was very coy, and refused his advances until about the end of the first fortnight; the pairing was a noisy affair, as the cock bird kept up an incessant shrieking noise, with his body elongated and his beak turned up to the ceiling, for fully half an hour beforehand and for quite ten minutes afterwards. On Sunday, the 15th of the month, the hen spent the whole day in carrying up hay to a large deep box nailed against the wall near to the ceiling, and on the surface of this she formed a saucer-shaped depression, in which shortly afterwards she laid three eggs: whilst sitting she was fed by the cock bird, but whenever he gave her an insect she invariably left the nest to eat it. In thirteen days the eggs hatched, and two days later two of the young birds were carried out dead, and dropped upon the floor at some distance from the nest; the third bird was safely reared, and moulted into his adult plumage towards

the end of August. The staple food which I prepared for my Blue Robins, and upon which they partly fed their young one, was a mixture of crumbled stale bread (two parts), Abraham's insectivorous birds' food (one part), prepared yolk of egg (one part), dried ants' eggs (one part), and grocer's currants (one part) slightly damped; I also gave them small earth-worms mixed with garden-mould in a large saucer, spiders of all sizes in quantity, flies, butterflies, moths, chrysalides, caterpillars, a few meal-worms, and beetles. One point in the feeding which I have not seen recorded interested me greatly:—It is well known to all breeders of both British and foreign finches that they always feed one another and their young from the crop; they never give them food which is not partially digested, so that the young are fed not only on vegetable or insect food, but upon half-digested and softened seeds; but it was quite a new fact to me that soft-billed birds prepared food for their young: indeed I know that our Robin, Blackcap, and in fact our Warblers generally, Thrushes of all kinds, Starlings, and Tits, merely crush or break up the worms or insects with which they feed their young. In the case of the Tits this does not appear to be done, or, if so, only in the privacy of the nesting-hole. My Blue-birds, however, generally crushed the food, and invariably swallowed it, disgorging and swallowing several times before giving it to the young bird; if half-a-dozen house-flies were given they would frequently swallow the whole, and give them to the young bird in one mouthful. The first time that I observed the old birds swallowing the insects put into the aviary for the benefit of the young one, I felt much annoyed, as it was not easy work to keep up a supply of insect food, even in the summer, in the suburbs of London; but presently I saw a convulsive movement in the throat, and the insects reappeared in the beaks of the parent birds, each of which in turn carried the food to the nestling. The young bird left the nest when twenty-three days old: I had been led to suppose that he would resemble the hen, but, in addition to his greatly inferior size and spotted breast, he was altogether of a far more cinereous tint. In about eight or ten days he was perfectly able to feed himself, and the parents then absolutely disregarded all his cries for food. After their moult I found my Blue Robins troublesome in the bird-room, as they not only ate all the eggs laid by my Mannikins (*Munia* sp.), but chased these little birds, and the still smaller Waxbills (*Estrelda* sp.), all over the aviary, to their injury, as in their fear they dashed themselves recklessly against the wires, and were afraid to feed and bathe quietly; I therefore removed the Blue-birds to one of my out-door aviaries, where they soon appeared to be quite at home. The Blue Robin is said to be able to withstand the cold of an English winter in an unheated aviary; my experience has shown me that this assertion should be received with caution. In the aviary in which I placed my birds there are two small snuggeries,—a cocoa-nut nest and a Canary's

nesting-box; the cock Blue Robin, at the approach of cold weather, appropriated the former and the hen the latter as sleeping berths; but the poor young cock was left out in the cold, which gradually brought on tuberculosis of the liver and spleen, from which he died on the night of Dec. 9th. I should therefore recommend all who desire to keep these birds in an unheated structure to provide them with some box in a warm corner near the roof, into which they may creep to pass the winter nights.—A. G. BUTLER (Natural History Museum, South Kensington).

REPTILIA.

A New Locality for *Lacerta viridis*.—Mr. Norman Douglass states (p. 16) that the range of *Lacerta viridis*, Laur., in Baden, is apparently restricted to two points,—the Isteiner Klotz, a hill lying between Freiburg and Bâle, and the Kaiserstuhl, between Freiburg and the Rhine. I can add a third locality in the Grand Duchy. While living at Heidelberg, in 1887, my brother and I frequently met with this Lizard during the spring, in the grass on the north bank of the Neckar, a short distance above the town, which lies on the opposite side of the river. We invariably found the two sexes together, and on one occasion we found a pair in a hole in a bank several hundred feet up the hill, on the same side of the river. I kept a number in captivity during the summer of 1887, and they thrived well on earth-worms and butterflies, varying the monotony by devouring an occasional *L. agilis*. Mr. Douglass states that he has found the eggs “as early as the latter part of June,” but one of mine laid a number of eggs on June 10th, in the early morning, and another individual laid on June 15th. Perhaps I ought to state that I kept my Lizards between the double windows of my room, on the south side of the house, so that they got a large amount of sun. The first time that eggs were laid the male Lizards promptly seized some, and ate about three before I could stop them. The remainder of the eggs, and those laid subsequently, I placed in the sun to see whether they would hatch; but they only shrivelled up, although union of the sexes had taken place before the eggs were laid.—E. E. AUSTEN (Natural History Museum, Cromwell Road).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

February 19, 1891.—Prof. STEWART, President, in the chair.

Messrs. A. W. Kappel, E. M'Clure, J. F. Braga, and W. M. Webb were admitted Fellows; and Messrs. H. Jones, F. H. Coste, and A. W. Turnbull were elected.

Mr. Thomas Christy exhibited a number of food-nuts utilised by the natives of Northern Queensland, but the species of which had not been determined, since no flowers nor foliage of the trees producing them had been obtained.

On behalf of Mr. A. R. Hunt, the Secretary exhibited a curiosity, in the shape of an orange within an orange, and remarked that, although by no means of common occurrence, a similar abnormality had been described and figured by Dr. Perrier (Bull. Soc. Linn. Normand. ix. tab. 2).

Mr. G. C. Druce gave an account of the Dillenian Herbarium at Oxford, prefacing his remarks with some particulars of Dillenius's life and labours, and of the botanists of his day with whom he was in correspondence.

Prof. Stewart exhibited and described a remarkable hermaphrodite Trout, explaining, by means of the black-board, the normal structure of the genital organs in both sexes of the fish, and pointing out in what respects the specimen in question differed.

A paper was then read by Dr. John Lowe on some points in the life-history and rate of growth in yew-trees, and some excellent photographs and drawings of celebrated yews were shown in illustration of his remarks.

March 5.—Prof. STEWART, President, in the chair.

Capt. T. Keene was admitted, and Messrs. T. B. Cato and E. Norman Langham were elected Fellows of the Society.

Mr. D. Morris exhibited a dwarf species of *Thrinax* which he found growing plentifully in the island of Anguilla, West Indies, and which was apparently undescribed.

Mr. T. Christy exhibited the fruit of some undetermined species of tree which had been introduced into commerce by the name of Monchona, but the origin of which had not been ascertained.

Mr. J. E. Harting exhibited several instantaneous photographs (taken by Mr. W. H. St. Quintin in Yorkshire) of a living Great Bustard, *Otis tarda*, and gave a brief account of the recent visitation of several of these birds to England. Between Dec. 9th and Feb. 5th no fewer than seven had been shot in Norfolk, Suffolk, Essex, Sussex, Hants, Wilts, and Carmarthenshire. For details of all see 'The Field,' Feb. 28th.

On behalf of Miss E. Barton, Dr. D. H. Scott gave the substance of a paper communicated by her, and entitled "A Morphological and Systematic Account of the Fucaceus genus *Turbinaria*."

Mr. George Murray described some new species of *Caulerpa*, with observations on the position of the genus. In elucidation of this paper, Mr. E. M. Holmes exhibited a large series of specimens, showing the extreme variability of the species of sea-weeds which had been referred to this genus.

A paper was then read by Dr. John Lowe on the specific identity of two forms of parasitic Crustacea, *Lerneonema spratta*, Sowerby, and *L. eucrasicholi*, Turton, the only two of the genus which had been hitherto recognised in Britain. A third species had been described by Dr. Salter (Ann. Nat. Hist. 1850, p. 56) from the eye of the Herring, and to this he gave the name of *L. Bairdii*; but his figures show clearly that they were drawn from imperfect specimens of *L. spratta*, which had been forcibly removed from the fish's eye, leaving the head behind. The parasites in question had been found only on the Sprat, Herring, and Anchovy.

ZOOLOGICAL SOCIETY OF LONDON.

February 17, 1891.—Prof. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

Mr. Edward Gerrard, jun., exhibited an extraordinarily large head of a Koodoo Antelope, *Strepsiceros kudu*, which had been shot by Mr. F. C. Selous near the river Macloutsie, Khama's Country, South Africa, in May last.

Mr. T. D. A. Cockerell exhibited and made remarks on a curious and rather noteworthy monstrosity of a land-shell (*Clausilia rugosa*) with two apertures.

Mr. G. A. Boulenger exhibited and made remarks on the renewed left pectoral fin of an African Lepidosiren (*Protopterus annectans*), from a living specimen in the Society's Gardens. He also exhibited young specimens and eggs of a South African Siluroid fish (*Galeichthys feliceps*), sent to him by Mr. J. M. Leslie, of Port Elizabeth. They had been taken from the mouth of the male parent, which carries its eggs in this extraordinary manner.

Prof. G. B. Howes read a paper on the probable existence of a Jacobson's organ among the Crocodilia, and made observations upon the skeleton of that organ in the Mammalia and upon the basimandibular elements in the Vertebrata.

Mr. R. H. Burne made some observations on the variation and development of the Leporine sternum.

Mr. Scott B. Wilson read a paper on *Chasiempis*, a genus of Muscipine birds peculiar to the Sandwich Islands. He described one of the species inhabiting the island of Oahu as new, and named it *Chasiempis gayi*, after Mr. F. Gay, of Kauai. The author further gave a key by which the five species of this genus inhabiting the various islands may be distinguished. Mr. Wilson also read the description of a new bird of the genus *Himatione*,—based on a single specimen obtained on the island of Maui,—naming it *Himatione dolii*, after Mr. S. B. Dole, of Honolulu.

Mr. G. A. Boulenger read a paper on some British specimens of the

remains of *Homœosaurus*, and made remarks on the classification of the *Rhynchocephalia*.

Mr. F. E. Beddard read a preliminary account of an Earthworm from West Africa, referable to a new genus and species, which he proposed to call *Libyodrilus violaceus*.

Mr. Frank Finn gave an account of a functional ductus botalli which he had observed in specimens of two birds (*Nycticorax violaceus* and *Dafila spinicauda*) dissected in the Society's Laboratory.

March 3.—Prof. FLOWER, C B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of February.

Mr. Sclater exhibited the typical and unique specimen of Macgregor's Bower-bird, *Cnemophilus macgregorii*, from the Queensland Museum, Brisbane, which had been kindly lent to him by the authorities of that Institution.

A report was read, drawn up by Mr. A. Thomson, the Society's head-keeper, on the insects bred in the Insect-house during the past season.

Mr. O. Thomas gave an account of a collection of small Mammalia made by Mr. F. J. Jackson, in Eastern Central Africa, during his recent expedition through the territories of the British Imperial East African Company. Fifteen species were represented in the collection, of which three appeared to be new to science: these were named *Nyctinomus lobatus*, *Otomys jacksoni*, and *Rhizomys annectens*.

A communication was read from Miss E. M. Sharpe on the Butterflies collected by Mr. F. J. Jackson during the same expedition. Twelve new species were described in this paper, and a general account of the whole collection was promised on a future occasion.

A communication was read from Dr. R. W. Shufeldt, containing observations on the comparative osteology of the *Columbidæ* of North America.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

March 4, 1891.—The Rt. Hon. Lord WALSHINGHAM, M.A., F.R.S., Vice-President, in the chair.

Mr. H. St. John Donisthorpe, Mr. F. W. Frohawk, Mr. Charles Fryer, Mr. G. F. Hampson, B.A., Mr. Frederick J. Hanbury, F.L.S., and Mr. G. B. Routledge were admitted into the Society.

Mr. F. P. Pascoe exhibited, and made remarks on, a curious Coleopterous larva with a case somewhat resembling that of the Lepidopterous genus *Psyche*, which was found at the Theatre of Bacchus, Athens.

Mr. J. W. Douglas sent for exhibition specimens of *Icerya (Crosso-tosoma) ægyptiaca*, which, through the kindness of Mr. A. D. Michael, he had received from Alexandria on the 19th January last. It was stated that

in travelling most of them had become loose, and had lost their waxen appendages; but a few still remained on the stems of their food-plant. In connection with this subject, Mr. G. H. Verrall alluded to a Dipterous parasite of *Icerya* from Adelaide—*Lestophonus iceryæ*, Williston—which had been bred from *Icerya Purchasi*, Mask., last February. Mr. M'Lachlan and Lord Walsingham continued the discussion.

Mr. R. Adkin exhibited a long and interesting series of *Triphæna comes* (*orbona*), from various parts of the South of England, Yorkshire, Forres, the Isle of Man, the Isle of Lewis, and the North of Ireland.

Mr. G. F. Hampson exhibited a series of varieties of *Plotheia frontalis*, Walk., which was the only species in the genus, and confined to Ceylon. He said that the varied forms of this species had been described under twenty-one different names by Walker, Felder, and Moore.

Mr. F. Merrifield showed a number of specimens of *Selenia illustraria*, of three different stocks, proving that the spring brood of this species, which passed the winter in the pupal stage, was, like the summer pupa, materially affected in colouring by the temperature to which the pupa had been exposed in its later stages. He thought this fact, coupled with similar results ascertained with respect to the single-brooded *Ennomos autumnaria*, indicated that the operating cause was one of wide general application, and that valuable results might be looked for if entomologists would turn their attention to the subject. Capt. Elwes said that in his experience in many parts of the Palæarctic region, in Japan, in the Taunus Mountains on the north-eastern part of the Mediterranean, in the Canary Islands, and elsewhere, where there was a combination of heat and moisture, all the commoner species of Lepidoptera occurring in this country attained a larger size and a greater brilliancy of colouring than in colder and drier regions; and he referred to such species, amongst others, as *Pieris brassicae* and *Argynnis paphia*. The discussion was continued by Mr. Jacoby, Mr. Fenn, and others.

Mr. W. H. B. Fletcher exhibited a long series of *Zygæna lonicerae* from York, and *Zygæna filipendulae* from Shoreham, Sussex; also a series of hybrids obtained by crossing these two species. He stated that the eggs obtained from these hybrids were all infertile. Lord Walsingham said this latter fact was extremely interesting.

Mr. F. W. Frohawk exhibited a living specimen of an ichneumon which had just emerged from a chrysalis of *Papilio taunus*.

Mr. C. J. Gahan exhibited a number of species belonging to the genera *Lema* and *Diabrotica*, and read a paper on them, entitled "On mimetic resemblances between species of the Coleopterous genera *Lema* and *Diabrotica*." Lord Walsingham, Mr. Jacoby, Colonel Swinhoe, and Mr. Champion took part in the discussion which ensued.—H. Goss and W. W. FOWLER, *Hon. Secretaries*.

THE ZOOLOGIST.

THIRD SERIES.

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[No. 173.

A JAPANESE TREATISE ON FALCONRY.

TRANSLATED BY F. V. DICKINS.

IN compliance with your request that I would furnish you with a translation of a Japanese *précis* of Falconry, forwarded for examination by M. Pierre A. Pichot, of Paris, I have much pleasure in sending you the following account of it.

It may be described as a "broadside," being printed on a single sheet, which measures 20·5 by 14·5 inches, and is illustrated, in colours, with figures of the Goshawk (*O-taka*), the Peregrine (*Haya busa*), and the Sparrowhawk (*Hai-taka*), and of various appliances used by falconers. It is entitled "*Taka gari ichiran*, or a Survey of Falconry, illustrated; compiled by Machida Hisanari, in the 9th year of Meiji"—*i. e.* of the present era, which commenced in 1868. It is therefore quite a modern composition.

We learned the art of training falcons, says this writer, from Kudara, or Hakusai (one of the kingdoms of Chósen, or Korea), during the reign of the 17th emperor, the Tenno (Celestial Monarch) Nintoku. In the 43rd year of that reign a man named Yozami no Miyake no Abiko (a bizarre name, the meaning of which is uncertain—*yozami* is so written as to indicate a night-fisherman) caught a strange bird in a net and presented it to the Court. No one could tell its name, but on its being shown to a man of Kudara named Sake-noki (another bizarre name, so written as to mean "rice-beer bibber," or perhaps "rice-beer merchant"), he said that in his country men called the bird *Kuchi*. It was put

into his charge, and attaching a line to it he fastened small bells to the centre tail-feathers, and in the autumn hawked Pheasants with it on the moor of Mozu. Such was the beginning of falconry in Japan.

Though there are many kinds of hawks, those used for falconry are mainly these three:—*O-taka*, or Great Hawk (*Astur palumbarius*); *Hayabusa*, literally "swift tuft-hawk," the Peregrine (*Falco peregrinus*); and *Haitaka*, or Creeping Hawk, in reference perhaps to its crafty habits, the Sparrowhawk (*Accipiter nisus*). Three other kinds, much inferior, are scarcely ever used for hawking. To catch hawks nets are employed. A large net is spread, and in the middle a smaller net of the kind known as *chochin* (lantern-shaped, *i. e.* nearly barrel-shaped) is fixed, in which are placed five or six sparrows at liberty to fly about in the interior. This contrivance acts as a decoy, and the hawks are thus trapped. The best time for catching them is between the great heats of summer and the full spring of the succeeding year. When caught the birds receive each a generic name: thus, a bird of any year taken in the autumn would be called *akage*, red-plumed [but the point lies in the resemblance in sound of "aka" to *aki*, autumn]; taken from the nest (*su*), *su-taka*; taken during the lesser summer heats, after having left the nest, *su-mawari*, nest-hoverer or brancher, and so forth.

Taka and *Hayabusa* are flown at Cranes, Wild Geese, Wild Duck, and White Herons (*Egretta candidissima*?); *Haitaka* at *Oshi* (*Aix galericulata*, L.), *Kogamo* (*Querquedula crecca*, L.), *Kuina* (*Rallus aquaticus*), and *Hibari* (*Alauda japonica*). These three hawks receive each a different training, but want of space compels limitation to the following account.

After a hawk has been netted, what is called *uchi-oroshi* (letting down) is practised. Warm water is prepared, and the tail, plumage, and bill are carefully cleansed from all dirt, while the margins of the bill and the tips of the claws are scraped. The bird is then attached by a leash and tied up in a dark house. During the night the door is carefully opened and the bird calmed; this is repeated several times in the night. Thus the bird loses some of its wildness, and it is then taken about outside during the night and further tamed. Afterwards it is exposed, also during the night-time, to the dim light of a lantern, and this treatment is continued until it loses all timidity, and may be allowed to

try a "morning perch." A "morning perch" is this: the bird is brought out in the grey dawn and then gradually faces the full morning light. Meanwhile it is allowed to watch the flight of Pigeons and Sparrows, and exercised first upon these, and afterwards upon wild birds. During the "night-roost" the bird must be carefully protected from disturbance. If through negligence it be alarmed it gets a sort of twist, and is never afterwards good for much. As to estimating the proper allowance of food, this is no easy matter; in general, one meal during the "night-roost" will be enough. Before flying the bird again care must be exercised. If too much food be then given, it will not fly at all at game, or, if it catches prey, it will be too weak or indifferent to prevent its escape.

Goshawks (*Otake*) are chiefly found in Matsumai, Nambu, Tsugaru, Sadake, and Sendai; Peregrines (*Hayabusa*), at Koshima in Hitachi, and at Iwaki in Mutsu; and Sparrowhawks (*Haitaka*), at Nikko and Utsunomiya in Kozuke, Chichibu in Musashi, and Matsumoto in Shinano.

EXPLANATION OF THE PLATE.

1. Goshawk, *Otake*.
2. Peregrine Falcon, *Hayabusa*.
3. Sparrowhawk, *Haitaka*.
4. Hawkhouse, *Toya*. From early summer to moulting time the leash may be untied, and the bird allowed freedom under a coop! From winter to spring, while solitary (unpaired), the leash must be tied under the coop to the perch.
5. Hawk's bath, *Mizufunedai*.
6. Rangle-box, *Shari-bako*. A small square trough containing gravel for the bird's use.
7. Dirt-tray, *Doro-ita* (literally dirt-board). This would seem to be a sort of scoop for removing the mutes.
8. Food-tray, *Ge-ita*. Scoop for introducing hawk's meat, when cut up, to young hawks.
9. Small food-tray, *Ko ye-ita*. Small food-scoop for eyesses and young wild hawks.
10. Eyess-basket, *Fuse-kago*. Used to carry about eyesses.
11. Mosquito-net, *Su-taka kago*. Used with eyesses.
12. Perch, *Chiboko*. Three feet long by six inches high. (This seems to be the perch used within a coop, or small portable hawk-house, No. 39.)

13. Perch-tray, *Uchi-ita*. A board or tray (apparently lacquered and ornamented) to catch the mutes below the perch.
14. Sock, *Fuseginu*. A cloth or silk-piece which is folded round the hawk preparatory to coping the bill or claws.
15. Lure-bag, *Hato-fukuro* (i. e. pigeon-bag). When a hawk on being flown does not return, it is lured by the fluttering of a live pigeon attached to a line, and the bag is intended to hold the pigeon.
16. Small Lure-bag, *Ikemono-fukuro* (i. e. live-thing bag). Similar to the last-named, but smaller, to hold sparrows, &c.
17. The Leash, *O-o* (i. e. great cord). Wherewith the hawk is tied to the perch). It is made of eight strands of silk. Colour, red or purple; red for ordinary hawks, purple for distinguished birds, such as *Taka* or *Hayabusa* (Goshawks and Falcons) that have killed Cranes (*tsuru*), Sparrowhawks (*Haitaka*), that have captured Mandarin Ducks (*oshi*), are also distinguished, but differently.
18. Jesses, *Ashikawa* (i. e. leg-leathers). Made of deer-skin, properly tanned and stained purple.
19. Bewits, *Igiri kawa* (i. e. smaller leg-leathers). Used for fastening a bell on the foot.
20. Frisfrass, *Buchi*. A stick of wistaria with the end teased out like a Japanese tooth-brush, used to cleanse the beaks of Goshawks and Falcons.
21. The Bell, *Suzu*.
22. Bell-shield, *Suzu-ita*. To act as a pad and protect the bell from chafing the leg of the hawk. It is made of tortoiseshell or the gill-cover of a Perch, *Koi* (*Cyprinus*, sp.).
23. Meat-bag, *Yegoshi*.
24. Small-bird cage, *Kuchiye-kago*. A basket-work receptacle for carrying small live birds used for training and entering the hawk.
25. Water-bottle, *Mizu-tsutsu*. Generally a joint of bamboo, properly fitted.
26. The Creance, *Oki-nawa*. A long line used when flying a young hawk for the first time.
27. Lesser Creance, *Kirihewo*. For small hawks.
28. Falconer's bag, *Hewo-bukuro*. To hold hoods, spare leashes, jesses, creance, &c.; also small prey.
29. Glove, *Yugake*. To carry the hawk: worn on the left hand.
30. Hood, *Zukin*. Made of silk or *papier-maché*, stained and varnished with persimmon-juice. In shape it is somewhat like the Indian hood, and has no braces for drawing tight.
31. Instrument-case, *Tsume-hashi-bukuro*.
32. Knives, *Kogatana*. For coping or paring beak, claws, &c.
33. Small-iron, *Yakigane*. For smoothing out rumped tail-feathers.

34. Cautey-iron, *Kashin*. To stop bleeding when necessary.
35. Hot-iron, *Danji-kote*. Applied heated over damped cloth to any painful spot.
36. Jess-pin, *Uguisu*. To enlarge the openings in the jesses when putting them on.
37. Borer, *Kujiri*. Used for similar purpose.
38. Tail of Goshawk, showing method of fastening bell to central feathers.
39. Portable Hawk-house, *Byobu-toya*, for eyesses.

[The reader may be reminded that in 'The Zoologist' for December, 1885, appeared an article on "Birds used for Sport in China," translated by the Editor from the French of M. Pichot, who, at a meeting of the Société Nationale d'Acclimatation held in Paris, exhibited a curious collection of drawings on this subject, sent from Pekin by M. Collin de Plancy, one of the interpreters of the French Legation.—ED.]

NATURAL HISTORY NOTES FROM EAST SUFFOLK.

BY G. T. ROPE.

GREY SHRIKE.—On Feb. 25th, 1890, I met with one of these birds at Tunstall; it flew up from the road, and perched upon the top of a tall ash.

SEDGE WARBLER.—On the evening of March 27th, at about half-past seven o'clock, I distinctly heard one singing by the river-side, close to Langham Bridge, near Blaxhall. This, I think, is an unusually early date for the arrival of this little songster.

CROSSBILL.—On the same day as the last-mentioned occurrence a male Crossbill was picked up in a dying state by some children, in a garden near Leiston. It was bleeding as if from a gunshot wound. Prevailing colour a deep red.

HOOPOE.—On the evening of April 19th, after sunset, I fell in with a pair of these beautiful birds at Farnham. When first seen they were on the outskirts of a fir plantation; and their striking colours and Jay-like flight, attracted my attention from a distance. They were not wild, but, owing to the fading light, it was difficult to get a satisfactory view of them. One which perched for a few seconds on a Scotch fir close to me kept alternately raising and depressing its crest, which, owing perhaps to the red glow from the western horizon, looked more chestnut than buff.

Many years ago my father saw a Hoopoe at very nearly the same spot.

FIELDFARE.—Saw a flock of twenty or more in a plantation at Blaxhall, as late as April 20th.

PARTRIDGE.—On May 10th, while in a ploughed field at Bromeswell, I noticed a Partridge a few yards off, standing upright, but apparently asleep. The eyes were closed, but opened partially while I was watching it, and again closed. On stooping down to take it up, the bird seemed suddenly to awake, and flew off, as though quite uninjured.

CUCKOO.—On August 23rd my brother, Mr. A. M. Rope, told me he had lately found at Leiston the remains of as many as four young Cuckoos, which he thought had been killed by hawks of some kind. In every case the lower mandible, with a mass of feathers, was all that he could discover. Though found in various places and at different times, each "kill" was at the edge of some wood or plantation.

SWALLOW, MARTIN, AND SAND MARTIN.—During September and the early part of October these birds usually congregate in great numbers about the River Alde, near Snape Bridge, remaining there for some time before taking their final departure southwards. Towards evening the telegraph-wires are often lined by them for a long distance, and a great many perch at times on the rigging of the vessels at the wharf. Sand Martins roost in great numbers on the reeds by the river-side, and, if disturbed by the passing of a boat, rise in clouds, reminding one of the swarms of gnats which frequent the same place. They occasionally alight on the reeds during the day. A considerable number of Pied Wagtails also annually make use of the reed-beds as roosting-places, and I have some reason to think that the Yellow Wagtail (though in smaller numbers) does the same, having noticed small parties or families assembling towards dusk on the river-wall. On Sept. 19th I saw either a Swallow or a Martin, *Hirundo urbica*, alight for an instant on the surface of the water, and take from it some floating object, probably an insect. The wings were spread to their full extent.

OTTER.—On October 2nd a young Otter was caught by one of the "wall-men" on the river-brink, a short distance below Langham Bridge. He accidentally cut it with his scythe while mowing at the edge of the water. It was, I believe, not much hurt;

and, after keeping it a day or two, he—to his credit be it said—put it back in the river. Many in his position would have been far more likely to have killed and sold it to some birdstuffer. He described it as about the size of a cat, and it must have been one of a summer litter. Close to the spot where it was caught is a bed of reeds and bulrushes, not unfrequently visited by Otters.

NOCTULE.—Last seen abroad on Oct. 4th, at Snape Bridge. Noctules are always very numerous here, probably on account of the many suitable retreats afforded by several lofty buildings connected with the maltings and wharves. In the year 1888 I noticed this bat on the wing as late as Nov. 28th, but think it is seldom abroad here after the end of October. It re-appears during the month of April, the earliest date of which I have a note being April 2nd, in the year 1873. About the maltings above mentioned, rats abound, and consequently many cats are kept. I have often watched the latter, about dusk, setting out in various directions for an evening prowl in search of prey. Some prefer the adjacent marsh ditches as a hunting ground, and steal along their margins, crouching low in the grass, with a view to surprising some unwary rat, or water vole, before it can reach the water.

COOT.—A single Coot took up its abode, about Oct. 14th, in the river near the railway bridge, where there are plenty of reeds. For several days I saw it almost daily about that part of the river. Though not much wilder than a domestic duck, it was apparently uninjured, and could fly well, though it would not do so unless absolutely compelled. During an unusually high tide, when a stiff breeze had covered the water with ripples almost amounting to small waves, I saw it swimming on a wide, open piece of water, with scarcely any cover. As soon as it perceived me it partially sank in the water, so that little but head and neck could be seen, and thus, aided by the ripples on the surface, became almost invisible.

MARSH TIT.—On Oct. 15th I noticed one of these sprightly little birds foraging busily among some sunflower heads, hung up to dry in a cottage garden.

KINGFISHER.—I am happy to state that Kingfishers were unusually numerous about the River Alde throughout the past autumn, especially between Langham and Snape Bridges.

An old mud-boat, moored in a secluded part of the river, was for some time a favourite fishing-station with a pair. This boat, being often more or less full of water, was also used by Turtle Doves, either for drinking or bathing purposes; I more than once saw one of these birds fly out from it.

WINTER MIGRANTS.—Grey Crows were first seen on Oct. 18th, when two of these birds were noticed at Iken flying inland, and following more or less the course of the river. On the same day a great many small parties of Sky Larks kept crossing the river at intervals, going in a westerly direction: these I took to be fresh arrivals. On the 20th great numbers of Grey Crows, Rooks, Jackdaws, and Starlings were seen coming from over the sea near Leiston, both by my brother and also by persons rabbiting in a field close to the beach, near the same village.

STARLINGS.—Almost every evening throughout the greater part of October and beginning of November, large numbers of Starlings were seen crossing the river near Snape Bridge, going east, or rather south of east. Sometimes they flew in numerous small detached parties, at others in one or more large flocks, and were first observed on Oct. 9th. On one occasion I witnessed a remarkable aërial feat performed by these birds. Several small flocks had already passed, when a larger one, after forming into a compact horizontal column, suddenly turned a complete somersault, like the sail of a windmill, immediately afterwards resuming the steady, straight course usually adopted at such times. The apparent unity of will and purpose which directs the movements of an entire flock of birds of certain kinds is certainly very remarkable; and it would be interesting to learn how any particular bird becomes qualified to act as leader, as well as by what means he can enforce such complete and wonderfully prompt obedience. We often see flocks containing hundreds or even thousands of birds, such as Starlings, Dunlins, Plovers, &c., execute various movements with such wonderful precision as to appear as if actuated by one common impulse. On the evening of Nov. 2nd a very large flock passed over, flying in a line of no great width, but which could not have been less than half a mile in length, and was probably a good deal more. After watching this flock for some time, the rear end of the column was still out of sight. Afterwards a second and much smaller flock, though containing several hundreds of birds, followed in the wake. These

Starlings were doubtless bound for their accustomed roosting-place—either some large bed of reeds or one of the alder “carrs” in the marshes. In about the direction which these flocks always took, at a distance of about five or six miles, there is a good-sized piece of water, with a thick border of reeds, where many years ago immense numbers of Starlings used to sleep, and the mighty roar of their wings, as they went through their nightly evolutions before settling down, might be heard at a considerable distance.

BIRDS FREQUENTING REED-BEDS.—Besides the many birds which habitually frequent the reed-beds, I have lately seen there certain species which are not usually associated in one's mind with such places, only perhaps resorting to them for lack of other cover, or possibly for change of food; as, for instance, Robins and Stonechats. For about a fortnight, at the end of October and beginning of November, a Wren was nearly always to be seen creeping about the reed-stems above Snape Bridge, as if in search of food. Possibly small water-snails, such as the young of different species of *Limnæa*, which are very abundant there, may occasionally be sought after by this little bird. I once saw one making vigorous efforts to extract a caddis-worm from its case (see Zool. 1889, p. 184), and it seems not unlikely from this that the larvæ of the smaller dragonflies and aquatic beetles may sometimes be taken by Wrens from the margins of shallow pools and ditches. The Blue Tit, *Parus cæruleus*, at times visits the reed-beds, hunting in small parties or flocks, after the manner of the Long-tailed Tit, and the Bearded Tit, which it is to be feared is fast disappearing from its British haunts. When thus engaged, it does not—according to my experience—associate with the Marsh, Cole, or Long-tailed Tits, as is so often the case at other times.

YELLOWHAMMER.—One was heard singing as late as Nov. 19th at Snape.

GREAT SPOTTED WOODPECKER.—On or about Dec. 1st my brother, while watching a Green Woodpecker on a tree at Leiston, saw a Greater Spotted Woodpecker come and alight upon the same tree.

FROG.—On Nov. 21st, a remarkably mild day, I was very much surprised to hear a Frog croaking in a ditch in the marshes. That there might be no mistake, I listened to it for some time at a distance of only a few feet from the spot whence the sound proceeded.

TOAD.—On Nov. 5th, a cold day, with a northerly wind, a Toad was leisurely making its way along the top of the river-wall, bound probably for winter quarters. During summer the mud of which these walls are composed becomes, from the sun's heat, full of deep cracks and fissures. These, as well as the numerous holes and runs of Moles by which the walls are perforated in all directions, make good retreats for hibernating Toads. I have several times found these creatures, during the winter months, laid up in Moles' holes, and also buried in the dry earth at the top of hedge-banks, where the thick hedge above throws off most of the rain.

ORNITHOLOGICAL NOTES FROM Co. WEXFORD.

By G. E. H. BARRETT-HAMILTON.

THE year 1890 brought with it many rare birds to Wexford, and the pages of 'The Zoologist' have already made known the occurrence of a Montagu's Harrier (p. 275), a Honey Buzzard (p. 355), and a Hobby (p. 357), as well as the breeding of the Manx Shearwater on the Saltee Islands (p. 273).

The greater part of January was remarkable for the prevalence of storms of such severity that many Cormorants, which took refuge on the Tuskar Rock, died from hunger, as I am informed by the light-keeper, Mr. P. Page.

Immense numbers of Starlings were in the country up to the end of February, when most of them took their departure. Very few of these birds breed in this part of Ireland, nearly all being only winter visitors. On Feb. 22nd a Blackcap (accurately described by Mr. Page) rested on the Tuskar Rock at 8 a.m. This bird has been only twice previously identified with certainty in this county, namely, on August 3rd, 1886, and Aug. 2nd, 1887; on both occasions by Mr. C. B. Moffat, at Ballyhyland.

The first Wheatear was reported on March 12th, at the Hook Tower Lighthouse, and the first Ring Ouzel on April 14th at the Tuskar. The latter is chiefly known in this county as a visitor on migration, but Mr. Moffat has observed it on Blackstairs Mount, where (though no nest has yet been found) there is every reason to believe that it breeds.

The Cuckoo was first noted on April 22nd, the Whimbrel on the 26th; the Corncrake on May 8th, the Lesser Tern on the 14th, the Swift on the 15th (all at Fethard), and the Nightjar on the 20th (at the Tuskar). Turtle Doves were noticed at the Tuskar on May 7th and 23rd; they are rare birds in the County Wexford, and there is no record of their breeding here, although they probably occur annually on migration. So late as May 16th a flock of "Black Duck" (Scoters) were reported by Mr. J. Byrne, of the Lucifer Shoals lightship.

On June 15th a Turnstone was shot at Fethard. About that date there appears to have been a considerable migration of Curlews, which were noted at Fethard as "coming in the evenings by thousands from a westerly direction." Throughout the month of June many warblers were observed on migration at the Tuskar, and on the 28th a Black Guillemot was shot near Bannon, as I learn from Dr. G. B. Crawford. The same gentleman very kindly gave me a specimen of the Little Stint, *Tringa minuta*, which he tells me he shot at Dunganstown, on the River Barrow, near New Ross, "about two years ago." The Little Stint must be a rarity in the south-east of Ireland, no other instance of its occurrence in the counties of Waterford or Wexford being known either to Mr. R. J. Ussher or to myself.

On August 23rd three Ravens were seen at Fethard, and on several subsequent occasions up to Dec. 10th. About October 25th Mr. Wheelock, of Wexford, had a Hoopoe in his shop, which he stated to have been killed at Drinagh, near Wexford, a few days previously.

The winter of 1890-91 was characterised by unusually, though not very continuous, cold weather, and, as a natural consequence, by unusual numbers of winter visitors. Starlings (which arrived early in October) were again numerous, as well as Redwings and Fieldfares, the former being noted first at the Hook Tower by Mr. D. Hawkins about October 10th, with the Starlings. Snipe, Duck, Teal, and Wigeon were very plentiful in my district, and large flocks of Green and Golden Plover have been in the country, numbers of which arrived early in December. Woodcock were present in at least their usual numbers; the best bag I heard of (about twenty couple) was made at Camolin. Mr. Moffat writes that Lesser Redpolls were very abundant at Ballyhyland; but I have not heard of any Bramblings.

On Nov. 14th two large flocks of Sanderlings were observed at Fethard by Mr. R. Fry, of the Coast-guard Station, who shot several of them. Late in that month, and throughout December, flocks of wild geese were observed in different localities passing overhead; they were probably nearly all White-fronted Geese, to which species belonged the only specimen which I was able to examine, which was shot near Wexford at the end of December. The greater number of these birds seem not to have stopped in the county, but to have merely passed over westwards. A friend met with twenty geese near Templemore, in Tipperary, which were probably Bean Geese, the description which he gave me of one which he killed (with snipe-shot!) agreeing well with this species. I have heard of no wild swans this winter, except those noted in 'The Field' for Feb. 1st, 1891, as having occurred at the mouth of the River Suir.

On Nov. 28th, Mr. D. Hawkins reported Snow Buntings about the Hook Tower all day, and on Dec. 7th, twenty more. On Jan. 26th, Mr. E. A. Gibbon sent me two, shot from a party of six or seven seen on the strand at Rosslare. I have no other record of the occurrence of this bird in the Co. Wexford since Thompson's note of them in the winter of 1846-47, with the exception of one instance in 1889. In January, Wheelock, of Wexford, wrote to say that he had a Bittern, shot near that place on the 12th, which I afterwards saw in his shop. On the 15th, Mr. Moffat saw a flock of ten Crossbills on a larch tree on Ballyhyland Hill. He left for Dublin on the 17th, so unfortunately had not much time to watch them. He also saw a flock of Crossbills on October 6th, 1889, feeding on the larch-cones in the same locality. There has been no means of ascertaining whether they have nested with us or not, as neither that gentleman or myself were in the county during the breeding season of 1890.

In conclusion, I have to acknowledge my great indebtedness to all those correspondents who have kindly sent me notes from their various localities during the past year.

ON THE WELSH NAMES OF BIRDS OF PREY.

BY E. CAMBRIDGE PHILLIPS, F.L.S.

It is to be regretted that the Welsh names applied to certain species of birds at the present day are generic, and not specific. The deep Welsh known to cultured Welshmen is scarcely ever used in everyday life, and is now rarely or never written. Hence many of the old Welsh names of birds are likely to die out. Take, for example, the Welsh word, *Giach*, Snipe. This word expresses the vocal sound uttered by the Snipe in rising, but is applied equally to the Jack Snipe as well as to the Solitary Snipe, supposing (which I much doubt) the Welsh have a knowledge of the latter bird, which occasionally occurs in Wales.

Thanks, however, to the kindness of a fellow townsman, I have lately had the pleasure of consulting a rare old Welsh dictionary, which is more historical and descriptive than dictionaries usually are. It is by Edward Williams, Bardd Glas Morgannwg (the blue Bard of Glamorganshire), and was printed in Brecon in 1826. It was evidently compiled by a man of considerable culture, who possessed some knowledge of birds, as will be seen by my notes on the Eagle, Owls, and Crows, many of which I have taken from it.

The Welsh name for the Kite is *Barcud*, pronounced *Barkit*, and sometimes in Carmarthenshire, *Barcutan*, plural *Barcutanod*. No other name seems to be in use for this bird, although a friend of mine, a native of Pembrokeshire, tells me that when a boy he well remembers a clever old keeper applied it to the Buzzard. Boys at the present day, when flying their kites, call them "papur barcutan" (i. e., *paper kites*). In the Welsh Bible the word Kite is rendered *Barcud* (Levit. xi. 14, Job xxviii. 7). In the dictionary alluded to, Williams gives it as *Barcud*, *Barcit*, *Barcitan*, *Barcut*, *Barcutan*; English, a Kite; Cornish, *Bargez*; Bretagne or Breton, which is nearly the same as the Welsh, *Barquet*. The word *Barcud* seems more generally used than *Barcutan*; and from the terminal *ud*, pronounced *kit*, comes our word Kite. Since some of these notes were first jotted down, I have had the pleasure of reading Mr. Harting's most interesting article on the *Berkute* or *Bargut* of Eastern Turkestan, which appeared in the 'Field' of the 27th

December last. In this he states that the name for the Eagle, which is trained for hawking by the Kirghis and Bashkyris, is variously spelled *Berkute* or *Bearcoote*; in Russia, *Berkute*. In Eastern Turkey it is *Birgut* and *Bargut*, whilst in Persian it is *Bargut* and *Bargud*. The similarity to the Welsh *Barcud* or *Barcit* is certainly very remarkable; and it is probably very ancient Welsh, which has been handed down from the earliest times, when possibly this name was generally applied to all large birds of prey in the semi-civilised world. From Mr. Harting's researches it would appear that the term is fairly general in Asia, and unknown in Europe, except where introduced into Russia and Turkey, until Brittany is reached; then to be known in Cornwall; and finally, in all its purity, in Wales.

The Welsh for Eagle is *Eryr*; in Cornish and Breton, *Er*. Williams recognises three kinds, *viz.*, *Eryr auraidd*, the Golden Eagle; *Eryr du*, the Black Eagle; and *Eryr gynffon wyn*, the White-tailed Eagle. He adds that many Eagles were to be seen in Wales in his generation (1826). One was killed in 1776 (he does not specify the species, but probably a Golden Eagle), which he saw himself in a place called Llansanwr, near Cowbridge, Glamorganshire. It was shot in the act of killing a lamb, but its wing being only broken, it nearly killed a dog before it was despatched.

There is a place in North Wales, he says (which, however, he does not specify), called "The Eagles' Rocks," where these birds *used* to breed, and were still to be seen there in 1826.

The Eagle, however, was never very common in Wales, as may be surmised from the above remarks; and this is borne out by the fact that, so far as I know, we have no rock or crag that bears its name in South Wales; although we have "The Beaver's Cave" on the Towy, and "The Wolf's Leap" on the Irvon, indicating that in bygone days both these animals inhabited this country.

The Buzzard in Welsh is called *Boda*, plural *Bodaod*, and this name is in general use in Breconshire, and in Carmarthenshire; sometimes, though rarely, the word *Bwncath* is used, but this is applied to any large bird, such as Buzzard, or even Bittern.

The Peregrine Falcon, or Hunting Falcon, is *Hebog*; a Falconer is *Hebogydd*, *i.e.*, one who hunts with Hawks. Sometimes *Gwalch* is given for Hawk, and *Gwalchur*, a Hawker, *i.e.*, a

man accustomed to catch birds with a Hawk (*Hebog*, Williams). The words *Hebog* and *Gwalch* are probably synonymous. Williams states that Falconry was very general amongst the gentry of Wales before the introduction of shot-guns.

In Merionethshire, Lord Lilford informs me that the Peregrine at the present day is called *Cydyll glas na Craig*, but this is no specific name, and simply means "the blue Hawk of the rock;" he adds that the Merlin is there called *Cydyll glas Vach*, *i.e.*, "The little blue Hawk." This word *Cydyll* is the same as the word *Ciryll*, commonly used for all small Hawks in this neighbourhood, and hereafter alluded to.

Sparrow Hawk is *Ciryll*, plural *Ciryllod*, and this name is commonly used in Breconshire, but I am sure it is also applied to the Kestrel. Williams renders Sparrow Hawk, *Gwipai*, *Gwipia*, and *Gwibiar*; and adds, "A kind of Falcon (*Walch*, *i.e.*, *Gwalch*), or Hawk (*Hebog*) of a small kind," evidently meaning by this that it was used for hawking; most probably he has mistaken the Sparrow Hawk for the Merlin. I know the word *Ciryll* is generally used by the farmers for any small Hawk.

All Owls at the present day are spoken of as *Dylluan* only, plural *Dylluanod*, sometimes *Dallhuan*, from *Dall*, blind, and *Huan*, sun, *i.e.*, "Sunblind." Williams, however, gives *Dylluan*, *Tylluan*; Irish, *Ean*; Hebrew, *Helil*; and he especially mentions five kinds, *viz.*, *Dylluan wen*, the White Owl; *Dylluan frech*, the Speckled or Streaked Owl, probably the Long- and Short-eared Owls; *Dylluan rudd*, the Brown or Ruddy-coloured Owl, which he also styles the "corpse bird," probably from its frequenting churchyards; *Dylluan gorniog*, the Horned Owl, which, as he afterwards says, is nearly as large as the Eagle—he probably means the Eagle Owl; and he finally mentions "a small Owl, which is the smallest of the Owls," and which can be no other than the Little Owl.

Although Crows are not strictly birds of prey, still it is worth remarking that at the present day the word *Bran* is applied indifferently both to the Rook and the Crow, but not to the Raven, which is still, and always has been, *Cigfran*, or Meat Crow. Williams, however, adds, *Ydfran*, a Rook, or rather Seed or Corn Crow; *Cogfran*, a Jackdaw, or Cuckoo Crow, probably from its smaller size; *Milfran*, the Carrion Crow, literally *Animal (eating)* Crow; and *Morfran*, a Cormorant, or Sea Crow. Somewhat

singularly, he does not separate the three species of Snipe, but refers to them all as *Giach*, Snipe.

From the above remarks, it may be gathered that formerly a great many native birds, if not all, had distinct specific names among the Welsh; but probably from the deep Welsh dying out, and from people not writing in Welsh so much as they formerly did, owing to the teaching of English in our schools, many of the specific names of birds have ceased to be used, and in their stead names of general application have come into vogue, such as are in common use in Wales at the present day.

LINES OF MIGRATION.

By F. B. WHITLOCK.

IN Mr. Cordeaux's note headed "Lines of Migration" (p. 103), he remarks (quoting from the 'Migratory Report' for 1886), "The returns from the north of Norfolk are poor," &c., &c. This poverty in the returns is probably due more to a lack of competent observers than to absence of material.

When visiting Hunstanton in the early part of October, 1889, I observed a considerable migratory movement amongst the smaller birds. During my stay there I called at the lighthouse several times, and, though I found both officials very courteous, they did not pretend to take more than a general interest in bird-life. I was informed that few birds struck the lantern, owing to the light being intermittent, but Mr. Westmoreland, one of the light-keepers, informed me that he had known a specimen of the Whimbrel and Pied Flycatcher to be killed, and these he considered the most noteworthy during his residence at Hunstanton. He had also procured an example of the Great Grey Shrike from a neighbouring field. In the absence of the usual schedules, the following observations, noted down at the time of my visit, may perhaps be of interest.

I reached Hunstanton on the evening of the 11th October. During my stay, until the 18th, the weather, with the exception of one day, was very favourable to birds journeying to our east coast, light S.W. winds and bright sunshine prevailing. On turning out on the morning of the 12th, my attention was at

once attracted by numerous flocks of Finches, which were passing along the shore in a southerly direction. On closer examination, I found most of the flocks to consist of Chaffinches, both old and young birds being represented; but I found others to be composed of Linnets, with a few Twites amongst them. Large flocks of Starlings also alternated with the Finches, whilst strings of Hooded Crows flew by just above the margin of the land. I did not observe any of the flocks alight, but amongst the drift left by the tide Meadow Pipits and Wheatears were searching for food in some numbers. After mid-day the number of birds passing began to decline, and by three o'clock few were in sight.

On the 13th, though bright and warm, not much movement was apparent, except amongst the Chaffinches. On the 14th I walked north towards Holm. The Chaffinches were still arriving in large numbers, but the commonest bird was the Sky Lark; all I observed were winging their way south, some of the flocks being very extensive. The procession of Hooded Crows still continued, and I noted the arrival of a few Redwings and Missel Thrushes. On the beach I met with the Rock Pipit in some numbers, and also the Snow Bunting. These two species had probably taken up their quarters for the winter, though some movement was apparent in the case of the Snow Buntings. Flocks of Lapwings passing in a southerly direction were frequent.

On the 15th not so much migration amongst the smaller birds was to be observed, but very many Hooded Crows arrived, with fair numbers of Rooks and Redwings. The migration of Chaffinches, Hooded Crows, Rooks, and Starlings set in again with renewed vigour on the 16th, but this time the Chaffinches were accompanied by Greenfinches, and I also observed three larger finches which I was unable to identify—they may have been Hawfinches, or Crossbills. The night of the 16th was very wet, and the morning of the 17th dawned on a rough sea, with a strong west wind. In spite of the weather, however, birds appeared in large numbers. The most prominent was the Starling, which arrived in great numbers; some of the flocks must have contained several thousand birds. Sky Larks were also abundant, and I met with a flock of Goldfinches and Twites. The Goldfinches were feeding on seeds of ragwort amongst the sand-hills. Linnets and Hooded Crows were well represented, but Chaffinches were comparatively scarce.

I left Hunstanton about mid-day on the 18th, the migration of Finches, Starlings, Hooded Crows, and Sky Larks being still in progress.

In these notes I have confined my remarks to those species which were undoubtedly travelling, but the appearance of two Merlins on the 15th may be worth mentioning; and, whilst watching a flock of Snow Buntings at Holm on the 16th, I observed a large flock of Grey Plover come streaming over the sand-hills.

Few birds appear to cross the Wash to the Lincolnshire coast. I only observed three Sky Larks attempting to do so, though I spent several hours in a boat anchored about two miles from the shore.

I think the above notes will confirm the opinion expressed by Mr. Cordeaux, in spite of the poverty of the returns examined by him, "that a focussing stream pours along the coast from east to west to pass inland by the estuary of the Wash and the river systems of the Nene and Welland." I imagine the majority of those birds whose arrival I witnessed to have been immigrants from Central Europe, probably crossing the North Sea during the night. Tired with their sea journey, they would be glad of a few hours' rest before resuming their travels. This, to some extent, might account for few birds striking the lighthouse lantern, and my not being able to detect any movement at night. The fact of migration almost ceasing in the afternoon also, I think, tends to confirm this view.

The eastern shores of the Wash do not seem to be extensively patronised by the waders; but this is probably to be accounted for by the somewhat peculiar geographical position of the Wash. Birds migrating from the north either strike our north-east or extreme east coasts, the Wash, as it were, lying between the two in a corner. A friend, however, who visited Hunstanton in the following November, informed me that great numbers of Lapwings were passing all day during the 6th. It may be interesting to note that a Snow Bunting, which my friend brought home with him, had a small land-shell with a living occupant, firmly imbedded in the feathers of the breast.

Though large numbers of birds reach the interior of England *via* the Wash, as noted by Lord Lilford and Mr. Cordeaux, the claims of the Trent Valley as another great highway, must not

be overlooked, northern breeding birds arriving on the Holderness and North Lincolnshire coasts largely using this route during their land journeys. At certain times of the year the effect of this migration is very apparent in Nottinghamshire.

The most interesting feature connected with the Trent Valley route is the fact of its being used as a highway in spring, birds apparently arriving from the east and north-east. Amongst the birds using this route in spring are the Dunlin, Common Sandpiper, Redshank, Yellow Wagtail, and Sand Martin. I suggest that these species, or some of them, reach us *viâ* the Rhone and Rhine Valleys, and then across the North Sea to Lincolnshire, but beyond my own observation I have found little to confirm this theory.

ON THE HERPETOLOGY OF THE GRAND DUCHY OF BADEN.

BY G. NORMAN DOUGLASS.

(Continued from p. 144.)

4. *Lacerta muralis*, Laur.—An accurate account of the peculiar distribution of *L. muralis* in this part of South Germany was published thirty years ago.* As this account is quoted in most works on the subject, it will be unnecessary to give it here *in extenso*, but it suggests a fact worth noticing which has not, I think, been mentioned hitherto.

It has been assumed that the immigration of this species into this country has taken place *viâ* the gap between the Jura and Vosges ranges (a route by which many other southern forms have entered Germany), but, on comparing its actual distribution with a map, considerable difficulties present themselves. In the first place, the non-occurrence of *L. muralis* on the sunny slopes of the Rhine-valley proper, and in other warm parts of the country (on the Kaiserstuhl and the southern incline of the Schwarzwald, for instance), appears very singular. Instead of this, it is found high up in the Black Forest at several points over 700 mètres above sea-level, in cold and exposed situations. Further, it is curious that *L. muralis* should be absent in localities where other

* Dr. Paulus, 'Verein für Vaterländ. Naturkunde in Württemberg,' 1857.

species, which have followed the above-mentioned line of immigration, are found. There is also, thirdly, a considerable difference in size and colouring and, what is more important, in the method of distribution between the *L. muralis* of Baden and that of the Bavarian Palatinate, which could hardly be so marked, if both had penetrated into Germany from the same source.

It may therefore be asked whether this species has not, following the course of the Danube, descended further westwards from the central plateau of the Black Forest along the many small rivers on whose banks it now is found. Certainly this would pre-suppose its former existence in localities where it no longer occurs, and hence possibly a change of climate within a geologically recent period in these comparatively bleak regions. Still this hypothesis appears the less improbable as other species have unquestionably immigrated by this line, and also in view of the fact that *L. muralis*, like *L. viridis*, occurs on the Danube east of the Swabian and Bavarian table-lands.* If the immigration along the Danube therefore has not taken place at a very early period, we can sufficiently account for its present singularly restricted distribution by assuming a diminished ratio of increase in this less congenial climate. Besides, the "stationary distribution" characteristic of the *Lacertidæ*, will prevent any further emigration until the district occupied has become over-populated. And there are indications of such local over-population. Thus it may be observed that from Gerusbach in the Murg-valley (where this species is very abundant) it is spreading across the narrow watershed into the valley of the Oos, in which Baden-Baden lies; but the transmigration is as yet incomplete, for it appears to occur only on the Gerusbach side of the Oos valley.

As regards the distribution of this species in the Grand Duchy, my experience is confirmatory of the account above referred to. It is found on several of the old castles in the

* This point need not have been reached exclusively from Lower Austria, but also from N. Italy. For *L. muralis* has been observed to cross the Brenner-pass, and may accordingly have come *viâ* the valley of the Inn (H. Krauss, 'Verhandl. Zool. Bot. Ges. Vienna,' 1873), whilst another author reports its occurrence in the higher course of the same river,—at Pfunds and Landeck,—which would imply an emigration from the south, parallel to that over the Brenner, by way of the Vintschgau. (I may mention that I never observed it at either of these localities.)

Black Forest, but only on such as are near the rivers mentioned by Dr. Paulus (*l.c.*). At Heidelberg I never observed it, and I see Bedriaga notes it has become rarer there of late years. Near the Katzenbuckel mountain, further up the Neckar, I could not detect it, nor yet at another point in the south of the country equally interesting to geologists, the Hohentwiel near Constance, where it is stated to occur.

In the Bavarian Palatinate *L. muralis* is considered the commonest lizard, being found both in the mountainous parts, and in the towns and vineyards of the Rhine valley. In the northern districts—near the Donnersberg, for instance—it seemed scarcer, while on all the romantic castles of the central and southern Palatinate—at Dahn, Trifels, Madenburg, Lindelbrunn, Drachenfels, Fleckenstein (of the Niebelungenlied), Weglenburg—it is extremely abundant. On the ramparts of the old fortress of Landau it may be seen in great numbers, and in the lanes throughout the whole country it is found promiscuously intermingled with *L. agilis*. In Elsass it is no doubt also universally distributed. I observed it on the fortifications of Weissenburg,* and along the fine road to Klimbach.

Specimens from Baden seldom exceed 17 centimetres in length. The males are generally speckled black on dark brown ground, and display a slight greenish iridescence in the light. The females incline more to the immature longitudinal striation; one or two specimens, indeed, exhibit four unbroken parallel lines along the back. The lower surfaces are usually of a pure white, or delicate pink colour, in very rare cases (in the male sex) assuming a more coppery tint. Throat sometimes, as with *L. agilis*, with black markings. Palatinate specimens are of greater size and colour-variability. Males with black-spotted throats become more numerous, and the under parts are frequently of a bright orange, which in the corresponding female form turns to a brick-dust colour. It may be observed that with German individuals of this variety the blue spots on the outer ventrals are, as a rule, inconspicuously small, and of greenish appearance, which suggests a sort of compensation on the part of

* A female specimen from this locality was of a uniform black colour (above) when caught, but in alcohol the markings, revealing the usual characteristics of this race, came out more strongly.

Nature for the additional outlay of red colouring. The var *flaviventris* is found, I believe, in other parts of Germany (though I never observed it in Baden or the Palatinate): in other districts it has established itself to the exclusion of nearly all other forms.

It is in the extensive sub-species *filiquerta* that we meet with the best instances of the great colour-plasticity which has given this lizard the designation of "a cycle of varieties"; since we may reasonably expect a species to offer most variability where the conditions of life are most conformable to its constitution. The colouring is largely influenced by environment. This is natural, for being a prey to so many enemies, the capacity for assimilating its colour to the surroundings is of paramount importance, although its mental and physical abilities are of no mean order.

Hence we find many races of this species possessing protective coloration to so marked a degree as to have influenced the original markings whose development is considered to be dependent on purely internal or "constitutional" causes. A few instances will suffice. Eimer has shown that on some recent lava-fields near Mount *Ætna* a complete adaptation to the surroundings has taken place within the short space of 200 years, a circumstance which speaks highly for the capacities of this species, notwithstanding the facility with which colour, "that most fleeting of characters,"* is modified by Natural Selection. All around Vesuvius, and in similar localities, the lizards have assumed equally dark tints. Some specimens from near Ottajano, on Monte Somma, exhibited no traces of the usual markings. As a pendant to this, I was interested to notice, in 1888, an almost uniform greyish white variety of *L. muralis* on the light-coloured rocks near Arnalfi. In strong alcohol the markings both of the Vesuvian and Arnalfi lizards begin to appear, showing that they belong to the usual Neapolitan type. A pretty instance of this sort of local variety I also observed near Narbonne. Along a road outside the town, the adult *L. muralis* harmonised perfectly in colour with the yellowish soil, whereas the young were much more variable in colour, being often quite dark. There was certainly every reason for this precaution, to judge by the presence

* 'Origin of Species,' p. 28.

of several *Lamenis viridiflavus* and *Cœlopeltis lacertina* which frequented the same spot. Examples of such positively protective coloration will occur to everyone who has paid attention to this species in its native haunts, though it is not, as a rule, so pronounced as in the instances given. Thus, more recently, in the Lipari Islands I have come across races of this species on black lava, or white pumice partially covered with vegetation, in consequence of which the adaptation was not so complete, though still recognisable. It has also struck me that the very green colour of *L. muralis* in the fields of Lombardy may be thus accounted for.

The class comprising most varieties of *L. muralis* (from this point of view) contains those whose colour is not adapted to any special environment. It is protective only in a negative sense, inasmuch as a still brighter coloration would render the lizards too conspicuous.* Under this denomination may be included nearly all varieties of this species.

There is yet a third class containing some island forms of this species (*L. filfolensis*, &c.), whose colour cannot, I think, be called protective in any sense of the word. Owing to the absence of enemies, the equilibrium between competing species is in these localities no longer preserved, and, under such exceptionally favourable circumstances, these remarkable divergent forms have been developed. That they should resemble each other to a certain extent is not more than we should expect, considering their common origin, and the natural tendency to analogous variability under similar conditions, while it is noticeable that the main points of difference are such as exist between the secondary sexual characters. There are many islets in the Mediterranean on which the lizards are of necessity protectively coloured, being few in number, and, if possible, more shy than on the mainland, but this is due to the number of enemies, chiefly Kestrels, of which the lizards must constitute the sole food. But the most divergent island forms are again bound to those of the second denomination by a series of transitional types, so that

* The colours of European *Lacertidæ* can hardly be termed aggressive. For capturing their prey they are dependent alone on their agility, and though certain forms of coloration may "enable them to creep upon their prey" more easily, these have been developed solely, I venture to think, as a protection from enemies.

it may be practically impossible, without an exact knowledge of the economy of any given variety, to know in which class it should be placed. Nevertheless, the extremes are theoretically distinct, and such a classification as that referred to, though of no systematic value, may prove interesting from other points of view.

Other varieties whose coloration has been influenced by the direct action of external conditions, would again be apart by themselves. Of *L. muralis* some melanic varieties, if their colour had resulted from moisture of the surroundings or other physical causes, would serve as examples; other instances are given by Koch ('Formen, &c. der Ecaudaten Batrachier'), or M. Wagner ('Migrations theorie'). Colour-variation of this description will generally be correlated with structural differences. A hypothetical illustration: if a variety of *Proteus anguinus* were formed no longer inhabiting dark caves, the change in colour thereby entailed would doubtless be followed by important modifications of structure.

Lacerta muralis is generally seen hereabouts in sufficient numbers towards the middle of April, though of course the time of its appearance is regulated by the state of the weather. My earliest note for the Bavarian Palatinate is March 19th, when I observed one male near Birkenhördt, but it has been seen as early as March 1st near Kreuznach. Both these dates are exceptional. At the Laacher See, in the Eifel, which I recommend to naturalists of all denominations, only two males were visible on a warm April 4th. Still it seems less susceptible to cold than *L. viridis*. I recollect seeing several young of this species at Fontainbleau on a very bleak October day, and in South Tyrol and Italy it may be observed sunning itself on warm stones surrounded by snow.

It occurs also at considerable altitudes. Thus it followed the Stelvio road a long way above Bormio. J. von Tschudi gives 3800 mètres as the highest point of its occurrence.

NOTES AND QUERIES.

MAMMALIA.

The Oared Shrew in Staffordshire.—In June, 1889, a female specimen of the so-called Oared Shrew, *Crossopus remifer*, was brought to me for identification, and was presented to me. It had evidently had a litter of young, as the mammæ, eight in number (four on either side), were very prominent. The fur on the entire upper portion of the animal is of the colour of a Mole, the throat and under parts grey. The following note accompanied the specimen:—"Captured by one of the haymakers in a field just below Harborne Vicarage, June 27th, 1889. Unfortunately, it did not occur to the man in question to search for probable nest whilst immediately following the mowers." I have hitherto regarded the distinguishing characteristics between *C. fodiens* and *C. remifer* as a brownish black upper fur, almost pure white throat and under parts, with the line of demarcation very distinct, and a white spot to indicate the position of the ears in *C. fodiens*. In *C. remifer* the body is of a stouter build, the fur of the upper parts is dark greyish black, which gradually merges into the grey throat and under parts. There is no white spot to indicate the position of the ears, but these are slightly fringed with grey. The fur on the abdomen has a slightly yellow tinge, but my specimen was rather tainted when I received it, and the fur "slipped" on these parts considerably. Beyond this I know nothing to separate the two species. Harborne is a suburb of Birmingham, but in Staffordshire. The Vicarage is about four or five miles from the centre of this city, and the meadow where the specimen was found is, according to my informant, far from any river or stream.—F. COBURN (7, Holloway Head, Birmingham).

[We believe it is now generally admitted that the Water Shrew, *C. fodiens*, and the so-called Oared Shrew, *C. remifer*, are not specifically distinct.—ED.]

Long-tailed Field Mouse swimming.—On Nov. 9th, 1890, while standing at the brink of a pond, I saw a three-part grown Long-tailed Field Mouse swim out, from the bank under my feet, into the middle of the pond. It then remained perfectly still for a time, being partly supported by the duck-weed, and seemed to be listening. The twitching of the large sensitive ears was plainly visible. It then swam back in a leisurely manner, and, catching sight of me, disappeared into a hole in the bank. Its actions were particularly slow and deliberate—very different from those of an animal compelled, by the sudden appearance of an enemy, to take to the water.—G. T. ROPE (Blaxhall, Suffolk).

[On one occasion we saw a Long-tailed Field Mouse swimming in salt-water. We were waiting for wildfowl on an island at the mouth of a

harbour, and, observing a ripple in the middle of smooth water, looked a little closer, and observed what appeared to be the head of an eel swimming towards the shore. To our surprise, it proved to be *Mus sylvaticus*, which landed close to where we were lying concealed.—ED.]

Animals eating Yew.—I believe that the yew, *Taxus baccata*, develops its noxious properties only when in a partially or wholly dried state, but that when fresh it may be eaten by all animals with impunity. The fruit, I believe, in its ordinary state, is harmless, and the seeds become poisonous only when crushed.—H. PUREFOY FITZGERALD (North Hall, Basingstoke).

BIRDS.

Rare additions to the Irish Avifauna.—In October, 1890, Mr. Richard Widdicombe, of Black Rock Lighthouse, Co. Mayo, sent me "two strange birds" in the flesh, shot there on the 11th of that month. One was a Kestrel, and the other a Short-toed Lark, *Alauda brachydactyla*. This is the first occasion on which the Short-toed Lark has been recorded from Ireland. On Oct. 20th, 1890, Mr. W. H. James shot, on the Fearaght Rock, a small bird, which he sent to me supposing it to be a Garden Warbler: it proved, however, to be a Red-breasted Flycatcher, *Muscicapa parva*. The only other occurrence of this species in Ireland, so far as has been ascertained, was on Oct. 23rd, 1887, at the Arklow South Lightship. I have both specimens. On Oct. 1st, 1890, at 4 p.m., wind light, S.W., Mr. W. H. James, light-keeper on the Fearaght Rock, off Kerry, shot a Lesser Whitethroat, *Sylvia curruca*, and forwarded it to me in the flesh. This species has long been looked for by Irish ornithologists. A Mealy Redpoll, *Linota linaria*, was shot on the Fearaght Rock, on Sept. 20th, 1890, and forwarded to me in the flesh, by the light-keeper, Mr. W. H. James. It is now in my collection, and is the second Irish recorded specimen. The following letter, dated Oct. 17th, 1890, was received from Mr. W. H. James, the careful and intelligent light-keeper on the Fearaght Rock, nine miles due W. of Kerry, and the most westerly land in Europe:—"I forward a very small bird with this, shot by my son on the 14th inst., at 10.45 a.m., wind N.N.W., force 3; blue sky to cloudy. It was first observed on a marsh-mallow bush, as if seeking for insects. It then flew to some rocks behind the dwellings, where it was shot. The only bird I can find in the books to answer it is what is called a Dalmatian Regulus. I weighed it, and it only weighed 1 drachm 11 scruples. It is the smallest bird I ever saw. I put it in spirits at once after getting it. I have entered it in the notes as a supposed Dalmatian Regulus; say if I am right." With this letter came the first Irish Yellow-browed Warbler, *Phylloscopus superciliosus*. The "marsh-mallow bush" was no doubt a plant of *Lavatera arborea*, several specimens of which grow on this wild and jagged rock, 602 feet high (see my 'Flora of the Basket Islands').

The books alluded to by Mr. James were copies of Morris's 'British Birds,' distributed some years ago among the light-keepers, at the request of some members of the British Association Committee on the migration of birds. This rarity has been beautifully set up by Mr. Williams, bird-stuffer, Dame Street, Dublin, and is now in my collection. — RICHARD M. BARRINGTON (Fassaroe, Bray, Co. Wicklow).

The Coloration of Pallas's Shrike.—I have been hoping that my note on the colours of Pallas's Shrike, *Lanius major* ('Zoologist', 1890, p. 27), would have elicited some replies from ornithologists well acquainted with the bird. I have for a long time noticed with regret how seldom a note or query in 'The Zoologist' is responded to, or commented upon, in any way by other naturalists. A little more discussion of doubtful points would surely often be desirable; and if the leaders in the science of Ornithology would occasionally vouchsafe, to less experienced readers, a little information upon the points raised, it would, I am sure, be greatly appreciated. I believe, also, that a good deal more criticism than we see now would be extremely beneficial in ornithological subjects. As the matter stands at present, if Pallas's Shrike is to continue to be considered a definite species or sub-species occurring in England, the description of its colours, as set forth in books, is by no means on a satisfactory footing. Five plain statements relating to the Grey Shrikes occurring in England are to be found in the books, *viz.*:—(i.) *Lanius excubitor*, even as a fledgling, has the two white wing-bars well developed, *i. e.*, it has, even at that early age, a considerable amount of white on the secondaries. (ii.) *L. excubitor* has a grey rump and upper tail-coverts. (iii.) The adult *L. major* has no white on the secondaries. (iv.) *L. major* has a pure white rump. (v.) *L. major* is lined on the lower parts at all ages. Now, bearing these stated facts in mind, I should like to ask to what species or form does a bird belong which has hardly a trace of white at the base of the secondaries (indeed roughly it would be said to have none); not at all strongly marked with lines underneath; extremely faint or no signs on the head and back of the brownish cast, which seems to indicate immaturity in Grey Shrikes; and a rump as dark as its rather dark grey back (*vide* Zool. 1890, p. 28)? I should like, also, to ask if any of your readers are possessed of specimens of an adult British-killed Pallas's Shrike in the plumage in which it has been described, *viz.*, with no white at the bases of the secondaries, and a pure white rump? The only possible solution seems to be that the bird described by me is a *young* Pallas's Shrike; but its plumage in other respects does not bear out this idea. If it is a young bird, I may say that in the volume of the British Museum Catalogue which includes the Shrikes it is not stated that this form or sub-species of Grey Shrike has, when in immature plumage, a grey rump and upper tail-coverts. — O. V. APLIN (Bloxham, Banbury, Oxon).

Photographs of Sand Grouse.—We have received from Mr. Cullingford, of the University Museum, Durham, two photographs (cabinet size) of some interest to ornithologists. One represents a downy chick of *Syrrhaptes paradoxus*, taken in Moray on August 8th, 1889, and preserved by him; the other shows a flock of sixteen old birds of this species, on the ground, in various attitudes. The yellow throats of the adult birds unfortunately come out black, as always happens in photography; but in other respects the species is unmistakable, and the photograph gives a good idea of the appearance of a flock in a state of nature. The chick would have looked more natural if, instead of being perched on a large stone (intended no doubt to show it off to advantage), it had been represented crouching beside it; and if its wonderfully harmonious coloration helped, in such a position, to render its outline indistinct, so much the truer would it have been to nature. For a really satisfactory portrait of a nestling Sand Grouse, one must turn, of course, to the coloured figure given by Prof. Newton in 'The Ibis' for 1890, pl. vii. where also will be found (pp. 207—214) an interesting account of its discovery.—ED.

The Landrail in Hampshire in Winter.—Between the 9th and 24th of December last I saw no less than three specimens of this summer bird, all killed within a radius of two or three miles of Ringwood. None of them were in the meagre condition one would have expected to find them during the unusually severe weather which then prevailed. Indeed this bird is seldom plump and fat even when food is plentiful, and these were in comparatively good condition. I am well aware that the occurrence of Landrails here in winter is not particularly rare, but the question is, how do they manage to live, for certainly very little, if any, insect food is to be obtained at such a season? On dissecting the stomachs of those lately obtained, I found a scanty supply of vegetable remains, and in one the elytron of a small black ground-beetle; so I suppose the bird is able, in a measure, to adapt itself to circumstances in the matter of food,—for surely if it could exist during the past severe winter, it would have no difficulty in finding sustenance in an ordinary season.—G. B. CORBIN (Ringwood, Hants).

Hybrid Finches at the Crystal Palace Bird-Show.—At the recent Crystal Palace Bird-show eight cases of hybrid British Finches were represented; the most uncommon being a cross between Bullfinch and Redpoll, exhibited by Mr. S. D. Hunt, of King's Lynn, which took first prize. The following hybrids were also exhibited:—One Chaffinch and Brambling; four Linnet and Bullfinch; one Linnet and Greenfinch; one Goldfinch and Linnet; three Bullfinch and Goldfinch; two Bullfinch and Linnet; and one Greenfinch and Linnet. Canary mules were particularly numerous, being numbered from 1290 to 1446 inclusive, and comprising crosses with the Goldfinch, Bullfinch, Greenfinch, Linnet, Redpoll, and Siskin. It is a

pity that the authorities did not take more trouble in naming the exhibits in their catalogue. There could be no difficulty in ascertaining the species of such birds as Wheatear, Redstart, or Yellowhammer. Moreover, many of the birds which were named were wrongly identified; for instance, a White Blackbird figured in the Catalogue as a "White Meadow Pipit"; a Tree Sparrow as a "Bramble finch"; a Brambling as a "Reed Sparrow"; a Yellow Wagtail as a "Chiffchaff"; and so on. Under the title of "Bunting" the Dunfermline *Emberiza melanocephala* (Zool. 1887, p. 193) appeared for the fifth consecutive year, but did not appear to be in very flourishing condition. — ARTHUR H. MACPHERSON (51, Gloucester Place, Hyde Park).

[A note on the hybrids exhibited at last year's show will be found in Zool. 1890, p. 106.—ED.]

Notes from Somerset.—A Red-throated Diver, *Colymbus septentrionalis*, a young male, was shot in the river three miles below this town, in November last. The only other specimen recorded to have been met with in this county is one which was picked up dead (Cecil Smith, 'Birds of Somerset,' p. 543); but as this book was published twenty years ago, the occurrence of this bird in Somersetshire may have been subsequently noted. The gentleman who shot the specimen above referred to, and in whose possession it is, has also a Pied Flycatcher, *Motacilla atricapilla*, shot near here, and a Great-crested Grebe, *Podiceps cristatus*, shot near Taunton in December last,—both rare visitors to this county. A Goosander, *Mergus merganser*, a young male, was killed in the marshes, and sent to me for identification on Jan. 9th. In the stomach were three small roach,—one partly digested,—a small eel, and the remains of other roach. A Smew, *Mergus albellus*, male, was brought to me on Jan. 14th, shot in the river two miles below the town, with another Goosander, shot at the same time and place. On Jan. 28th a Bewick's Swan, *Cygnus Bewickii*, was shot at the mouth of the river, and brought to me; another I saw in the bird-stuffer's shop. Many geese have been killed this winter in the neighbourhood, but unfortunately I have not been able to see any of them for identification, which I regret, as there are one or two species not yet recorded in Somerset. I shall be glad, at all times, of particulars of rare birds killed or identified in this county, if any of your readers will kindly send them to me. —H. St. B. GOLDSMITH (King Square, Bridgewater).

The Great Grey Shrike.—Glancing over my remarks on this species (pp. 96—100), it occurs to me to supply a few omissions by sending you a further note. The earliest allusion to the presence of this Shrike in the British Isles that I have come across in my reading is that of Giraldus Cambrensis in the well-known 'Topographica Hibernica.' Willughby was perhaps the first English naturalist to describe the employment of this

Shrike in the capture of passage Falcons. His epitome of the habits of the bird is blunt but accurate, "She sits up on a high bough, making an uncouth noise" ('Ornithology,' 1678, p. 21). I have had many opportunities of confirming this. On the Rhine they are cruelly persecuted by the gamekeepers, and a Shrike that has lost his mate will often fly to the top of a very tall poplar, and thence pour forth his woes, "making an uncouth noise," as described by Willughby. The keepers are paid for Shrikes by the feet they produce. Their plan is to mark down any pairs of Shrikes that they can find on their beat in spring, and to wait until the young ones are feathered, when they generally kill one of the old birds as well as the brood. In consequence of this practice the species is being exterminated in the Valley of the Upper Rhine, though Hoopoes, Golden Orioles, and all insectivorous birds are stringently protected, as are their eggs. But I met with the Grey Shrike also on higher grounds—up to an elevation, in fact, of 5000 feet, though at this height it becomes rare. Suitable food is more plentiful in the Valley of the Rhine than in more elevated regions. Adrien Möllen, of Falconswaerd, told me that the Dutch hawk-catchers have to catch fresh Shrikes for their use every season, as a bird worked one season, if caged until the next autumn, would become too tame to do its work efficiently. I have not alluded to the Grey Shrikes in Scotland in 'The Zoologist,' having sent my Scotch notes on this species to 'The Scottish Naturalist.' The sentence in which I wrote of the Grey Shrike resting on its tarsus (Zool. 1891, p. 100) has suffered from a slip of mine in transcribing. What I intended to say was, that a Shrike, when holding a beetle in one foot, balances itself on the disengaged foot *and* the tarsus of the engaged foot.—H. A. MACPHERSON (Carlisle).

Distribution of the Red-backed Shrike and Cirl Bunting.—Will you allow me to state, through the medium of 'The Zoologist,' that I am engaged in working out (with a view to publishing the result of my enquiries) the distribution of the Red-backed Shrike and the Cirl Bunting in Great Britain, and in collecting a record of all the occurrences of the Woodchat Shrike in this country; and that I shall be greatly obliged to any ornithologists who will be good enough to send me notes on these subjects.—O. V. APLIN (Bloxham, Oxon).

Variety of the Bullfinch.—A curiously marked variety of the Bullfinch was lately shown to me. The beak and legs are yellow; the breast and nape pink; the back is of a pale slate colour, mottled with pink; the sides of the face red, and over the beak are a few grey feathers; the tail-coverts are white. The bird is a male, and was taken near Reigate by a bird-catcher in December last. It lived for some time in confinement, and at death came into the hands of our local birdstuffer, Mr. Reeves.—E. P. LARKEN (Gatton Tower, Reigate).

Red-necked Phalarope in Hants.—In the recently published list of the ‘Birds of Hampshire,’ by my friend the Rev. J. E. Kelsall, the above species is casually mentioned as having been reported from this county. I have now the gratification of recording it as an undoubted visitor. On Oct. 27th last a friend of mine was in the meadows, not far from the river, when he observed a bird which he supposed, at first sight, was a Wagtail, running about upon some weeds that were floating down the stream. On drawing closer, to get within shot, he saw there were two birds, one of which slipped off the weeds, and proceeded to swim towards the opposite bank, drawing its head over its back (to use the words of my friend) like a Teal when it swims. He shot it, and I had the chance of seeing the elegant little bird while it was still warm; the other fortunately escaped. At first sight any lover of birds would see it was a Phalarope regardless of its characteristic feet; but on comparison with a specimen of the grey species, which I chanced to possess, its specific differences were at once apparent, although the colours of both, being in winter garb, are somewhat similar. The smaller size and more slender build of the Red-necked one were noteworthy, and a closer look at the beaks of the two species seem almost to support the generic distinction which has been proposed; for whilst that of the “grey” is broader and compressed towards the point, that of the “red” is gradually tapering through its entire length from base to point. The little bird in question weighed just one ounce, and on dissection it proved to be a male; the lower parts of the throat and breast are ashy grey, with an indication of the ferruginous tint of summer, and there are some buff streaks upon the darker plumage of the back and greater wing-coverts (is this a mark of immaturity?), with a conspicuous white bar across the wings; the crown of the head and a broad streak running through the eye to beyond the ear-covert are brownish black, the back of the neck being of a lighter hue; all the under parts are white. The texture of the feathers upon the breast and under parts remind one forcibly of those of a Gull, being close and thick-set; and on skinning the bird it was observable how persistently the feathers would curl over upon the inside of the skin, similar to the *Laridæ*: those who, like myself, sometimes practise taxidermy, will know the peculiarity to which I allude. — G. B. CORBIN (Ringwood, Hants).

Breeding of the Woodcock in Ireland.—*A propos* of the interesting observations on this subject by Mr. Ussher, Mr. Allan Ellison, and Rev. W. W. Flemyng, in ‘The Zoologist’ last autumn, three other counties in which the Woodcock breeds may be added to those mentioned; they are the counties of Kildare, Galway, and Mayo. During the past few years I have observed several Woodcocks haunting parts of Lord Cloncurry’s demesne at Lyons, Co. Kildare, through the breeding season. I have frequently watched their evening flight late in spring and in early summer. Although

not aware of a nest having been found, I have no doubt, under the circumstances, as to their nesting there. As to Co. Galway, the Hon. L. G. Dillon has kindly informed me that the first Woodcock's nest known to have been seen in his father's demesne (which is about six miles N.W. of Ballinasloe) was found about twenty-three years ago, and that, since then, few years have passed without one or more being found. Lately he has heard of Woodcocks breeding in other parts of Co. Galway, and he often heard of their nests being found in the wooded hills, in the south of the county, before the time mentioned above. With regard to Co. Mayo, Mr. J. E. Jackson, of Cong, in that county, informs me that an odd nest has been found, and a few Woodcock seen during summer, in the woods at Ashford, Cong. I believe the Woodcock has not hitherto been recorded as breeding so far west as this. A glance at the list of counties in which this bird has been found to nest shows that its distribution in Ireland during the breeding season is tolerably wide and general: it would, therefore, seem not at all improbable that it breeds also in a number of other counties where it has not yet been discovered in the breeding season by ornithologists or others who make known their observations. The Hon. L. G. Dillon's knowledge of it having bred in Co. Galway twenty-three years ago, suggests that the belief in the alleged extension, westward, of the Woodcock's breeding range in recent years may possibly be due to the discovery recently, by ornithologists, that it nests farther west than they were aware of previously. Is there any evidence to show that a hundred years ago the Woodcock did not breed as far west as it does now? It is a bird particularly likely to have been overlooked, except in the shooting season, on account of its nocturnal and crepuscular habits; and, while sportsmen are numerous in Ireland, there are very few ornithologists.—J. E. PALMER (Dublin).

Swans in Suffolk.—The winter of 1890—91 will be long remembered by the wild-fowl shooters as a great Swan-year. Some remarkable shots have been made; on one occasion five Whoopers, out of a flock of nineteen, were killed on the River Alde at one discharge of a punt-gun; another gunner obtained three Swans (species not recorded) at a shot with a shoulder-gun, carrying only an ounce and a half of shot. A fine Bewick's Swan was sent me in the flesh, from Aldeburgh, on March 13th, shot in the river a day or two before; though in poor condition, it weighed over 12 lb s. It still retained some of the rust-coloured tips to the feathers of the head and breast, but the lemon-yellow on the beak was beautifully bright, and extended in a circle round the eye, almost as conspicuous as in the Norfolk Plover. In reply to my query as to the number of Swans obtained this winter, Mr. Hele (to whose kindness I am indebted for the Bewick's Swan) writes:—"Seven Whoopers, two Bewick's Swans, four wild Mute Swans—I think you would be safe in saying twenty."—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Red-necked Grebes at Scarborough.—During the month of January last a great number of Red-necked Grebes, *Podiceps rubricollis*, were obtained at Scarborough. This is an unusual occurrence, for these birds are uncommon visitors to this district. The first specimen was picked up dead near the telegraph-wires on Jan. 15th, and the last noticed were four seen in the South Bay on Jan. 28th. Between these dates no less than twenty-three specimens came under my notice, making a total of twenty-eight. I have also seen seven which were shot at Filey, and I am informed that a large number of others were obtained. Out of this number one only showed any trace of the red neck from which the bird derives its name. All the others were either birds of the year or in the winter plumage.—WILLIAM J. CLARKE (44, Huntriss Row, Scarborough).

Blackcap in Gloucestershire in mid-Winter.—By way of supplement to the notes on the occurrence of the Blackcap in winter that have already appeared (pp. 61, 65, 106), it may be worth recording that a hen bird of this species was sent to me for verification, from Gloucester, on the 28th December last. It was shot in a garden in the suburbs of that town on the previous day, and was in good condition.—H. W. MARSDEN (21, New Bond Street, Bath).

[The Rev. A. Matthews, of Gumley, Market Harborough, reports a hen Blackcap at Saddington Reservoir, Leicestershire, on the 2nd March last.—ED.]

Comparative scarcity of the Bernacle Goose.—With regard to Mr. Harper's note on the scarcity of the Bernacle Goose on the N.E. coast (p. 68), I may state that the only instances of its occurrence which have come under my observation were noted in 1883. On Sept. 28th, in that year, I saw a flock of eleven of these birds near the Tees Mouth, and three days afterwards purchased one (a female), which had been caught on the Tees sands by a fisherman; one wing was badly broken near the shoulder, but, acting on the advice of a medical friend, it was not amputated; the wound healed, and the bird is now living in a garden in company with another Bernacle and a Brent Goose. They eat a great deal of grass, and are also very partial to barley and soaked bread. When first I got the Bernacle Goose, I had a tame Shieldrake, and the two became inseparable companions, coming up to the dining-room window daily at meal times, and even venturing into the room for a piece of bread or potato, if the window was opened, but after the Shieldrake died, the Goose could not be induced to enter the room again. Can any correspondent say what is the average age of the Bernacle Goose? A short time ago there were two in the grounds at Southend, Darlington, and I was informed by Miss Pease that they were bought by her father, the late Mr. Joseph Pease, but so long ago that she could not remember the year. In 'The Field' for Sept. 19th,

1885, an instance is recorded of a Bean Goose which lived for twenty-six years in semi-captivity.—T. H. NELSON (Redcar).

Black Guillemot in Breeding Plumage in February.—On the 25th of February last there were three specimens of *Uria grylle* hanging up in Leadenhall Market, and said to have come from the North of Scotland. They were all in full summer plumage, with brilliant vermilion-coloured legs and feet, and showed no signs of having been in any other dress during the winter.—ARTHUR H. MACPHERSON (51, Gloucester Place, Hyde Park, W.).

Little Auk inland in Notts.—I have lately purchased, from the taxidermist of Retford, a specimen of the Little Auk, *Mergulus alle*, which was shot on Sherwood Forest, within a few miles of Retford, on or about Jan. 12th last.—L. BUTTRESS (Grove, near Retford, Notts).

The former value of Sea Gulls in Sussex.—During the first half of the 17th century a member of the Wilson family—William Wilson, Master of the Horse to the Earl of Suffolk—married a Mistress Mary Haddon, daughter of a London merchant, and went to reside at Eastbourne Place, in Sussex, which he afterwards purchased from his wife's stepfather. An old account-book, belonging to the family, states that the rental was £999 a year, and that "there belongeth to the sayd manor one warren of Conyes worth £40 a year, and the royalty of hawking, hunting, fishing, and fowling." It is added, "We take yearly within the sayd manor ten dozen or twelve dozen of Sea Gulls, worth 30s. a dozen, £18; besides Puetts and Sea Pyes" ('Sussex Archæological Collections,' vol. xi. p. 27).—J. E. HARTING.

Black Redstart in Hants.—On the 16th November last my brother sent me a specimen of the Black Redstart, *Ruticilla tithys*, from Hampshire. It was a young male, and of a uniform dark grey plumage, with the white just appearing on the wings, and the tail a dull red.—P. T. LATHY (Warren Road, Bexley Heath, Kent).

Destruction of Kingfishers.—Paying regular visits to a taxidermist in this town, I have often seen, during the late severe winter, the pitiable sight of sometimes half-a-dozen of these beautiful birds awaiting their turn to be skinned. And a desire to learn more about the capture of these particularly shy birds—for they are not common in the district—prompted me to make enquiries, the result of which may be interesting to your correspondent, Mr. Cocks. From the information supplied to me it appears that the men about here resort to two simple methods of capture, namely, with the net and with the gun. Obviously the most profitable time is when the frost has driven the birds from the higher reaches down to the larger streams of lower altitude! The birds are consequently more together;

and the catcher, having marked his bird (or birds), goes down immediately below the first bend in the stream, and there fixes his net across the usual line of flight. Meanwhile, his companion has made a tour round, and the victim is flushed down stream, and eventually taken in the net. This plan, I believe, is considered to be superior to any other, and half-a-dozen Kingfishers may be taken in the course of a morning's walk. Owing to this wholesale destruction the Kingfisher has, of late years, so greatly diminished in numbers about Bolton, that I am afraid a sight of this elegant little bird will, in the near future, be of comparatively rare occurrence.—C. E. STOTT (Bolton-le-Moors).

Rare Birds in Gloucestershire.—During the severe weather at Christmas the following rare birds were shot in close proximity to the Severn:—*Cygnus musicus*, a very old pair; the female only being shot. *Mergus albellus*: some very fine specimens were obtained, both male and female; this is the first time, I believe, that this bird has been shot in Gloucestershire.—A. LIONEL CLARKE (Gloucester).

FISHES.

Large catches of Mullet and Mackerel on the Cornish Coast.—On the 18th March last no less than 12,000 Grey Mullet, *Mugil capito*, were captured, by means of a draw-seine, by the fishermen of Sennen Cove, at Whitsand Bay, Land's End. The fish were of remarkably fine quality, one being brought to me which measured 2 ft. in length, 1 ft. 3 in. in girth, and weighed 6 lbs. 10 oz.: the fish realised 18s. a score. On the 31st of the same month a Lowestoft mackerel driver, fishing some leagues S.W. of the Lizard, took 48,000 mackerel. No such a catch of mackerel, for one night's fishing, has ever been heard of here before, and what makes it more extraordinary is that it should have taken place in March, when the catches usually average a few hundreds only. Later on in the season, when fishing west of Scilly, 20,000 to 25,000 is regarded as a heavy catch. The catch sold for £360.—T. H. CORNISH (Penzance).

The Fishes of Northumberland and Durham.—I should like to draw the attention of your readers to the excellent "Catalogue of the Fishes of the Rivers and Coast of Northumberland and Durham," drawn up by Mr. Richard Howse for the 'Natural History of Northumberland, Durham, and Newcastle.' This list, of 64 pages, includes no fewer than 142 species, and has been prepared with evident care. Taken with Mr. Clarke's List of the Fishes of the Yorkshire Coast, and the Lists of Fishes published by the Norfolk and Norwich Natural History Society, Mr. Howse's Catalogue fairly covers the greater part of our east coast, and deserves careful perusal.—H. A. MACPHERSON (Carlisle).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

March 19, 1891, *Special General Meeting*.—Prof. STEWART, President, in the chair.

Messrs. F. H. P. Coste and A. H. Turnbull were admitted, and Messrs. J. Hagger, W. Ross, and W. D. Wickes were elected Fellows of the Society.

The Secretary having read the minutes of the last meeting, the President announced that the sense of the meeting would be taken by ballot on the proposed alteration of certain Bye-Laws, of which due notice had been given as prescribed by the Charter of the Society, and after explaining the nature and object of such alterations, he invited those present to express their opinions. A discussion followed, in which twenty-two of the Fellows took part, and on the votes being counted it was found that a portion only of the proposed alterations were assented to, the remainder being negatived by 40 to 29.

The following papers were then read:—"Researches on Earthworms belonging to the genus *Lumbricus*," by the Rev. H. Friend; and "The Hemiptera and Heteroptera of Ceylon," by Mr. W. F. Kirby.

The meeting then adjourned to April 2nd.

April 2.—Prof. STEWART, President, in the chair.

The Rev. E. N. Langham, and Messrs. W. D. Wickes, H. S. Streatfield, and R. W. Phillips were admitted Fellows of the Society.

The Rev. Prof. Henslow exhibited specimens of *Oxalis cernua*, Thunberg, a native of the Cape of Good Hope, and gave an interesting account of its introduction into the countries bordering the Mediterranean and the Canaries and Madeira, tracing its present northern distribution so far as he had been able to ascertain it. A discussion followed in which Messrs. A. W. Bennett, C. B. Clarke, W. Bateson, and B. D. Jackson took part.

Mr. A. B. Rendle, having examined the specimens of "Monchona" exhibited by Mr. Christy at a previous meeting, expressed the opinion that this trade product was the preserved fruit of a palm, belonging to a species apparently undescribed. It was stated somewhat vaguely by the importer to have come from the South Pacific. Mr. Rendle also exhibited another specimen of an orange within an orange, which differed from that shown at a former meeting in that the inner orange possessed a rind, and was not entirely enveloped by the outer one.

The President exhibited an abnormal specimen of a butterfly (*Gonepteryx rhamni*) possessing five wings, or two hinder wings on one side.

Mr. W. Bateson then gave the substance of a paper by himself and Miss A. Bateson on Variations in Floral Symmetry of certain plants with irregular corollas. He described the variations in number of parts and of symmetry occurring in the flowers of *Gladiolus*, *Veronica*, *Linaria*, and *Streptocarpus*, and showed that although in these varieties there is considerable departure from the normal form, yet the resulting variety is often as definite as the normal form and not less perfect in symmetry. It was suggested that the variations by which specific forms of symmetry are produced may also be thus distinct, and not of necessity involving transitional forms, and, for example, that the process by which the 4-petalled symmetry of *Veronica* arose from that of a 5-petalled ancestor was perhaps similar in kind to that by which the 3-petalled variety of *Veronica* is formed from the type, transitional forms being in such cases rare, or even absent. An interesting discussion followed in which the President, Prof. Henslow, Messrs. C. B. Clarke, and A. W. Bennett took part.

The Secretary then read a paper by Mr. H. N. Ridley, of Singapore, on two new genera of Orchids from the East Indies.

ZOOLOGICAL SOCIETY OF LONDON.

March 17, 1891.—Prof. G. B. HOWES, F.Z.S., in the chair.

Mr. Sclater exhibited and made remarks on some horns, with scalps attached, of an Antelope sent to him from Somali-Land by Capt. H. G. C. Swayne, R.E., which he referred to the lately described *Cervicapra clarkii* of Mr. Oldfield Thomas. He also exhibited two skins of the Ounce, *Felis uncia*, in reference to the specimen of this Cat lately acquired by the Society, and made some remarks on the geographical range of the Ounce in Central Asia.

Mr. A. Smith Woodward gave an account of some dermal plates of *Homosteus* from the Old Red Sandstone of Caithness, lately sent to him by Mr. Donald Calder, of Thurso, the examination of which had enabled him to advance our knowledge of some points in the structure of this remarkable form of extinct fishes.

Mr. G. A. Boulenger gave a detailed description of Simony's Lizard, *Lacerta simonyi*, from the large specimen lately living in the Society's Gardens, which had been brought from the rock of Zalmo, Canaries, by Canon Tristram.

Mr. W. F. Kirby gave an account of a small collection of Dragonflies made by Mr. E. E. Green in Ceylon. The series contained examples of sixteen species, of which three appeared to be new to science.

Mr. Oldfield Thomas read some notes on the specimens of Antelopes procured by Mr. T. W. H. Clarke in Somali-Land, which had been submitted

to his examination by Messrs. Rowland Ward & Co. The specimens were referred to eight species. One of these, already preliminarily described as *Cervicapra clarkii*, was now regarded as constituting a new generic form allied to the Gazelles, and proposed to be called *Ammodorcas clarkii*.

April 7.—F. DUCANE GODMAN, F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of March; and called special attention to a young example of the Ounce or Snow Leopard, *Felis uncia*, new to the Collection, and to a Small-clawed Otter, *Lutra leptonyx*, from India, being the second specimen of this Otter acquired by the Society; also to a specimen of a Lhuys' Impeyan, *Lophophorus lhuysi*, from Szechuen, Western China, obtained by Mr. A. G. Pratt during his recent visit to that country, being the first example of the species that has reached Europe.

The Secretary exhibited the drawing of a female Antelope, *Tragelaphus gratus*, with a young one, now living in the Zoological Garden, Amsterdam, which had been obligingly sent to him by Heer C. Kerbert, the Director of that Garden.

The Secretary exhibited (on behalf of Mr. W. L. Slater, Deputy Superintendent of the Indian Museum, Calcutta), a specimen of a Duck, apparently a hybrid between the Mallard, *Anas boschas*, and the Gadwall, *A. strepera*, which had been lately obtained in the vicinity of Calcutta.

Mr. T. D. A. Cockerell read a paper on the geographical distribution of Slugs. The author divided the known Slugs into six families:—*Succineidæ*, *Vaginulidæ*, *Arionidæ*, *Limacidæ*, *Testacellidæ*, and *Selenitidæ*, under which he grouped fifteen subfamilies. The *Janellidæ* were reduced to a subfamily of *Succineidæ*, and the generic nomenclature of the whole group was revised, two new genera and one new subgenus being named. The *Philomyxidæ* were made a subfamily of the *Arionidæ*. The distribution of each subfamily, and of all the recognisable genera, was discussed in some detail. Under the *Veronicellinæ* a new subgenus, *Imerinia*, from Madagascar, was indicated.

A communication was read from Dr. Alcock, Surgeon-Naturalist to H.M. Indian Survey steamer 'Investigator,' containing a description of *Saccogaster maculatus*, a viviparous Bathybial Fish from the Bay of Bengal.

Prof. F. Jeffrey Bell read some observations on *Bathybiaster vexillifer*, a Star-fish originally described by Sir Wyville Thomson, of which the typical specimen had lately been received by the British Museum.

Mr. G. A. Boulenger gave an account of the Siluroid fishes obtained by Dr. H. von Ihering and Herr Sebastian Wolff in the Province of Rio Grande do Sul, Brazil.

Mr. F. E. Beddard read a paper giving some account of the anatomy

of the Patagonian Cavy, *Dolichotis patagonica*, from specimens recently living in the Society's Gardens.

April 21.—Prof. W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

A communication was read from Lieut.-Col. Sir Oliver B. C. St. John, R.E., containing notes on a case of a Mongoose (*Herpestes mungo*) breeding during domestication.

Mr. R. E. Holding exhibited and made some remarks on some remarkable horns of Rams of the domestic Sheep of Highland and other breeds.

Messrs. Beddard and Murie exhibited and made remarks on a cancerous nodule taken from the stomach of an African Rhinoceros (*Rhinoceros bicornis*), which had recently died, after living twenty-two years in the Society's Gardens.

Mr. E. T. Newton read a paper on the structure and affinities of *Trogotherium cuvieri*, basing his remarks principally on a fine skull of this extinct Rodent lately obtained by Mr. A. Savin from the forest-beds of East Runton, near Cromer.

Mr. J. H. Elwes read the first part of a memoir on the butterflies collected by Mr. W. Doherty in the Naga Hills, Assam, the Karen Hills in Lower Burmah, and in the State of Perak.

Mr. J. J. Lister gave an account of the birds of the Phoenix Islands, Pacific Ocean, as collected and observed during a visit to this group made in H.M.S. 'Egeria,' in 1889.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

April 1, 1891.—Professor R. MELDOLA, F.R.S., Vice-President, in the chair.

Mr. G. A. Booth, of Grange-over-Sands, North Lancashire; and Mr. W. Manger, of New Cross, S.E., were elected Fellows of the Society.

Capt. H. J. Elwes showed a small but very interesting collection of butterflies from Laggan Alberta, N.W. Territory of Canada, taken by Mr. Bean at high elevations in the Rocky Mountains. Amongst them were *Colias elis*, Streck., which seemed to be very close to, if not identical with, *C. hecla* of Europe; *Argynnis alberta*, W. H. Edw.; and *Chionobas subhyalina*, W. H. Edw. The resemblance between the butterflies of this locality and those found on the Fells of Lapland was very striking, some of the species being identical, and others very closely allied. Capt. Elwes said that it was another proof, if one were wanted, of the uniformity of the butterflies found throughout the boreal region in the Old and New Worlds.

Mr. G. C. Champion exhibited several insects recently received from Mr. J. J. Walker, from Hobart, Tasmania. The collection included a curious species of *Forficulidæ*, with asymmetrical forceps, from the summit of Mount Wellington; two mimetic species of *Ædemeridæ* belonging to the genus *Pseudolycus*, Guér., and the corresponding *Lycidæ*, which were found with them; also specimens of both sexes of *Lamprima rutilans*, Er.

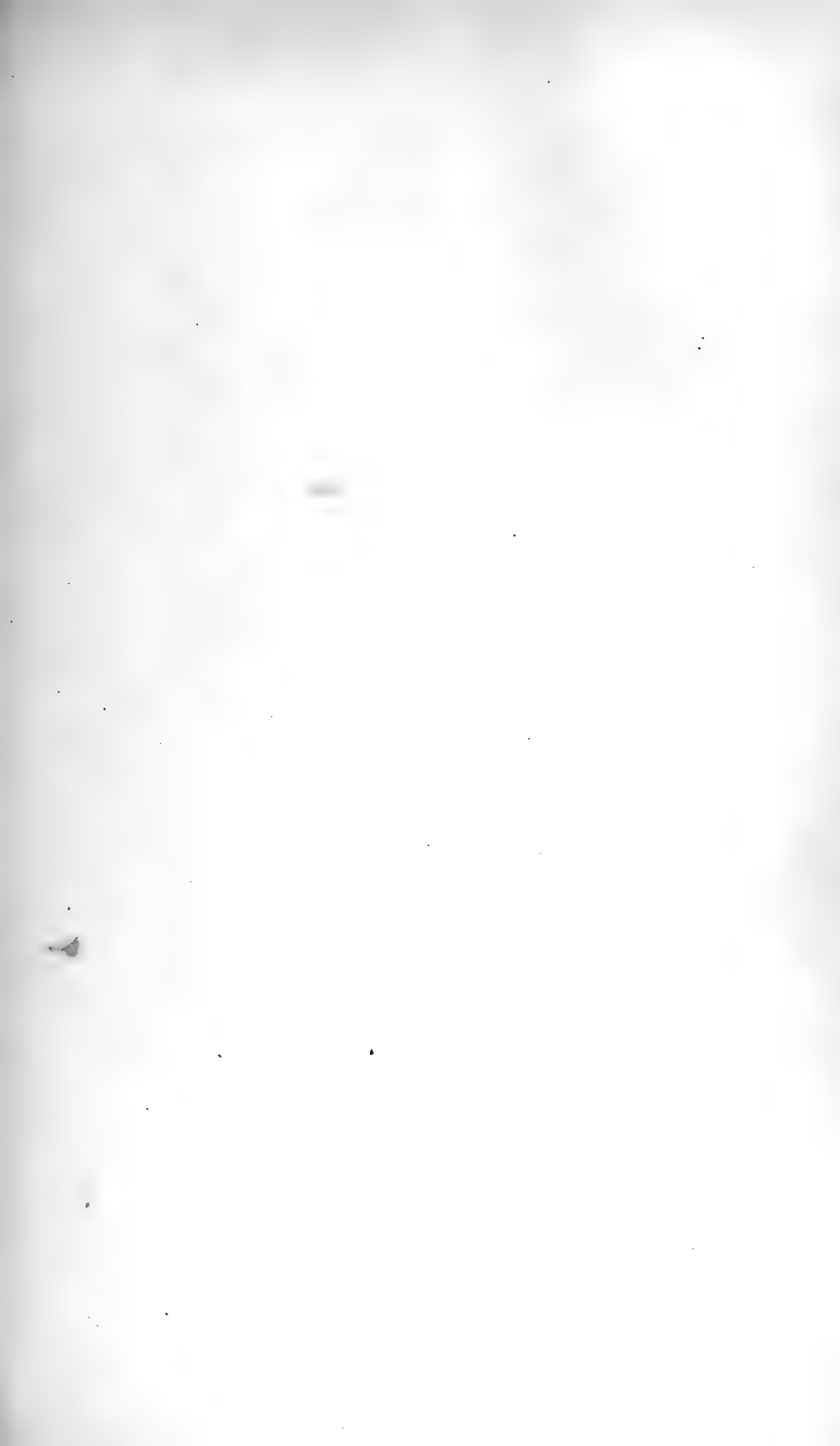
Mr. N. M. Richardson exhibited a specimen of *Zygæna filipendulæ* with five wings; a second specimen of the same species with the middle legs on the right side much dwarfed; four specimens of *Gelechia ocellatella*, including a pink variety, bred from *Beta maritima*; four specimens of *Tinea subtilella*, a species new to Britain, taken last August in the Isle of Portland; also specimens of *Nepticula auromarginella*, a species new to Britain, bred from larvæ taken near Weymouth on bramble. Dr. Sharp and Mr. M'Lachlan commented on the structural peculiarities of the two specimens of *Zygæna*.

Mr. C. Fenn exhibited a series of *Teniocampa instabilis*, which had been bred out of doors during the recent severe weather. They were all bred from ova laid by the same female, and many of them were of an abnormally pale colour. Mr. Fenn said that, according to Mr. Merrifield's theory, these pale specimens, in consequence of the temperature to which they had been subjected in the pupal state, ought to have been very dark. Mr. Jenner Weir, referring to the pale specimens, said he had never before seen any of so light a colour.

Mr. W. Dannatt exhibited a butterfly belonging to the genus *Crenis*, recently received from the Lower Congo. He said he believed the species was undescribed.

Mr. G. A. J. Rothney sent for exhibition several specimens of an ant (*Sima rufo-nigra*), from Bengal, together with specimens of a small sand wasp (*Rhinopsis ruficornis*) and a spider (*Salticus*), both of which closely mimicked the ant. It was stated that all the specimens exhibited had lately been received from Mr. R. C. Wroughton, Conservator of Forests, Poona. Mr. Rothney also communicated a short paper on the subject of these ants and the mimicking sand wasps and spiders, entitled "Further notes on Indian Ants."

Mr. G. C. Champion read a paper entitled "A list of the Heteromorous Coleoptera collected by Mr. J. J. Walker, R.N., in the neighbourhood of Gibraltar, with descriptions of four new species." At the conclusion of the meeting a discussion ensued, in which Mr. Kirby, Capt. Elwes, Mr. M'Lachlan, Mr. Jenner Weir, Dr. Sharp, and Mr. Crowley took part.—H. Goss, *Hon. Sec.*





G. J. G. 1891

West, Newman imp.

L. Hutchinson lith.

The Serotine...

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THE SEROTINE, *VESPERUGO SEROTINUS*.

BY THE EDITOR.

PLATE I.

COMPARED with its congener, the Noctule, *Vesperugo noctula*, of which an account was given, with a figure, in 'The Zoologist' for May, 1887, the Serotine is not only more local in its distribution, but is apparently much less numerous as a species. This at least is the conclusion arrived at after many enquiries for it in different parts of the country.

It is, of course, not unlikely that the proximity in size of these two species, and the similar appearance which they present when seen upon the wing at a little distance, may have led on many occasions to their being confounded, and it may be well therefore, before enquiring into the haunts and habits of the Serotine, to consider the characters which serve to distinguish it from the Noctule.

In regard to size, the following table will show the respective measurements of the two species:—

Name of Species.	Length.	Tail.	Head.	Ear.	Tragus.	Fore-arm.	Thumb.	2nd finger.	4th finger.	Tibia.	Foot and claws.
<i>V. noctula</i> . .	3.0	2.0	0.9	0.75	0.25	2.0	0.3	3.7	2.1	0.75	0.45
<i>V. serotinus</i> . .	2.75	1.8	0.9	0.75	0.35	2.0	0.3	3.5	2.0	0.75	0.35

In extent of wings the Serotine measures about $12\frac{1}{2}$ in.* against $13\frac{1}{2}$ to 14 in. in the Noctule, so that when flying it looks comparatively shorter and broader. When examined at close quarters the extremity of the wing is seen to be very pointed. The tail also is long and pointed. In the size of the head there is apparently little difference, but the tragus is longer and more pointed in the Serotine than in the Noctule.

The dentition in the Noctule is—

$$I. \frac{4}{6}; c. \frac{2}{2}; pm. \frac{4}{4}; m. \frac{6}{6} = \frac{16}{18}.$$

In the Serotine we find—

$$I. \frac{4}{6}; c. \frac{2}{2}; pm. \frac{2}{4}; m. \frac{6}{6} = \frac{14}{18}.$$

The only difference being that there are two premolars less in the upper jaw of the Serotine than are found in the Noctule, and the teeth (32) are fewer in number than in any other British species of this family. The upper incisors are remarkably long and bifid at their extremities; the lower incisors trifold.

The colour of the fur, which is soft, long, and silky, resembles that of the Noctule in being of a deep chesnut-brown; but there is this difference observable, that whereas in the Noctule the colour of the dorsal and ventral surfaces is alike, in the Serotine the under parts are always much paler, approaching to grey or yellowish grey. It has been remarked, however, by Bell, that the Serotine is liable to greater variation in colour than any other European bat.

The general similarity of the two species here compared may excuse their being sometimes confounded, especially when so good a naturalist as Geoffroy made the curious mistake of describing each under the name of the other ('Annales du Muséum,' vol. viii. p. 194). The late Dr. Gray, of the British Museum, in a 'List of the *Vespertilionidæ* of Great Britain' (Zool. Journ. ii. p. 108), included the Serotine as seen "about London," but we imagine the Noctule must have been mistaken for it. We have observed the latter repeatedly in London flying over the Serpentine, in Kensington Gardens, and around the ornamental

* This is Bell's measurement of the extent of wings in the Serotine, but we have measured specimens which extended an inch longer than this, and equalled the Noctule. Some allowance must doubtless be made for the age of the specimen measured.

water in St. James's Park, but have never met with specimens of the latter in Middlesex; notwithstanding the statement in Jenyns's 'British Vertebrate Animals' (p. 22), that "it has hitherto only occurred in the neighbourhood of London."

The nearest point to the Metropolis at which the Serotine has been found, we believe, is Dartford Heath, in Kent, where many years ago specimens were obtained by the late Frederick Bond. From the records which we have collected, it would appear that it has been met with more frequently in Kent than in any other county of England, and its range in this country, so far as has been ascertained, seems to be entirely confined to the south-eastern counties. At Folkestone it was discovered more than forty years ago by Mr. H. N. Turner (Zool. 1847, p. 1635), and Mr. G. Buckton secured specimens at Chartham Paper Mills, near Canterbury. In September, 1874, we received from Mr. William Borrer, of Cowfold, near Horsham, an example of the Serotine which he had shot some years previously at Charlton, near Dover, where at that time it appeared to be not uncommon.

Mr. Borrer's notes on this species, which were communicated to 'The Zoologist' (1874, p. 4126), are particularly interesting. He says:—

"The first specimen I ever saw was taken at Bonchurch, Isle of Wight, and was sent me by my friend the Rev. A. C. Bury. On the evening of the 10th July, 1851, whilst walking in a lane at Charlton, near Dover, I saw a bat which I at once knew from its flight was of a species I never before saw alive. The next evening I shot a male of this species, and the night after, at the same place, a female; and on the 21st, near Riverchurch, in the same neighbourhood, another male, and I this night saw several others of this species. They commenced their flight about a quarter before nine, and at first they flew very low, hovering occasionally to catch something from the ends of the branches of the trees, in which act I shot the first.* As the night got on, they flew higher, and between 9.30 and 9.45 they flew altogether out of gunshot in height. On the 3rd August I received from Mr. Gordon, of the Dover Museum, a half-grown one, taken from a hole in a tree near Waldershare, Dover; and in October, 1851, I received from him fifteen specimens alive, male and female. Of these I turned ten into the roof of my house at Cowfold, Sussex, and saw them careering round the house many evenings after. They generally flew

* The late Frederick Bond informed us that he had watched the Serotine taking moths off the blossoms of the blackthorn.

very high, their flight and manner on the wing much resembling those of the Swift, especially the habit of occasionally turning half over, with their wings extended and motionless. In April, 1852, three or four only appeared, and these I saw most evenings till in July I left home for a month, and saw no more of them till the 31st October, when a pair were again flying about my house. This species seems to be especially savage when handled, and will bite most severely if they have a chance. I could not make them take any food in confinement. These were all taken from the old clock-tower at Waldershare, the seat of the Earl of Guildford. After the last-mentioned date I saw them no more at Cowfold; but in June, 1870 or 1871, I found that they had become common at Henfield, about five miles south of Cowfold, where they appear to have remained ever since, probably inhabiting the church, for they are generally to be seen flying about some old trees in a meadow near. As I studied bats for many years at Henfield, and was a close observer, I feel certain that the Serotine was not there thirty years ago (say in 1825), and I cannot avoid the conclusion that they are my bats which migrated in a body from Cowfold."

Further westward we should expect to hear of the Serotine in Hampshire, for, according to the testimony of several observers, it is not uncommon in the Isle of Wight. The Rev. C. A. Bury, at Bonchurch, and Messrs. Bond, Hadfield, and A. G. More have all testified to its occurrence there. The last-named observer remarks, in a list of Mammalia printed in Venables' 'Guide to the Isle of Wight' (1860), p. 408:—"The Serotine appears to be generally distributed, and by no means scarce. It has been obtained repeatedly at Bembridge, where it was very common until the recent felling of old timber and clearing of hedgerows prescribed by the present advanced state of farming. Newchurch, Godshill, and Brigstone are also known to produce this species, said to be rare in Britain. The large bats shot by Bond 'round the cliffs near the edge of Freshwater Down, measuring three inches more than the Serotine across the wings,' and included in Mr. A. G. More's list (p. 409) as the Mouse-coloured Bat [*V. murinus*], to which species they were at first referred, were found on subsequent examination to be merely fine examples of *V. noctula*."

It should be observed here, that on a comparison of measurements, we have not found a greater difference in the extent of wing of these two species than about an inch and a half. Bell, however, referring to the variation of colour to which the Serotine is liable (Brit. Quadr. 2nd ed. p. 46), remarks that he

has seen specimens from the Isle of Wight and from Folkestone which were of a decided greyish tinge, and of *somewhat greater size than usual*.

Further to the westward than the Isle of Wight, and perhaps the opposite coast of Hampshire, we cannot hear of it, and all attempts to discover this bat in the Midland counties or further north have been hitherto unsuccessful. It is either not known, or not distinguished from the Noctule.

The only point *north* of London at which, so far as we are aware, its occurrence has been noted, is Coggeshall, in N.E. Essex. In a communication made to this journal in April, 1883 (Zool. 1883, p. 173), Mr. Miller Christy wrote as follows:—“Although the bats found in the county of Essex have received in the past a fair share of attention at the hands of Yarrell, Doubleday, and Messrs. Joseph Clarke and Henry Laver, the occurrence of the Serotine, *V. serotinus*, has not hitherto been recorded, having perhaps been confounded with the Noctule. I am glad therefore to be able to state that Mrs. Joseph Smith, of Great Saling, has in her possession a specimen of this bat which was shot more than twenty years ago [*i. e.* prior to 1863] in the garden of Pittiswick Hall, near Coggeshall. It is so shrunk through bad stuffing that it is useless to give its dimensions.”

There is said to be a specimen of the Serotine in the Museum at Newcastle-on-Tyne, which was taken at Cleadon in 1836, and presented by Mr. W. A. Swinburn (Meynell & Perkins, Cat. Mam. Northumb. Trans. Tyneside Nat. Field Club, vol. vi. 1864, p. 164), but it is more likely to be the Noctule, which is not included in the same Catalogue.

The specimen from which our illustration was taken was kindly forwarded to us for identification by Mr. George Dowker, of Stourmouth House, Wingham, Kent, on the 1st August, 1890, having been shot in that neighbourhood the previous evening. It was at once despatched to Mr. G. E. Lodge, who was thus enabled to take its portrait while still in a perfectly fresh condition, a matter of no small importance. Should this figure (which is on a much larger and more useful scale than that given by Bell), and the accompanying remarks, enable some of our readers to identify the species in districts where it has been undetected, our chief object in penning these lines will have been gained, and we shall hope to be made acquainted with the result.

THE HABITS OF THE MOOSE IN THE FAR NORTH
OF BRITISH AMERICA.

BY J. G. LOCKHART.*

THE MOOSE is common over the whole country as far north as the borders of the barren grounds. In the valley of the Yukon, and on the west side of the Rocky Mountains, Moose are particularly numerous, and continue so westward to Behring Strait. There are particular localities where Moose are rarely, if ever, seen. For instance, so far as I have heard, they never approach the shores of Hudson's Bay near York factory. They are very rarely killed in the vicinity of Fort Rae, although they are quite numerous at Big Island and along this side of the lake.

The females have one or two young at a time. They have sometimes, but very rarely, been killed with three young inside; but no one, Indian or white, that I have known, ever saw a female followed by three sucklings or yearlings. For this I have never heard a reason assigned. Since the female has four teats giving milk, one would suppose that she might suckle as many as three young.

The food of the Moose consists of willows, small birch-trees, and shrubs, and also of grass and hay. Sometimes two or three will pass an entire winter near certain small lakes or large grassy swamps, in which they feed, scraping off the snow with their feet. In winter, when no water is to be had, they eat snow freely. In winter also the females are most sought after, because they are the fattest. In summer the male is best for the same reason.

* From the 'Proceedings of the U.S. National Museum,' vol. xiii. (1890). The manuscript of this paper was received from Mr. Lockhart in 1865, while he was an officer of the Hudson's Bay Company, of London, and has been preserved in the archives of the Smithsonian Institution. Between 1860 and 1870 Mr. Lockhart made many valuable contributions to the National Museum, including insects, birds, mammals, and fossils from Mackenzie River, Alaska, Great Slave Lake, and Hudson Bay Territory. For more than thirty years the Hudson Bay Company has zealously co-operated with the Smithsonian Institution in increasing the ethnological and natural-history collections of the National Museum. The objects thus received from Mr. Robert MacFarlane, Mr. Lockhart, and other agents of the Company, have added greatly to our scientific knowledge of British North America.

In fall, when the females are rutting, the males become very emaciated.

There are various modes of hunting the Moose, detailed accounts of which would be, I fear, too tedious. The first and most usual way is to approach the animals on snow-shoes or on foot, as only a hunter knows how, and shoot them. The old men who are not able to walk much in deep snow make a kind of fence of three poles tied equidistant from each other, a little taller than a man, stretching perhaps for two days' march between lakes, or a lake and a river, or between two mountains, or in any particular place where the Moose are accustomed to pass. Spaces are left vacant here and there in this fence, and in these snares are set. In autumn, during the rutting season, the hunter carries with him the clean, dried shoulder-blade of a Moose, and when he hears the call of the male Moose, which is audible at a distance of several miles, he rubs the shoulder-blade against a small, dry tree and imitates the call of the male. The Moose, as soon as he hears the sound, imagines no doubt that it is another Moose, and runs in the direction, till met by a shot. The male is very dangerous at that season, especially when wounded.

Many years ago, before guns and ammunition found their way into this country, the Indians used to build snow embankments near favourite feeding places, and lie hid there for days until a Moose should chance to pass near, when they would kill him with arrows.

I have been told that they run the Moose with horses in the plain country along the Saskatchewan. So long as the Moose keeps his trot, a horse cannot catch him, but if he can be forced into a gallop he soon becomes blown, and is then easily overtaken. The hunter uses every precaution, and having approached as near as possible to the animal, unperceived, he mounts, and putting his horse to its utmost speed generally surprises the animal so as to make it break into a gallop.

All Indians in the north have certain superstitious notions regarding the Moose. I have tried hard to prevail upon the Chippewyans to bring me some heads and horns, but without success. The reason for this is that the Indian women during their menses are not permitted to eat or even touch a Moose head, for should they do so they firmly believe that the captor will kill no more that winter. They say that this has been

remarked and proved since time immemorial. Now there are many women in the Fort, and they are continually going about from house to house, and, it may be, sitting and driving about on the dog-sleds upon which a head would require to be placed if brought from a distance. A head and horns brought to the Fort, cleaned and preserved, would doubtless be visited and handled by women, and if any of them should happen to be in the proscribed state it would finish the hunting success of the Indian who killed the Moose that year. At other times the women, as well as their husbands, handle and eat the heads. The Loucheux of Peel River and the Yukon are strict only with regard to the first Moose an Indian kills after having starved for a period. Of this the women are scarcely allowed to taste, and on no account must they taste the head. These Indians have no objection to part with Moose heads, if assured that no portion, even of the refuse, will be given to a dog to eat. They cannot be prevailed upon to bring young ones to the Fort alive, although many are caught every spring while crossing rivers and lakes. They say this would spoil their hunting altogether; but why, I could never get one to explain; probably the idea has some connection with the superstitions entertained among the Chippewyans regarding the women.

In spring, when the females are near calving, they proceed to places where they are least likely to be disturbed by Wolves, such as islands in lakes and rivers, and also in prairies and large swamps which are overflowed with water at that season; there they search for a dry spot among thick woods where they may bring forth their young. When the calves are very young the mother in their defence will even attack a man. At such times her appearance reminds one forcibly of that of a vicious horse. She raises her head, throws back her ears upon her neck, and sniffs or blows like a horse; then she bounds toward her enemy, striking the ground with her fore feet, her eyes glittering with rage.

When the snow happens to be very deep, Moose are run down on snow-shoes and killed with arrows. In spring, when there is a crust, accidents frequently happen in this species of hunting. If the hunter chance, from the nature of the country, to run too near the Moose, after he is fatigued, he will turn like lightning, leap toward his assailant, and trample him under foot. I have known several people who had very narrow escapes of this

kind. On one occasion three Indians were hunting and fell upon the tracks of a female Moose and her young one. They immediately gave chase, and in a short time the "Mannisheesh," or young one, became fatigued and stopped. One of the Indians, who had left his companions a short distance behind, approached in his haste too near the game. The young Moose instantly leaped towards him. In his eagerness to escape, his snow-shoe caught in a willow, and down he went with the Moose on top of him bucking and trampling with all four feet. His companions came up. The Moose again took to flight, and they went to pull out of the snow what they were quite certain would be a mangled corpse, but the man had scarcely received a scratch, so they shook him, and, joining in a hearty laugh, started again in pursuit.

The Moose down at Peel River and the Yukon are much larger than up this way. There I have known two cases of extraordinary Moose having been killed, the meat alone of each of them weighing about 1000 pounds. The Loucheux have a superstition that the Indian who meets with one of these extraordinarily large Moose is sure to die within the year, or else meet with some grievous misfortune.

A north wind in winter, when the sun does not rise high above the horizon, affords the best chance for Moose hunting. From some cause which I do not understand, the sun being then towards the south, shining against the wind, causes the tracks to be seen from a considerable distance. The hunter thus sees from a distance in which direction the Moose has gone, and acts accordingly. When the winds come from the east, west, or south, the tracks can rarely be distinguished more than a few yards off, and thus frequently they start the game in an unexpected quarter, without being able to get a shot.

Moose rise and feed at dawn. About sunrise they again lie down to chew the cud or sleep till 10 or 11 o'clock. Then they feed till 2 o'clock in the afternoon, again lie down till 4 or 5 o'clock, then feed till dusk, when they lie down for the night.

They generally lie down with their tails to windward, trusting to their senses of hearing and smelling, which are remarkably acute, to warn them of approaching danger from that quarter; they can use their eyes to warn them from danger to leeward, where hearing, and especially smelling, would be of little use.

While sleeping or chewing the cud, their ears are in perpetual motion, one backward, the other forward, alternately. They also have the remarkable instinct to make a short turn and sleep below the wind of their fresh track, so that any one falling thereon and following it up is sure to be heard or smelt before he can get within shooting distance.

ORNITHOLOGICAL NOTES FROM MAYO.

BY ROBERT WARREN.

THE winter of 1890-91 will be well remembered on account of the severe and long-continued frosts and heavy snow-falls in England, and also for the unequal distribution of the cold weather throughout the British isles, the central and southern counties appearing to suffer most; while here in Ireland, and especially in the west, we had a far milder season of comparatively slight frosts, without snow. So the effects on animal life were scarcely perceptible on this west coast, no birds suffering except the Black-headed Gulls, the various species of small birds that died off in such numbers in 1878-79 and 1880-81 escaping altogether. I saw no dead ones lying about, nor any sickly or weakly individuals moping about with ruffled feathers, as seen in previous winters.

In this district the winter set in with unusual mildness, and an excessive rainfall, there being only three dry days in November, and no frosts until the nights of the 26th, 27th and 28th, when the mercury in a thermometer (six feet from the ground) stood at 27°, 25° and 27°; but the temperature rose again above freezing, and on the nights of Dec. 1st and 2nd it stood as high as 48° and 51°, after which dates it began to fall gradually until the night of the 7th, when the thermometer marked 30°, and from that until the end of the month we had a continuance of slight frosts, with occasional thaws on odd days, the mercury never falling below 28°, and the average minimum temperature of the month being only 33½°.

The New Year began with the temperature at freezing, gradually falling until the nights of the 5th and the 7th, when, with a bitter E.S.E. wind, the mercury fell to 23° and 22°, indicating nine and ten degrees of frost; and on the latter night we had the

first snow of the season; at 11 p.m. it covered the ground to a depth of three inches, there being every indication of a heavy fall; but towards morning, with a change of wind and a rise of the thermometer to 32° , rain came on, clearing off all the snow by sunrise. Then until the 13th (when the general thaw set in) we had the same continuance of mild frosts, the mercury varying from 32° to 28° (the lowest), and on the nights of the 15th and 16th it rose to 39° and 40° . We had no frost after until the 20th, when, with a light fall of snow, the thermometer marked two degrees of frost, but that disappeared with the snow by noon next day, and the rest of the month was fine and mild, with a few showers of rain occasionally.

February began with a light frost, but the entire month was exceptionally mild and dry—in fact, the driest February we remembered in this part of the country, quite belying the old saying of “February, fill dyke,” for we had twenty-two days without rain, and a light hoar-frost only on three days.

After March 5th cold, stormy weather set in, with frequent hail and snow showers on some days, but not remaining on the ground. A bitter frost began on the night of the 10th, becoming very severe on the two succeeding nights, when the mercury (in a thermometer eighteen inches from the ground) fell to 22° and 20° (the coldest night of the season), but fortunately, the wind changing round from N.N.E. to S. caused the frost to disappear as rapidly as it came, though not before it alarmed many farmers who had potatoes planted, for fear of its having reached the “sets,” so deeply had it penetrated into the soil. For the rest of the month the weather continued very stormy and cold, no vegetation of any kind showing; and, in the midst of blinding hail showers, our earliest spring visitors, the Sandwich Terns, loudly gave notice of their arrival in the estuary.

Owing to the ground being so long frozen, preventing any worms coming to the surface, the Black-headed Gulls suffered severely from want of food from the middle of December up to Jan. 13th, when the thaw set in; numbers died throughout the district, and were seen lying about the fields and along the shores of the estuary, where they had been left by the tides. So hard pressed were they for want of food, that a flock of about twenty birds regularly haunted my poultry yard for nearly three weeks, feeding with the fowls, and flying readily to any food thrown to

them. A couple of Common Gulls occasionally joined them at the poultry-trough, but not every day, for these visits were resented by some of the Black-heads, who used to attack and drive them off. Some of the Gulls were very weak, scarcely able to fly out of the yard when disturbed, and from day to day I used to miss out of the flock several well-marked individuals that had probably died at night of cold and starvation. Some Blackbirds and Thrushes, with a few Missel Thrushes, regularly fed at the troughs until the thaw; but two days after it set in, not a Gull appeared in the yard.

At Belleek Manor, near Ballina, over a hundred Gulls haunted the terrace outside the hall-door, where they were fed regularly during the frost, and so tame had they become as to take food from the hand. The Fieldfares and Redwings mostly left this part of the country after the frost set in, only a few Redwings remaining about the thorn-hedges to eat the haws. In consequence of there being no snow on the ground, the small birds appeared to manage to obtain sufficient food, for none of them were driven to seek food on the shore, as is usual in hard winters in this locality. There was an immense migration of Wigeon in the estuary, as if they were crowding in from the colder parts of the country, and I remarked quite as many as in the severest winters, such as 1878-79 and 1880-81; but, except on two or three nights, the frost was not hard enough to drive the Wild Ducks out of their inland haunts to the sea-coast, and in consequence they were not seen in anything like the numbers observed in the estuary during the winters mentioned.

There was a great migration of Woodcocks to all the coverts, and unusually heavy bags were made in Mayo, Sligo and Galway. The White-fronted Geese were very numerous, and many were trapped at the unfrozen springs where they fed. I saw several hanging in a game-dealer's shop in Ballina that had all been taken in the ordinary rabbit-traps; one was a young bird of the year, in very dark plumage, not having a trace of white round the base of the bill, nor any black marking on the breast, and only for the colour of feet and bill was rather puzzling to identify. Very few Swans were noticed passing across the country, though I was told that eight or ten visited Lough Conn, and that larger numbers were seen on the lakes in the Erris district.

I was disappointed in not meeting with rare birds during the

severe weather, although I was constantly on the look out for such visitors, and frequently on the water punt-shooting in the estuary, I had ample opportunities for seeing any that might appear. On one day I saw a little party of eight Scaup Ducks near Killanley, and knocked down six out of the number, but owing to my cripple-stopper missing fire, two cripples got off. The four secured were all young males in first year's plumage, with the broad white patch on forehead, and the only trace of male plumage was a few of the grey wavy feathers appearing on the back, some scarcely visible. Shelldrakes were more numerous than usual; a flock of between thirty-five and forty haunted the sands all the winter, but most of these have now left, there being only three or four pairs remaining to breed in the Bartragh and Enniscrone sand-hills. Curlews were in great numbers, but few were shot, in consequence of deserting some of their old resting-places, having been so disturbed by the small-gun shooters; however, I obtained some fair shots, one of sixteen birds on the bank near the island of Baunros, and another of eighteen on the bank near Rosserk Abbey; on both occasions a little after daybreak.

One of the most extraordinary and interesting sights of the season was the immense congregation of Green Cormorants that used to assemble for some weeks in December and January on the lower part of the river, where it runs outside the bay, just inside the "bar." Here, after fishing, many hundreds—up to two thousand—birds used to rest at low-water on the sands at both sides of the channel; and when this great flock used to rise on the wing at the approach of a punt or boat, the sight was most bewildering and confusing, for nothing could be seen but this mass of dark forms circling round and crossing and recrossing in all directions over the punt until they all had satisfied their curiosity by a good look at the boat and its occupant. Where this immense gathering of Cormorants could have come from I cannot imagine, for I never before saw a larger number than one or two hundred birds resting on the sands either at the Moy or Killala bars, and nothing like the numbers could have been bred on this line of coast. The only explanation I can suggest is that a great part of them had shifted their quarters along the coast from the more northern bays and inlets.

NOTES AND QUERIES.

MAMMALIA.

Animals eating Yew.—The poisonous properties of the yew referred to (pp. 151, 186) is, at all events in the Midlands, a well-known fact to agriculturists. I can well remember the painful result of a herd of cattle breaking into a spinney of yew trees, and feeding on the leaves. The incident I refer to occurred some years ago in Leicestershire, and, without going into details, it will suffice to state that, out of twenty-five well-fed bullocks, eighteen were dead in the morning. I think the generally accepted hypothesis is, that the leaves have a narcotic acrid effect, acting more on the spinal cord than on the blood! Mr. FitzGerald's supposition (p. 186) is certainly wrong; but I believe the nature of the case greatly depends on the quantity swallowed, for if taken with, say, three or four times the quantity of their ordinary food, it is said that the foliage of this plant is comparatively harmless.—C. E. STOTT (Bolton-le-Moors).

Daubenton's Bat near Edinburgh.—I have recently examined specimens of this probably overlooked species, which were captured at Liberton, near Edinburgh, in July, 1880, and supposed to be specimens of the Pipistrelle, *Vesperugo pipistrellus*. Daubenton's Bat, *Vespertilio daubentonii*, has not, I believe, been hitherto recorded for this county.—W. EAGLE CLARKE (Science and Art Museum, Edinburgh).

CETACEA.

Common Rorqual on the Essex Coast.—I had an opportunity of examining the whale which was captured on Feb. 12th, at Holliwell, about four miles from Burnham-on-Crouch, and found it to be a Common Rorqual, *Balænoptera musculus*, female, not fully grown, measuring a little under 47 ft. in length, and in poor condition. The most interesting feature to remark is the curious asymmetry of colour which appears to be a constant character of the species, and, though unnoticed or unrecorded till of late years, is nevertheless very apparent to a careful observer; in this specimen, on the left side, the top of the head, the under jaw, and the baleen (so-called "whalebone"), pendant from the upper jaw, being of slaty-black colour; whilst, on the right side, a portion of the upper jaw, about 2 ft. of the baleen in front, and a strip of the under jaw to about 5½ in., were white, whilst the throat was slate-black, extending in an oblique line to the junction of the pectoral fin; the remaining portion of the throat and under parts being white nearly up to the tail-flukes. This difference of colour on the two sides of the head was first recorded and figured by Prof. G. O. Sars (Christiania Videnskabs Sels, and Forh. 1880).

This species is perhaps the most common of the Finner Whales or Rorquals, and has been frequently stranded and captured on the British coast, especially in the north, and many skeletons are preserved in British and continental museums. Its fully-grown length is from 65 to 70 ft., and the two skeletons which are to be seen in the Natural History Museum at South Kensington are about 68 ft. in length. To one of these are attached the preserved dorsal fin and the tail-flukes. In conclusion, it may be well to mention that the whale which was taken in the river Crouch, on the opposite side, on Nov. 1st, 1883, was a specimen of Rudolphi's Rorqual, *Balenoptera borealis*, and was about 29 feet in length. This was described by Prof. Flower in the 'Transactions of the Essex Field Club' and the 'Proc. Zool. Soc.', and the skeleton now abides in the Museum at Sydney, New South Wales.—WALTER CROUCH (Wanstead, Essex).

Sibbald's Rorqual on the Irish Coast.—A well-grown specimen of this whale was taken in Wexford Bay on the 28th March last, and the following particulars have been kindly sent to me by Mr. Jasper Walsh, Lloyd's agent at Wexford, who obtained the information at my request, and says that, so far as it goes, it may be relied on. A photograph which he sent, showing the whale half in the water, was too small to be of any use in identification. It was probably a female, the upper parts black, and the lower slate-colour, and the extreme length 82 ft. The measurement from the eye to end of lower jaw, $16\frac{1}{2}$ ft.; length of pectoral fin, $10\frac{1}{2}$ ft. by 2 ft. 7 in. greatest breadth; tail flukes, $8\frac{1}{2}$ ft. each: the dorsal fin extremely small, about 28 in. at base and 11 in. in height: the baleen black, about 2 ft. in length clear of the fringe. Prof. Flower informs me he has seen a portion of the baleen, and there is no doubt as to the species. The carcase was seized and sold by the Receiver of Customs, and was knocked down to Mr. W. Armstrong, of Wexford, for £111.—WALTER CROUCH (Wanstead, Essex).

BIRDS.

Dartford Warbler in Winter.—Can any of your correspondents give me any information about the Dartford Warbler after this severe winter? I am afraid that this rare and delicate species must have suffered severely. In spite of the severe weather, on March 24th I found a Song Thrush's nest with young ones, evidently hatched nearly a week. In the hard winters of 1879 and 1880 the Golden-crested Wrens, previously very numerous here, were almost exterminated. Since then they have been increasing again, and, I am glad to say, seem to have stood this winter fairly well. As there are several about still, I hope the Dartford Warblers may have escaped as well.—W. B. PUREFOY (Greenfields, Tipperary).

[We hear from Dorsetshire that, in a locality where the Dartford Warbler used to be found, not one has been seen since the severe frost of

the past winter. We presume our correspondent is aware that this bird is unknown in Ireland. From his letter it might be inferred that it is to be found in Tipperary.—ED.]

Blackcap in Sussex in Winter.—You may add Sussex to the counties in which the Blackcap has been seen this winter. On Feb. 22nd I saw a hen bird of this species on the street pavement searching for insects in scraper-holes and the corners of entrances to houses. The bird looked very puffy, and permitted me to come within a foot of it, but had enough life in it to fly upon a wall when I attempted to catch it with my hand. I noticed it several times during the day, but not afterwards.—S. H. VERRALL (Lewes).

Red-throated Diver and other Birds in Notts.—During October last Lord Middleton shot, on the lake in his park at Wollaton, a nice specimen of the Red-throated Diver and a female Scaup. A Common Buzzard was obtained, during the same month, near Nottingham; and Mr. Barron shot a pair of Pintailed Ducks, just over the boundary, in December. Mr. Masters shot two Bean Geese at Annesley Park during the same month. Two Smews were shot on the Trent, near Beeston, and one on the same river at Shelford.—J. WHITAKER (Rainworth, Notts).

The Evolution of Bird-song: a Correction.—In my second article on the "Evolution of Bird-song" (Zool., 1890, p. 284), I stated that the Kittiwake and the Peregrine Falcon had a similar cry; I should have said that the Herring Gull and the Peregrine had a similar cry—a note like "horrock." I am engaged on a work upon Bird-song, and should be glad to receive records of remarkable instances of imitation, &c., by wild or captive birds. I should like to add that the theories stated in the articles in question have been supported by my later observations, and by many facts which I have gleaned from several authors.—CHARLES A. WITCHELL (Stroud).

The Birds of Heligoland.—The long-expected appearance of Mr. Gätke's volume on the Birds of Heligoland will be hailed with satisfaction by ornithologists. The work, which has been in hand for many years, has been edited by Prof. Rudolf Blasius, and published in Brunswick. It is a handsome, well-printed, royal octavo volume of 609 pages, and represented on the pretty cover is a lighthouse, in black and gold, radiating beams of light into the night, with a cloud of birds drifting past, and with the appropriate title of the book below—'Die Vogelwarte Helgoland.' The work is divided into three sections, the first of which has reference to the migration of birds under the various headings:—(I.) The ordinary migration of Heligoland. (II.) Direction of the migrants. (III.) Height at which migrants travel. (IV.) Speed of migrants. (V.) Meteorological conditions influencing migration. (VI.) Migration in connection with age

and sex. (VII.) Exceptional appearances. (VIII.) What guides the birds during their migrations? (IX.) What leads to the setting out for migration? In Section II. we have a chapter on the change of plumage in birds by the renewal of colour without a moult. The remainder of the volume is occupied by a list and descriptive text of 396 species which have been observed and noted at Heligoland up to date. The book is charmingly written, and the author's descriptions of bird-life, as seen on passage on the island, are full of life and vigour, and expressed in a graphic and picturesque manner. Of the great scientific value of the work, at last accomplished, I need not now speak; containing, as it does, the carefully recorded experiences of more than forty years at the best station in the world for watching the migration of birds, this volume must be invaluable to ornithologists, and it seems highly desirable that an English translation should be prepared and published with as little delay as possible. — JOHN CORDEAUX (Great Cotes, Ulceby).

Variety of the Wild Duck.—Mr. Foljambe sent me, during the frost, a very pretty variety of the Mallard. Breast greyish white; neck rosy grey; back pale slate-colour, speculum two shades darker; curled feathers in tail slate-colour, and rump the same colour.—J. WHITAKER (Rainworth, Notts).

Lapland Bunting in Lincolnshire.—On Nov. 18th last I shot a specimen of the Lapland Bunting, *Calcarius lapponicus*, among the sandhills at North Cotes, on the Lincolnshire coast. It proved to be a male in winter plumage, and was alone, feeding on the ground among the long bents, and in its movements, &c., resembled a Snow Bunting. It had probably just come in, as, though late in the day, its stomach contained only a few seeds and husks of two species of grass growing on the sandhills. On the same afternoon I saw the first large flock of Snow Buntings coming in from the sea; and among the sandhills were a few Yellowhammers and many Reed Buntings, all probably fresh arrivals. The weather was fine and warm, with a light W. wind.—G. W. CATON HAIGH.

Wildfowl in Devon during the Winter of 1890—91.—The winter of 1890—91 will ever be remembered as being one of exceptional severity, and one which has driven to this county immense flocks of wildfowl; never have so many been seen and obtained before. I have myself been very fortunate in obtaining a few good specimens for my collection. Wild Duck and Wigeon have been shot by the hundred, and Teal in less numbers. The Smew, a rare winter visitant, has been obtained on three or four occasions this winter, one of which I examined was a male in full dress: birds in this plumage are seldom met with, as they keep farther out at sea, and rarely approach the shore. I also examined, at the same time, a male

Pintail, in perfect plumage, which had been shot on the estuary of the Exe. Flocks of Shelducks appeared on the River Exe, and several were sent to the poulterers for sale. Scaup, Pochard and Goldeneye have also been procured, the latter in rather large numbers. I have detected many of these at our game-dealers, as also several specimens of the Red-breasted Merganser. Immense flocks of wild geese, chiefly Brent Geese, continued to visit us from the commencement of the severe weather. A few specimens of the Bean Goose were shot early in January, one of which I fortunately obtained, as also a specimen of the White-fronted Goose. When shooting on the River Exe, on Jan. 19th, I was astonished to see such flocks of Brent Geese, which were pursuing their course from the sea to the river, and *vice versâ*: several gunners were awaiting their arrival, some of whom were successful in obtaining specimens, myself included, having added two splendid birds to my collection. A few Whoopers were seen, and I believe two or three examples were secured. I should say that this has been an exceptional winter for Bitterns, judging from the reports of their occurrence: I have examined several specimens obtained in this county. Woodcock and Snipe have been very plentiful.—WM. E. H. PIDSLEY (Blue Hayes House, Broadclyst, Devon).

American Bittern in Co. Kildare.—An American Bittern, *Botaurus lentiginosus*, was shot on Maddenstown Bog, near Newbridge, Co. Kildare, on the 20th February last. It was a female bird, weighing 1 lb. 3 ozs., and was in fair condition. It is a curious fact that another bird of the same species was shot on the same bog last year, and is preserved in the collection in the Museum of Science and Art, Dublin.—EDWARD WILLIAMS (2, Dame Street, Dublin).

Crossbills breeding in Co. Waterford.—On the 16th May, while in a tree with a Siskin's nest, a flock of nine Crossbills flew past, uttering their loud rattling note; so they have not forsaken Cappagh, but having probably bred earlier than last year, owing to the mildness of February, the broods have now flocked and are flying around their breeding-haunt.—R. J. USSHER (Cappagh, Co. Waterford).

Wild Swans in the Isle of Man.—During the past winter several Wild Swans appeared in the Isle of Man. About the commencement of this year one was observed in Douglas Bay, which was very tame, coming close to the landing-pier, from which it was twice fired at. Later on several were seen at Port St. Mary, one of which seemed to be wounded. About the middle of January one was shot at Scarlett, near Castletown, and proved to be a Whooper. At the same time I happened to be in the north of the island, and was there told that a Wild Swan had been captured on a pond about twenty yards wide. The bird sat on the ice covering the pond, and as it did not rise when approached, a rope was

stretched across and it was drawn in to the bank. It was found to have one of its legs broken, which may have caused its inability to rise. It was taken to a farm, but refusing to eat, was put out on the pond again, where it was found dead the next day. It had been left under some gorse for over a fortnight, when I got to the place, and immediately had it skinned and sent to Manchester to be set up; fortunately it was in time for preservation. This was a Bewick's Swan. The place where it was caught was at Orrisdale, Kirkmichael, very close to the sea-coast brows. The winter here was very mild, but an unusual quantity of wildfowl arrived. On February 19th, three Shovellers, *Anas clypeata*, two drakes and one duck, were shot at Langness, out of a party of four. The Shoveller seems to be a very rare bird here.—FRANK NICHOLSON (1, Laureston Terrace, Douglas, Isle of Man).

Turdus migratorius in the British Islands.—On the 4th of May last, an adult male American Robin, or Red-breasted Thrush (*Turdus migratorius*), was shot at Springmount, Shankhill, a few miles from Dublin. Mr. Murphy saw it feeding in a field, and recognising it to be a stranger, sent for a servant-man to shoot it. It was in good condition, and the stomach contained the remains of beetles. It was sent to Mr. Edward Williams, of 2, Dame Street, Dublin, who showed it to Mr. A. G. More before he skinned it, and sent it to me directly afterwards, whilst the skin was still soft. It does not show any sign of having been in a cage, the feet being quite clean and healthy, and there is no sign of undue abrasion on either wings or tail. It is in almost full breeding plumage, and belong to the typical or eastern race of the species; the tail being very dark, and the white patches at the end of the outer feathers being well developed. This species has been previously recorded as a British bird (Harting, 'Zoologist,' 1877, p. 14), an example having been caught alive in April or May, 1876, near Dover. It has also occurred on the Island of Heligoland, where a fine example flew against the lighthouse, and was picked up dead, on the 14th of October, 1874 (Gätke, 'Die Vogelwarte Helgoland,' p. 264). Four other European occurrences are recorded (Dalglish, 'Bulletin of the Nuttall Ornithological Club,' 1880, p. 68), one near Berlin, and three in Austria. Under these circumstances we may fairly claim the American Robin as a rare straggler to Europe, and add it to the list of British Birds.—HENRY SEEBOHM (22, Courtfield Gardens, S.W.).

Notes from Sussex.—The following notes are from the letters of an obliging correspondent residing at Pevensey. Writing on Oct. 27th last he says that a Marsh Harrier and a Great Grey Shrike were observed near Bexhill. Two Spotted Crakes and a Purple Sandpiper were shot at Pevensey. On Dec. 10th he records a Shieldrake, and remarks that he has not known one shot there for nearly twenty years. In a later letter,

after alluding to the severe weather which prevailed in December, my friend writes, "The flight of birds to the westward for a few days were astonishing, all going before the snow." This is probably part of the same flights already recorded (pp. 63—66). A male Bittern was shot in Hove Levels on Jan. 20th, and my friend saw another during the first snow: it passed within a few yards of him, while he was waiting for Duck at flight-time. Another Shieldrake and a Slavonian Grebe were killed near Pevensey about the middle of January.—T. H. NELSON (Redcar).

Winter Notes from Shoreham.—The frost began here on Nov. 26th with a shower of snow, the result of which was an enormous influx of all kinds of fowl, especially Snipe, which fairly swarmed in the unfrozen springs, and a great movement of small birds to the west, mostly Larks, Linnets, and Starlings. On the 29th I bagged several Snipe, all of which were in very poor condition, and picked up several frozen Larks. A Long-eared Owl was winged in the Warren, in mistake for a Woodcock, and although it never became tame it fed well, and was released as soon as its wound had healed. The first Brambling, *Fringilla montifringilla*, was caught in the bushes by the house on that day. On Nov. 30th the holly trees were full of Redwings, busily eating the berries, and a Grey Wagtail appeared in an unfrozen dyke. On Dec. 6th, caught a Cirl Bunting in the sparrow-net at night. On the 8th, shot the first Wigeon up the river, and a Sheldrake was seen; the unfrozen dykes were full of Water Rail and Snipe, both of which were very thin. There were large flocks of Larks flying west on the 20th, and on the 21st the Park was full of Bramblings in large flocks. On the 22nd, went out to sea, and saw several Brent Geese and a pair of immature Eiders; Great Northern and Red-throated Divers were following the shoals of sprats in hundreds; we must have seen fifty or sixty on the wing at once; a full-plumaged Goldeneye and a Short-eared Owl were shot by the river. On the 23rd two immature Tufted Ducks were shot in the river. On the 25th a Great Crested Grebe was seen by the Groynes. On Jan. 2nd two Bitterns were shot the other side of the river: I saw one of them, and it was in very good condition. On returning from the morning flight I found one in the Spring-dyke, but did not shoot it, and later on in the day flushed it twice again, once approaching it within five yards: it flew very heavily, with a low, croaking note. The keeper was put on to watch it, and it remained in peace till Jan. 9th, when at last it either strayed to the other side of the river or was poached, as it was not seen again, and the next day one was for sale in Shoreham. A large flock of Sheldrakes appeared, and one was shot, as well as an adult male Tufted Duck. A flock of twenty-two Geese flew over the Park and frequented the open downs for some days, but were unapproachable. I saw large numbers of Brent at sea flying to the eastward, and a Peregrine, which flew about the shore. On Jan. 4th there was a slight thaw, and I found large

numbers of Blackbirds, Thrushes, and Redwings lying dead under the evergreens, evidently frozen to the boughs at night and brought down by the thaw. On Jan. 10th, saw six Sheldrakes close to the shore, and a Bernacle Goose shot the previous day out of a flock of eight; it was in fair condition and in good plumage. Several Smews were shot, and a man from Brighton shot a Little Gull, *Larus minutus*. On the 22nd two Greylags, *Anser ferus*, were shot up the river, and weighed 7 lbs. and 6½ lbs. respectively; they were very good eating. The thaw then set in thoroughly, and the Rooks returned to roost in the Park, after an absence of nearly two months. Dead birds were then lying about everywhere, and I am afraid our garden will have but few nests this year.—F. HEAD (Buckenham, Shoreham).

FISHES.

Large Trout in the Thames.—At Medmenham lately Mr. Clare Sturgess took two Trout weighing respectively 11 lbs. and 7 lbs. These are fine weights for the Thames, and the capture is the more remarkable since they were both landed on the same day.

BATRACHIA.

Homing Instinct of *Hyla arborea* (Linn.).—Two and a half years ago I put a small green frog (*Hyla arborea*) that my daughter brought from the South of France into my conservatory. In the following spring he began to croak, and, contriving to make his escape, found his way to the pond where his strident voice awoke the echoes every summer evening. He always remained about the same spot, which was about 300 yards from the conservatory. Now comes the extraordinary part of his history. When the winter came on, he found his way back to the conservatory. This performance he repeated last year, and now again he has found his voice. That so small a creature should remember where he had been comfortable in winter, and find his way back to the conservatory across an open lawn, seems to me very extraordinary.—E. N. BUXTON (Knighton, Buckhurst Hill.)

INSECTS.

Locusts in India and Egypt.—Papers received by recent mails from India report a plague of Locusts in Northern India, and they are present in such swarms in the Jhelum district that the civil authorities are hard at work having them destroyed. Bad though matters are in the neighbourhood of Jhelum and Pind Dadan Khan, the damage caused by Locusts is even greater in the "teshils" of Chucknal and Tallagung. During the last week in April the railway between Jhelum and Demali was again so covered with Locusts that on several occasions the trains had to be taken on in sections along the line to avoid accident. These insects are said now to be leaving Lahore, though a few may still be seen about, but they soon fall

a prey to the Blue Jays and King Crows. In Egypt, too, the plague is assuming serious proportions, and the Government has delegated Mr. Hooker, a leading official, to leave for Upper Egypt, in order to take measures for the protection of the crops against the ravages of these insects. Mr. Wallace, Director of the Farming School, is charged with a similar mission to the Delta.

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

April 16.—Prof. STEWART, President, in the chair.

The following were elected Fellows of the Society:—Messrs. J. Oliver, J. H. Hill, W. D. Crotch, A. S. Woodward, and W. B. Longsdon.

A paper, by the Rev. F. R. Wilson, was read, "On Lichens from Victoria," in which several new species were described, specimens of which were exhibited.

A paper, by Surgeon-Major A. Barclay, followed, "On the life-history of two species of *Puccinia*, viz. *P. coronata*, Corda, and a new species which the author proposed to name *P. Jasmini-chryso-pogonis*. A feature of peculiar interest noted in the latter species was the extraordinary abundances and wide distribution of the teleutosporic stage as compared with the comparative scarcity of the æcidial stage, and this disproportion in the distribution of the two stages had been remarked by the author long before he had ascertained that they were related. A discussion followed in which several of the botanists present took part.

May 7.—Prof. STEWART, President, in the chair.

Messrs. J. H. Hill and J. Oliver, and Prof. A. Milnes Marshall were admitted, and Mr. M. A. Ruffer and Prof. Cramer were elected Fellows of the Society.

Prof. R. J. Anderson exhibited a panoramic arrangement for displaying drawings at biological lectures.

Mr. John Young exhibited a nest of the Bearded Titmouse, *Calamophilus biarmicus*, which had been built in his aviary. Several eggs were laid, but none of them were hatched.

The Rev. E. S. Marshall exhibited several specimens of a *Cochlearia* from Ben More, believed to be undescribed.

Mr. Robert Drane forwarded for exhibition a plant of the rayless daisy found growing abundantly in the neighbourhood of Cardiff; and an undetermined sponge dredged in about forty fathoms off the coast of South Wales.

Mr. D. Morris drew attention to a Jamaica drift-fruit recently found on the coast of Devonshire. Although figured so long ago as 1640 by Clusius, and subsequently noticed by other observers, the plant yielding it had only lately been identified by Mr. J. H. Hart, of Trinidad, as *Sacoglottis amazonica*. Mr. Morris likewise exhibited specimens of the fruit of *Catostemma fragrans*, received, for the first time, from St. Vincent, showing its true position to be amongst the *Malvaceæ*, tribe *Bombaceæ*.

Mr. Thomas Christy exhibited some kola-nuts, and made remarks on the properties attributed to their medicinal use.

A paper was then read by Mr. Malcolm Laurie on the anatomy of the genera *Pterygotus* and *Slimonia*, and their relationship to recent *Arachnida*. An interesting discussion followed, in which the President, Prof. Howes, Dr. H. Woodward, and others took part.

ZOOLOGICAL SOCIETY OF LONDON.

May 5.—Prof. W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of April, and called special attention to the arrival of what appeared to be an adult male example of the Lesser Orang, *Simia morio* of Owen, presented by Commander Ernest Rason, R.N., who had obtained it at Sarawak; and to a Great-billed Tern, *Phaethusa magnirostris*, obtained by purchase, new to the collection.

Mr. Sclater opened a discussion on the fauna of British Central Africa, by pointing out the limits of this new territory, which was computed to embrace some 54,000 square miles of land lying immediately north of the Zambezi and west of Lake Nyassa. Mr. Sclater gave an account of the principal authorities who have already written on the subject. He was followed by Mr. G. A. Boulenger, who read a paper "On the State of our Knowledge of the Reptiles and Batrachians of British Central Africa." The discussion was continued by Mr. Edgar A. Smith, who read a note on the Molluscan fauna of British Central Africa; and by Mr. E. T. Newton, who communicated some general remarks on what is known of the geology of British Central Africa, stating several points to which special attention should be directed. Remarks on various branches of the same subject were made by Dr. Günther, Mr. O. Thomas, Mr. Stebbing, Mr. Salvin, and Mr. Beddard.

Mr. T. D. A. Cockerell read notes on some Slugs of the Ethiopian Region, based on specimens in the collection of the British Museum.

Dr. C. J. Forsyth-Major read a paper containing a summary of our knowledge of the extinct Mammals of the family *Giraffidæ*.

A communication was read from the Hon. L. W. Rothschild, containing the description of a new Pigeon of the genus *Carpophaga*, from Chatham Island, South Pacific, proposed to be called *Carpophaga chathamensis*.

Col. Beddome read descriptions of some new Land-Shell from the Indian Region.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

May 6, 1891.—Mr. FREDERICK DUCANE GODMAN, M.A., F.R.S., President, in the chair.

Mr. Robert A. Dallas Beeching, of 24, St. James's Road, Tunbridge Wells, Kent; Mr. H. Shortridge Clarke, of Douglas, Isle of Man; Monsieur Léon Fairmaire, of 21, Rue du Dragon, Paris; Mr. Wm. Reid, of Pitcaple, Aberdeenshire; and Mr. Nelson M. Richardson, B.A., of Montevideo, Weymouth, were elected Fellows of the Society.

Dr. D. Sharp exhibited a number of eggs of *Dytiscus marginalis* laid on the sheath of a species of reed, and commented on the manner of their oviposition, which he said had been fully described by Dr. Régimbart.

The Rev. A. E. Eaton exhibited a collection of *Psychodidæ* from Somersetshire, including six species of *Psychoda*, eleven species of *Periconia*, and one species of *Ulomyia*. Mr. M'Lachlan commented on the interesting nature of the exhibition.

Mr. P. Crowley exhibited a specimen of *Prothoë caledonia*, a very handsome butterfly from Perak; and a specimen of another equally handsome species of the same genus from Tonghou, Burmah, which was said to be undescribed.

The Secretary read a letter from Mr. Merrifield, pointing out that the statement made by Mr. Fenn, at the meeting of the Society on the 1st April last, of his views on the effects of temperature in causing variation in Lepidoptera, was incorrect; he (Mr. Merrifield) had never suggested what might happen to *Taniocampa instabilis*, and had expressly stated that he had found a reduction of the temperature below 57° to produce no effect, whereas in Mr. Fenn's experiments the temperature must have been below 40°.

The Secretary also read a letter which Lord Walsingham had received from Sir Arthur Blackwood, the Secretary of the Post Office, in answer to the memorial which, on behalf of the Society, had been submitted to the Postmaster-General, asking that small parcels containing scientific specimens might be sent to places abroad at the reduced rates of postage applicable to packets of *bonâ fide* trade patterns and samples. The letter intimated that, so far as the English-Post Office was concerned, scientific specimens sent by sample post to places abroad would not be stopped in future.—H. Goss, *Hon. Secretary*.

NOTICES OF NEW BOOKS.

Wild Life on a Tidal Water: the Adventures of a House-boat and her Crew. By P. H. EMERSON. Illustrated with 30 Photo-etchings. Together with an Appendix "Breydon, Past and Present." London: Sampson Low, Marston & Co. 4to., pp. 145.

WE do not know who first introduced the fashion of writing handbooks to the Norfolk Broads, but whoever the author may have been, he has had many copyists, and, to judge by the books which continue to appear, the supply of such guides bids fair to exceed the demand. As might be expected, they are of very unequal merit.

From the naturalist's point of view we have read nothing better than the description of a Norfolk Broad in summer and in winter, with all its wealth of bird-life, to be found in the late Henry Stevenson's 'Birds of Norfolk.' But this is no more than was to be expected from so accomplished an observer, who, from a life-long residence within easy reach of the Broads, was intimately acquainted with most of them. The case is far otherwise with the majority of visitors; or at least with those who have essayed to write guide-books to the Broads. Their experience, as a rule has been limited to a few weeks, and their knowledge of natural history is of the slenderest description. The least pretentious, and perhaps on that account the most acceptable volumes of the kind, are those in which the writers have attempted no more than an account of a pleasant holiday spent in exploring some of the Norfolk broads and rivers, with such statistics as are likely to be of use to those inclined to follow their course.

In the handsomely illustrated quarto volume before us we have something more than this—something beyond the mere narrative of an enjoyable summer cruise. In the thirty photo-etchings on toned paper there is a direct appeal to the artistic feeling of the reader, who is presented with some of the most striking views obtainable *en route* from the deck of a house-boat. They are of unequal merit, owing to the difficulty of focussing when working with a quick exposure shutter on a swift tideway, and the difficulty in securing proper paper, since that which is admired

for etchings is unsuitable for printing photo-gravures. But, in spite of these drawbacks, they are extremely pleasing and effective realisations of the author's descriptions. The "Tidal Water," it were almost needless to remark, is Breydon Harbour, and the thirty illustrations have all been taken in the immediate neighbourhood of Great Yarmouth.

As regards the text, the descriptions are lightly written, and some of the dialogues with Norfolk fishermen, in which characteristic provincialisms are introduced, are amusing enough. There are two or three irrelevant chapters which possess no interest for any but the author, and might well have been omitted. From the zoologist's point of view the most useful portion of the work is the "Appendix," by Mr. Fielding Harmer, entitled "Breydon Water, Past and Present," with notes on the rarer birds procured there, and a chart showing the channels, and soundings in feet, at low water.

Forty-five years' experience as a punt-gunner has enabled Mr. Harmer to write authoritatively on the subject, and his account of this celebrated resort of wildfowl—which, if measured at its extreme limits, is four and a half miles long by a mile and a half broad—will be perused with interest by all naturalists who are also sportsmen.

By the name "Breydon" is understood all that is contained within the flint-faced banks which border the water on either side, and prevent the flooding of the adjoining marshes when the spring tides are forced up by strong N.W. winds. Within these banks are formed the channels, creeks, mud-flats, saltings, and crops of sea-grass (*Zostera*). As this piece of water lies in nearly the most easterly part of England, and opens into the North Sea, it is naturally most attractive to the wildfowl which come south in the autumn and go north in the spring. Mr. Harmer considers that more rare birds have been shot on Breydon and the adjoining marshes than anywhere else in England.

During the last twenty years great changes have been taking place. The channels have been gradually filling up, and there are indications that, before many more years can elapse, the whole extent of Breydon Water, with the exception of the main channel, will be dry at low water. The reed-beds have all disappeared; half of the saltings have been washed away, two having entirely disappeared; the marshes have been drained; the

decoys, with one exception, are no longer worked; civilisation encroaches at all points; shoulder-gunners are on the increase on the rivers and broads; in short, all these factors are destroying what was formerly, for its extent, one of the best punting resorts on the coast. With this destruction of their natural haunts it is not surprising that many species of birds are disappearing.

What a famous place it once was for waterfowl of all kinds may be inferred from Mr. Fielding Harmer's list of the species which at various times have been procured there. This list would have been more instructive if Mr. Harmer had not adopted the embarrassing and useless plan of enumerating every species in the British list, leaving the reader to infer that all those to which no observations are appended have *not* occurred there. It would have been far better to have omitted these altogether. "I have given" (he says) "Yarrell's complete list of British birds; when no note is made, it will be understood that these birds have not been observed on Breydon." Then why include them? He has not adopted Yarrell's classification, which renders any comparison with that work very troublesome. Nor is it possible, for the reasons stated, to estimate properly what proportion of the whole number of species has been met with in this much-favoured locality.

From a cursory perusal which we have made of this list, it appears that a closer examination of the records relating to Norfolk, which have been published from time to time by ornithologists resident in Norfolk, would have enabled the author to make it much more perfect than it seems to be. Nevertheless, as a conscientious attempt to elucidate the avifauna of a particular district, it forms an acceptable addition to the literature of the subject.

The Birds of Sussex. By WILLIAM BORRER, M.A., F.L.S.

With a map and six coloured plates, by J. G. Keulemans.
London: R. H. Porter. 1891. 8vo., pp. 385.

If fifty years of close observation of the habits and movements of birds, in the county in which the author has continuously resided, be considered, as it undoubtedly is, the best qualification for giving some account of them, assuredly no one was better qualified than Mr. Borrer to undertake the preparation of the present volume, which bears on every page the stamp of accuracy.

The geographical position of Sussex, with its long frontage to the English Channel, naturally makes it a much frequented place of call for the hosts of birds which annually alight upon or leave our shores, while the rare combination of tidal waters, wide rolling downs, and beautiful woods, many of them relics of ancient forests still possessing much of their wild and pristine grandeur (as St. Leonard's Forest, and the forests of Ashdown, Tilgate, and Worth), render it one of the most important ornithological districts in England.

In an Introduction of ten pages Mr. Borrer notices the chief physical features of the county, and has to chronicle, alas! many changes inimical to bird-life, especially the intersection of Sussex with railways (not only inland, but along the coast), the reclamation of marsh land, and the breaking up of downland under cultivation. Particularly does he deplore the disappearance of Pagham Harbour, between Selsea and Bognor, once such a paradise for the ornithologist, but now unfortunately reclaimed and drained.*

These alterations of the face of the country have worked corresponding changes in its bird-life, and many species have now to be chronicled as rare which formerly were not uncommon. But Mr. Borrer's experience is long enough to enable him to print many interesting observations made in bygone years, when places like Pagham Harbour, Amberley Wildbrook, and Henfield Common had charms for the sportsman as well as for the naturalist, and when many a good day's shooting was rendered memorable by the observation of some curious bird in haunts still unspoiled by the agriculturist.

If we have any fault to find with Mr. Borrer's volume, it is that some of his chapters are too short, and do not include enough of his own field-notes. He could, "an he would," have told us much more, but perhaps feared to make his volume too bulky. Occasionally records of rare species, or interesting notices relating to Sussex birds, have escaped his memory, or his research. We may instance a few:—The occurrence of the

* In 'The Field' of July 2nd and 16th, 1887, will be found two articles on "Pagham Harbour, Past and Present," in which the writer, from personal experience, contrasts its former appearance with its condition after the sea had been banked out, and gives an account of the wildfowl and waders which once resorted there in numbers.

Great Grey Shrike in England during the summer months is so unusual, that the capture of a pair near Hailsham in the summer of 1851 (Zool. 3388) might have received a passing notice. Mr. Borrer might have referred to the remarkable nest of a Nuthatch which was found at East Grinstead in the summer of 1871, and was described and figured in 'The Field' of Oct. 28th, 1871: it was formed in a haystack, and plastered with clay, and, when cut out, weighed 11 lbs., and measured 13 in. by 8 in. at the widest part. The height of the nest from the ground was between five and six feet, and the lining was composed of dead leaves. The description furnished by the finder of it was communicated by the late Frederick Bond, and was reproduced in this journal (Zool. 1871, p. 2850). The story of the old Nuthatches from Cowfold continuing to feed their young which had been removed to Henfield, $4\frac{1}{2}$ miles distant, was published in 'The Field' of Oct. 4th, 1873, not 1878, as misprinted on p. 84 of Mr. Borrer's book.

Two more instances of the occurrence of the Tawny Pipit, *Anthus campestris*, may be added to those mentioned pp. 105, 106 — namely, one at Brighton, Oct. 1876, reported by the late G. Dawson Rowley, in 'The Field' of Oct. 22nd in that year; and another, also at Brighton, Oct. 23rd, 1882, as announced by Mr. Thomas Parkin (Zool. 1883, p. 34).

The Woodlark, *Alauda arborea*, regarded (p. 119) as "very local and by no means common," may be noticed as breeding annually in the neighbourhood of Uppark, in West Sussex. The latest example of the Short-toed Lark known to have been captured in Sussex is by some oversight not mentioned (p. 113). It was taken by a birdcatcher at Amberley, on the 18th July, 1888, as recorded by Mr. Howard Saunders (Zool. 1888, p. 350). The date of capture of the White-winged Lark, *Melanocorypha sibirica*, accidentally omitted, was the 22nd Nov. 1869, and to the footnote appended to the account of this species (p. 113) may be added the words, "but the mistake was corrected by Bond himself, *tom. cit.*, p. 2022."

An example of the Lapland Bunting, *Plectrophanes lapponica*, not noticed (p. 115), was caught near Brighton in Sept., 1854 (Zool. 1855, p. 4558).

Mr. Borrer refers to a Sussex specimen of the Rustic Bunting, *Emberiza rustica* (p. 117), as "the only example which

has occurred in England"; but a second was procured at Easington Holderness, 17th Sept., 1881, as recorded by Mr. W. Eagle Clarke (Zool. 1881, p. 465); and a third at Elstree Reservoir, on the borders of Middlesex and Hertfordshire, Nov. 19th, 1882, as mentioned by Lord Lilford (Zool. 1883, p. 33). The Cirl Bunting, *E. cirrus*, has in several years been found breeding in West Sussex, in the parish of Harting.

There is some mistake in the reference made (p. 130) to Bond's record of the Serin at Brighton, in April, 1870. On turning to the volume and page indicated (Zool. 1884, p. 119), we find no allusion to it. A curious mistake also occurs in the opening sentence of the article on the Parrot Crossbill (p. 140), where the author makes the statement that "this species was formerly considered only a large variety of the Common Crossbill, but is now held to be distinct." The precise converse of this is the case (*cf.* Saunders' 'Manual,' p. 194).

Under the head of Chough it would have been well to have noted that at Dangstein, in West Sussex, Lady Dorothy Nevill for many years kept Choughs, which were allowed complete liberty and nested there (*cf.* 'The Field,' 23rd and 30th Sept., and 7th Oct., 1882).

The Ravens of Uppark should have been noticed. They were strictly protected, and bred there annually for many years, where the present writer has often seen them.

The breeding of the Hoopoe, *Upupa epops*, at Southwick, near Shoreham (p. 168) is noteworthy. Several other instances of the occurrence of this bird in Sussex might be mentioned in addition to those noticed, the dates being April 19th, 24th, and 27th.

Treating of the Greater Spotted Woodpecker, Mr. Borrer states (p. 174) that he is not aware that it has any local name. We have heard Sussex gamekeepers occasionally refer to it as the "French Magpie."

As to the introduction of the Red-legged Partridge into Sussex, our author might have noted that in 1776 (as stated in 'The Field' of Jan. 27th, 1883) Sir Harry Fetherstonhaugh imported a lot of eggs from France, and, from a correspondence with his mother which has been preserved, it appears that several coveys were reared within the walled gardens of Harting Place and in the Park; and, though the attempt to establish them there

permanently failed, there can be little doubt that from this centre of introduction the county of Sussex was originally stocked.

Under the head of Great Bustard (p. 199) Mr. Borrer gives an interesting piece of information:—

“The Bustard” (he says) “was often hunted with Greyhounds by my grandfather, who died at an advanced age in 1844. He told me that he had had many a good course with these birds. He used to go out early in the morning after a foggy night, to look for them feeding in the wet turnips, when they were frequently so thoroughly soaked as to be unable to fly. He generally found them in little parties of from five to ten, and sometimes took five or six in a morning; commonly young birds, though occasionally he had known an old one to be caught; but they avoided them as much as possible, for, when overtaken by the dogs, they fought savagely, and had more than once damaged the Greyhounds.*

“They were most common on a part of the Downs between the Dyke and a place known as Thunders Barrow, from certain ancient tumuli supposed to be British. My father also, while riding on the Downs about a mile from Patcham, fell in with nine of these birds feeding in a turnip-field; this was about the year 1810. I have heard them spoken of by some of the old Southdown shepherds as having been often seen by them. Of course the birds then bred there.”

The pages relating to the Bustard were probably printed off before the news could have reached the author of the latest occurrence of this species in Sussex, namely, on the 6th January last, when one (a hen bird) was shot on Pett Level, near Winchelsea. (See ‘The Zoologist’ for March last, p. 104).

We regret that want of space precludes our noticing many other passages which we had marked for comment, more particularly amongst the Waders and Wildfowl, to which we have paid considerable attention in Sussex harbours and marshes. We may possibly be enabled to return to the subject later, but for the present we can do no more than direct attention to the extracts, which are given in an Appendix, from the unpublished MSS. of William Markwick, of Catsfield, near Battle (see Zool. 1890, pp. 335 and 379), and to the half-dozen coloured plates, by J. G. Keulemans, with which the volume is embellished. The species

* The former practice of coursing Bustards with Greyhounds has been noticed not only in England (‘The Naturalists’ Pocket-Book, or Complete Cabinet of Nature,’ London, 1799-1800), but also in Russia (Dresser, ‘Zoologist,’ 1871, p. 2512).

represented are the Gyr Falcon, the Honey Buzzard, the Rufous and Aquatic Warklers, the Nutcracker, and the Squacco Heron; and the utility of the work is enhanced by the addition of a county map.

The Birds of Devonshire. By WILLIAM E. H. PIDSLEY. Edited, with an Introduction, and short Memoir of the late John Gatcombe, by H. A. MACPHERSON, M.A. With Map and Coloured Plate. London: Gibbings. Exeter: Commin. 1891. 8vo, pp. 194.

BEING aware that Mr. W. S. D'Urban and the Rev. M. A. Mathew have, for the last twenty-five years, been engaged in collecting materials for an account of the Birds of Devonshire, it was with some surprise that we read the announcement of a book, with this title, by Mr. Pidsley, a gentleman unknown to fame as an ornithologist, even in his own county. To say that we are disappointed with it, is only to echo probably the verdict which has already been passed upon it by more competent critics, and it appears to us that whatever merit it may possess is almost entirely due to the editorial touches bestowed by Mr. Macpherson. That Mr. Pidsley is wanting in experience, is evident from the general lack of original observations of any importance. To a certain extent, of course, books of this kind must be in the nature of compilations; but then the compiler should at least be well versed in the literature of the subject, even if he does not always possess the requisite knowledge to enable him to distinguish the wheat from the chaff.

On the first page of the "Introduction," Devon is stated to be the second largest county in England. If we mistake not, Yorkshire and Lincolnshire are both larger, the area of the latter county being 7 per cent. greater than that of Devon.*

The river Tamar, which is said to rise in Cornwall (Introd. viii.), takes its origin, we believe, from the Devonshire hills, on the borders of Cornwall; and Cranmere Pool, which is stated to be the largest sheet of water on Dartmoor, and to fall short of 700 feet in circumference (*l. c.*), is really only 384 feet in circum-

* See Pengelly, Trans. Devon. Assoc., 1883, p. 230.

ference, and has held very little water since 1844.* These are, doubtless, small matters, but it is well to be accurate.

In the notice of previous publications on the natural history of Devonshire, we were not prepared to find so high a value placed on Mr. Brooking Rowe's Catalogue (p. xv), which is scarcely more than a bare list of names, conveying little information; most of the species being described as "common," "not uncommon," "rare," "scarce," or "occasionally met with," while several of the commoner birds are omitted altogether. Mr. D'Urban's much more complete List, printed in Besley's 'Handbook of Exeter,' 1863 (second edition, revised in 1871), and his fuller List in the 'Handbook for South Devon,' 1875, ought surely to have deserved mention, especially as several of the statements therein seem to have been copied (no doubt unconsciously), at third hand, from writers who have omitted to acknowledge the source of their information.

We are glad to see the obituary memoir of John Gatcombe, which is incorporated in the Introduction (pp. xvi-xxii), and forms a fitting tribute to the memory of one of the keenest of Devonshire naturalists, whose articles, published in 'The Zoologist,' have apparently furnished the greater portion (certainly the most valuable part) of the information contained in the volume before us.

Turning to the body of the book, it strikes us that, in the case of some of the species mentioned, some interesting points have not been sufficiently investigated. We will deal with them in the order in which they occur.

On p. 15 it is remarked that the Lesser Whitethroat, *Sylvia curruca*, "has not, as yet, been found breeding in the county." Has our author overlooked the statement, by Mr. G. F. Mathew ('Naturalist,' 1866, p. 358), to the effect that it has nested in North Devon? His words are:—"I have repeatedly seen this bird and taken its nest, and do not call it uncommon in the neighbourhood of Barnstaple." We are not aware that this observation has been shown to have originated in a mistake.

The Dartford Warbler (p. 16) is, perhaps, extinct now in Devonshire, none having been reported since 1877; but if the

* See Rowe's 'Perambulation of Dartmoor,' and Crossing's 'Amid Devon's Alps.'

author has any evidence to the contrary, it might have been well to have noted it.

Mr. Pidsley does not throw any light on the breeding of the Bearded Titmouse (p. 23) in Devonshire. Bellamy, whom he quotes, of course derived his information from Comyns, an observant ornithologist, often quoted by Montagu, and, as the locality referred to is (or was) a likely one, his observation hardly deserves to be characterised as "vague, hearsay evidence."

It is to be presumed that the "droves" of *Parus cristatus*, referred to by the editor (p. 25), were not observed by him in Devonshire. The wording is a little vague. If we are not mistaken, the late William Brodrick found *Motacilla alba*, Linn., breeding near Ilfracombe, and, though Mr. Pidsley characterises *Motacilla melanope*, Pall. (the Grey Wagtail), as a scarce bird on Dartmoor (p. 28), he has overlooked the fact that Gatcombe often found it breeding on the borders of Dartmoor.

We are told (p. 41) that the Hawfinch has not been found breeding in Devonshire, but we have an impression that Mr. D'Urban has found the nest in South Devon. The bird itself is often met with there in winter and early spring.

The author does not seem to be aware that the so-called Parrot Crossbill, which he regards as a distinct species (p. 45), is now generally regarded as merely a large-billed race of the Common Crossbill (*c. f.* Saunders, 'Manual,' p. 194). It was Mr. D'Urban who pointed out to Seward, the taxidermist, that the Crossbills sent to him from Exmouth, in January, 1888, belonged to this race (*c. f.* 'Zoologist,' 1888, p. 105).

Large flocks of Snow Buntings (p. 49) are not "quite unknown" in Devon. Mr. G. F. Mathew saw a large flock near Barnstaple in the autumn of 1863 (Zool., 1863, p. 8845). The Wood Lark, *Alauda arborea*, which is stated (p. 56) to be "on the whole a scarce bird," abounds in many parts of Devon, particularly in autumn.

In enumerating the reported instances of the occurrence of the Little Bittern in Devonshire, Mr. Pidsley has overlooked the notable example recorded by Montagu (Orn. Dict. Suppl.), on the authority of Comyns. This bird, a female, was shot by the river Credey in May, 1808, and was found to have a considerable number of eggs in the ovary, some of which were so enlarged "as to induce an opinion that a brood would have been produced

in this country, especially as a male was afterwards shot not very distant, and had been previously observed near the same place. A third was also killed in the same neighbourhood during that summer." Montagu adds:—"Mr. Comyns, who gave us the above information, has two of these birds in his collection."

With regard to the White Stork, of which the last Devonshire example is stated to have been shot at Topsham on the Exe, in July, 1852 (p. 93), we have a note that there is one in the Exeter Museum, labelled "St. George's Clyst, near Exeter [four miles distant], January, 1856."

The statement (p. 99) that the Sheld-duck has not, to the author's knowledge, been known to breed on Dawlish Warren "within the last *three* or *four* years," is somewhat misleading; for there is good reason to believe that it has not done so for the last *forty* years. The Shoveller, *Anas clypeata*, can scarcely be regarded as a "scarce visitant." It is common enough, at all events, at Slapton Ley, where during the past winter upwards of two hundred were met with. The history of the King Eider, *Somateria spectabilis*, seen by Mr. Gatcombe in the flesh, at Plymouth, some years ago, is unfortunately incomplete (p. 107), there being no evidence as to where it was obtained. It is not unlikely it may have been brought in ice by some ship with salt-fish from Newfoundland.

Writing of the Red-legged Partridge (p. 118), Mr. Pidsley, no doubt correctly, characterises it as an introduced species, but does not mention an earlier date for its appearance than 1860 in the district of Plymouth. It may be well, therefore, to note that this bird was met with on Waddell's Down, near Exeter, so long ago as 1844. The Red Grouse is not included in Mr. Pidsley's work; and he is probably unaware that early in the present century—namely about 1820-25—Mr. John Knight, of Simonsbath (the father of the present Sir Frederick Knight, M.P. for Worcestershire), turned out several pairs of Red Grouse *on Exmoor*, by way of experiment. Although no permanent success attended his efforts in that direction, it is worth while, in view of the isolated instances of the occurrence of the Red Grouse in Devonshire which have been reported, to bear in mind this bygone attempt to introduce it.

We might add many other comments to those already given, but want of space precludes it. We have noticed a good many

typographical errors besides those corrected by the author in his *Errata*, some of which we should have thought too obvious to have escaped detection: thus we find *Mula* for *Inula* (p. 31): Otter *Dairs* for Otter *Davis* (p. 88); and the curious statement (p. 156), under the head of Curlew, that "now breeding birds may be met with *at all seasons*."! Of course the author wrote "non-breeding birds."

The single coloured plate, which serves as a frontispiece to this volume, represents a Buff-backed Heron, *Ardea bubulcus*, in adult plumage. It would have been better to have figured the actual Devonshire specimen which is in immature plumage, and which would have been easily accessible to the artist, since it is preserved in the Natural History Museum at South Kensington.

On the whole, considering the richness of the Devonshire avifauna, and the important collections of notes which are known to exist, but which are as yet unpublished, we cannot regard this work as sufficiently comprehensive or adequately dealing with the subject.

The thanks of ornithologists are certainly due to Mr. Macpherson for the skill with which he has edited the materials placed at his disposal, and for the additions which he has evidently made to the original manuscript; but we venture to think that critical readers will look forward to the preparation and publication of a better work on the Birds of Devonshire, by someone of greater experience than the author of the present volume.

Bibliothèque Scientifique Contemporaine. Post 8vo. Paris: Librairie, J. B. Baillièrè et Fils. 1890-91.

- (1) *La Géographie Zoologique.* Par le Dr. E. L. TROUËSSART. Avec 63 figures dans le texte, et deux cartes. 1890.
- (2) *Les Facultés Mentales des Animaux.* Par le Dr. FOVEAU DE COURMELLES. Avec 31 figures. 1890.
- (3) *Les Huîtres et les Mollusques Comestibles.* Par ARNOULD LOCARD. 1890,
- (4) *Les Sociétés chez les Animaux.* Par le Dr. PAUL GIROD. Avec 53 figures. 1891.
- (5) *L'Évolution des Formes Animales avant l'apparition de l'homme.* Par FERNAND PRIEM. Avec 173 figures. 1891.

WE take it for granted that most of our readers are acquainted with some at least of the volumes issued by Messrs Kegan Paul & Co., in their "International Scientific Series," which includes such excellent books as Prof. Karl Semper's 'Natural Conditions of Existence as they affect Animal Life,' Prof. Heilprin's 'Geographical and Geological Distribution of Animals,' and Sir John Lubbock's 'Senses, Instinct, and Intelligence of Animals,' which are all books to be read by naturalists. But it is perhaps not so well known to English readers that MM. Baillièrè et Fils, in Paris, have for some time past been also publishing a small octavo series, with the general title "Bibliothèque Scientifique Contemporaine," in which are to be found several works on kindred subjects by French writers.

We give, above, the titles of those which have reached us, all of which seem to us deserving of attentive perusal, and we regret that want of space does not permit us to enter so fully as we could wish into the merits of each one of them.

The object of the publishers is evidently to provide a series of handy volumes, at a moderate price, for those who desire to possess some knowledge upon the scientific questions of the day, but whose occupations or engagements prevent them from devoting much time to original research. In one sense these treatises may be termed popular compilations from the best sources; but the treatment is original, and there are no translations, while, in most cases, the names and scientific position of the authors afford a sufficient guarantee of accuracy.

The first volume on our list, that of Dr. Trouessart, on Zoological Geography, reminds us, by its title and the nature of the contents, of Dr. Heilprin's work in the English series above referred to; but a comparison of the two suffices to show that, although the subject-matter is of necessity similar, the mode of treatment, the division of the subject, and the facts collected, are all original.

Considering that the study of the geographical distribution of animals is so widely recognised amongst zoologists, it is not a little singular that there was no book on the subject in French until that of Dr. Trouessart appeared. It was to supply this want, in fact, that his work was undertaken, and he may be con-

gratulated on the result, for it is at once clear and concise. In the main, the author adopts the views of Dr. A. R. Wallace, which, as he says, have become classical; but fifteen years progress in the science has necessitated a complete revision of the subject, and the size of the present volume demanded a different treatment of it.

A careful study of the most recent Monographs and local Faunas, and more than ten years spent in the collection of a great mass of materials, appear to have convinced the author that it was impossible to make the geographical distribution of the lower animals fit in with the divisions proposed by Dr. Wallace, and he accordingly had to plan his chapters according to the views of specialists. Students of the Invertebrata will give him credit, no doubt, for having striven to do justice to this part of the subject, the specialists whose views he has adopted being recognised authorities for the different groups. We have been much struck with Dr. Trouessart's remarks (pp. 330, 331), "Sur le Chien Sauvage, *Canis dingo*, d'Australie, et l'origine de la Faune de mammifères placentaires terrestres du même pays," which, but for its length, we should have been glad to quote. It is virtually a refutation of the theory that the Dingo is descended from parents originally introduced by the earliest settlers in Australia, and an expression of the view that as fossil remains of the Dingo have been found in the pleiocene beds of Victoria, and as no trace of the existence of man at the same epoch has been discovered, the Dingo must have been originally indigenous to Australia, and, like the *Notelephas australis* of Owen (whose fossil remains have come to light in Queensland), must have found its way thither at a time when Australia formed part of the continent of Asia, descended from the same stock as the Wild Dogs of India and Sumatra.

Dr. Foveau de Courmelles' volume, on the mental faculties of animals (2), shows considerable research on the part of the writer, the number of authorities quoted by him (both ancient and modern) amounting to upwards of four hundred, including many familiar names of English naturalists. The subject is a very difficult one; for it is evident that merely to imagine traits of intelligence, without proving their existence, is to wander into the realms of pure fancy, and, on the other hand, to quote facts is simply to follow a well-beaten track. The middle course was

to deal with known phenomena, and to group them in such a manner as to admit of their being compared with the mental faculties of man — and this course has been adopted by our author.

After a critical examination of the views of previous writers, occupying nearly fifty pages, Dr. Foveau de Courmelles, in successive chapters, deals with instinct, qualities and defects in animals, their intuitive faculties, their faculty of conception (such as memory inherited or otherwise, association of ideas, recognition of portraits, imagination, &c.); mimicry; fear and its manifestations; sleep, and death; foresight, and prognostication of weather; sensibility; emotions; affections and passions. Altogether a fascinating book, full of curious and suggestive facts.

In M. Locard's volume (3), on oysters and edible molluscs, we have a book of a very different kind, yet withal a useful and instructive one. The main idea is "food supply," and how to provide man with wholesome, varied, and sufficient sustenance is the problem which the author considers to be one of the most important at the present day. He points out what indeed has been long known to naturalists, namely, that there is a great deal of good wholesome food to be obtained, which costs next to nothing, but which, either from ignorance or prejudice, is not utilised; and this is especially the case with a great variety of molluscs. Concerning the natural history of these, we do not find much that English readers have not already learnt from such books as Lovell's 'Edible Mollusca'; but there are some useful statistics from French sources, and a curious chapter on Oyster-culture in the Middle Ages which is not without interest.

Dr. Paul Girod's treatise (4), on animal colonies and associations, goes over familiar ground. The subject is a popular one, and has often furnished a theme to writers on natural history topics. Hence it was hardly to be expected that anything very new could be written about it. Even in the case of the Invertebrate animals, concerning which the majority of people know far less than they do of the Vertebrata, great advances in knowledge have been made of late years; and, thanks to such volumes as Sir John Lubbock's 'Senses of Animals,' the same writer's 'Ants, Bees and Wasps,' and Prof. Van Beneden's 'Animal

Parasites and Messmates,' we have to a great extent become familiarised with the habits and ways of many of these lowly creatures, which at one time were regarded as almost too insignificant to deserve attention. The author, in his Introduction, distinguishes between "Colonies" and "Societies or Associations," and thus expresses his reasons for commencing with a consideration of the Vertebrata:—"Il nous a semblé utile d'aller des formes animales les mieux connues de tout le monde, (les Vertébrés) vers les types des Invertébrés. moins familiers à ceux qui abordent l'étude des sciences naturelles. De ce fait, nous abordons l'histoire des *Associations* avant celle des *Colonies*." In some cases the author's remarks suggest compilation rather than observation, as, for instance, when he regards Crows as gregarious, and attributes to these birds habits which are only applicable to Rooks.

The works of Alfred Espinas and Edmond Perrier are freely quoted, and the illustrations—many of them above the average in point of accuracy—have apparently been derived from that zoological encyclopædia 'Les Merveilles de la Nature.' If there is nothing very new in what Dr. Girod tells us, what he has to say is well said, and there are so many aspects to the subject, that it is one of which we can hardly get tired.

In the "Evolution of Animal forms before the appearance of Man" (5), M. Priem has given us a very solid piece of work, purely palæontological, and the numerous woodcuts (175) with which it is illustrated add much to the attractiveness of his remarks. They represent the principal types, and the chief transition forms. The subject is one to which it is impossible to do justice in the very brief notice which we can extend to it. Suffice it to observe that, after stating the principles which justify a contention that the animal world has undergone a progressive evolution, the author attempts to show that it is generally possible to indicate the factors of evolution in a genus, order, and class. and he especially strives to show the existence of a progressive evolution in the lowest of all animal forms, because, as he says, "jusqu'à ces derniers temps elles se prêtaient moins bien à cette démonstration que les formes supérieures."

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THE BIRDS OF GREENLAND.

BY JOHN CORDEAUX.

IN 1875, just previous to the sailing of the last Arctic Expedition sent out by this country in the 'Alert' and 'Discovery,' Prof. Newton, at the request of the Admiralty, drew up his 'Notes on Birds which have been found in Greenland,' and these were printed in the large text-book issued at the time for the instruction of the Expedition.

This list of Greenland birds is a most complete one, and was compiled from every available source of information up to date, but chiefly from the excellent list by Prof. Reinhardt, printed in 'The Ibis' of 1861. In writing it Prof. Newton exercised a wise discretion in distinguishing between the accidental stragglers and the true denizens of the country—that is, birds which either breed there, or such as annually frequent it, in some part or other, for a longer or shorter period; and still further, to direct attention to those more northerly districts specially to be explored by the Expedition, the names of all such species as might reasonably be expected to be found north of Melville Bay, in Smith's Sound, and northward, were printed in a different type. The total number of species included in this list is 125, and of these no less than sixty-two must be considered nothing but stragglers to Greenland, and sixty-three, at the very outside, may be called residents; of these latter sixteen, or nearly one-fourth, are birds which do not occur within the Polar Circle, and cannot be considered true Arctic species; of the remaining forty-

seven, recorded as inhabiting North Greenland,—their extreme northern extension being uncertain,—it was reasonable to expect, making the most liberal possible allowance, that thirty-six, or more probably about thirty, might be looked for in Smith's Sound and northward.

The actual number recorded by Col. H. W. Feilden, the Naturalist to the Expedition, as observed in Smith's Sound and northward, that is between the 78° and 83° of north latitude was twenty-four, and no addition was made to the lists by the sister ship, the 'Discovery'; these were all well-known Arctic forms included by Prof. Newton, in his excellent Manual: of the possible number of thirty-six enumerated, those not observed by the Expedition included the Grey Plover, American Golden Plover, Red-necked Phalarope, Purple Sandpiper, Sabine's Gull, Ross's Gull, Iceland Gull, Pomatorhine and Common Skua, Arctic Puffin, Red-breasted Merganser, and Snow Goose.

The actual number of birds, including stragglers, which are known to have occurred at Spitsbergen is about thirty species, and forty-six were recorded by the Austro-Hungarian Expedition at Jan Mayen Island, which lies about 400 miles N.E. of Iceland, or half-way between that island and Spitsbergen, during the thirteen months the members of the Expedition spent there in 1882-3. Amongst the number were such unexpected and unlooked-for visitors as the Redbreast, Tree Pipit, Fieldfares, Song Thrush, Blackbird, and Water Rail.

The only complete catalogue of Greenland birds published since 1875 is the one which has recently been compiled by Mr. Andreas T. Hagerup, a Danish mineral engineer, who was resident between two and three years in Southern Greenland, and his opportunities of recording the avifauna of the country have doubtless been greater than those of any other observer. The translation of the work, published in America, is edited by Mr. Montague Chamberlain, a well-known ornithologist, and one of the founders of the American Ornithologists' Union.*

In the Hagerup-Chamberlain catalogue there are some ten additional species which did not appear in Professor Newton's

* 'The Birds of Greenland,' by Andreas T. Hagerup. Translated from the Danish by Frimann B. Arngrimson. Edited by Montague Chamberlain. 8vo. Little, Brown & Co., Publishers, Boston, U.S.A.

list, and several have not before been known to occur in Greenland. The first and largest portion of the pamphlet record the author's own personal observations on the local avifauna, when stationed from April, 1886, to October, 1888, at the mining settlement of Ivigtut, on the south side of Arsus fjord, in lat. $61^{\circ} 15'$, and about ten miles distant from the sea. The second portion of his work is a "Catalogue of the Birds of Greenland," based on the works of Holböll, Reinhardt, Prof. Newton, Ludwig Kumlien, and others; use has also been made of the late Alfred Benzon's collection of bird-skins and eggs. This catalogue comprises all the birds discovered up to date in that part of Western Greenland which is settled by Danes, the country lying south of 73° N. lat.

Of the ten most recent additions to the Greenland list, eight must be considered as mere chance visitors, and these may be dismissed without any further reference; they are interesting alone as showing the wanderings of birds: these are the Yellow-bellied Flycatcher and Canadian Warbler from North America,* the European Sky Lark, Steller's Duck, Velvet Scoter, European Coot, Siberian Gull, and Storm Petrel. The remaining two are residents during some part of the year and breeding; these are the Curlew Sandpiper,† stated to be "not uncommon in North Greenland. Breeds at Christianshaab, 69° ." Considering the very great interest to ornithologists connected with the breeding-haunts and the yet unknown eggs of this species, the information conveyed in these few words must be considered vague and unsatisfactory. The other annual visitor—"a summer resident, breeding in both North and South Greenland"—is the Common Tern, *Sterna fluviatilis*, an abundant species both in North America and Europe.

The personal observations of Mr. Hagerup when resident at Ivigtut, from their originality and freshness, are of great interest to ornithologists. The Grey Sea Eagle appears very common in the district, particularly in the winter; on one occasion Mr. Hagerup saw fourteen on the fjord. Both the white and grey

* To these may perhaps be added a single example of *Totanus solitarius*, from a skin obtained by Mr. Benzon from Kangek (64° N. lat.), taken August 1, 1878.

† The *Tringa ferruginea*, Brünnich, or *T. subarquata* (Güld.), Bonaparte's Sandpiper, the *T. fuscicollis*, Vieillot, is said to be "not uncommon in the most southerly part of Greenland, where it probably breeds."

or dark form of the Greenland Falcon are equally represented. Mr. Hagerup, after an examination of a large number of specimens, thinks there is but one Gyrfalcon found in Greenland, and that the light-coloured birds breed chiefly in the north, and the dark are restricted to the southern districts, and that the two must be considered as geographical races. Their principal food in the winter consists of Ptarmigan. It seems somewhat remarkable that not a single living example of the Duck Hawk or Peregrine Falcon was observed by the author during his residence, as it is known to breed generally throughout Greenland. The Snowy Owl was considered a rare winter visitor. In the summer this fine Owl, which is a thoroughly circum-polar species, is most common in the extreme north; in 1876 no less than twenty-six nests of the Snowy Owl were found within fifteen miles of the 'Discovery' when stationed in the bay of that name in lat. $81^{\circ} 42'$. The Raven is very common all the year round, and from August to October they collect in flocks, sometimes as many as thirty, and devour great quantities of the berries of *Empetrum nigrum*. The lively little Wheatear is a common summer resident, arriving in May, and breeds in all suitable places. Greenland specimens average a larger size than those in Europe. Mr. Hagerup remarks that they appear to have learned one tune from the Snow Bunting, used by both the male and female at the nest, and that he has never heard the Danish Wheatears whistle that tune.

The most common of the small birds found in the vicinity of Ivigtut was the Greater Redpoll; this is the *Acanthis linaria rostrata* of American ornithologists, and the *Linota linaria*, or Mealy Redpoll of English authors, and must not be confounded with the Greenland Redpoll, *Linota hornemannii*, Holböll, which is resident throughout the year, breeding quite commonly north of 69° , and in winter moving to the south. The Greater or Mealy Redpoll is a summer visitor, arriving late in April and leaving in September. The nest, usually built wherever a bunch of bushes are found, is a very pretty object, of dried grass and roots, lined with plant-wool and often a few ptarmigan feathers, so as to look altogether white.

The domestic Sparrow was introduced into Greenland some years ago; in 1886 only five males were left, and in 1888 two. It is satisfactory to know that this pest has at last found a

country too cold and wet for it, and that there is no risk of Greenland being overrun like the United States and Canada.

The most interesting of the avian visitors during the summer is the Snow Bunting. They arrive early in April, departing again about the middle of October. Mr. Hagerup has never seen one in winter; it is chiefly in April, when the country is still buried in snow, that their glorious song is most appreciated. In 1888 the earliest eggs were found on May 26th, the last on June 14th. All the nests found were built between stones, sometimes far in among the heaps. The Lapland Bunting was the least common of the songsters at Ivigtut; it frequents damp places covered with grass and bushes, but not observed higher than 200 feet above sea-level. In numbers it bore the following ratio to other small birds:—one to five of the Wheatears; one to twenty of the Snow Bunting; and one to thirty of the Redpoll. The song is short and of an extremely melancholy nature.

The number of Ptarmigan, *Lagopus rupestris* (Reinhardt), near Ivigtut is considerably increased in the winter by migrants from the north. In the first winter of 1866, a very severe one, about 400 were shot; in 1887, a mild winter, about double that number. They are very late in getting their summer dress, the females in June, and the males a month later, and they do not appear to acquire in the summer the black feathers of the breast, as do the males of our Scotch Ptarmigan, *L. mutus*.

Barrow's Goldeneye, *Clangula islandica*, is said to breed in small numbers as far north as 69° or 70°; it occurs near Ivigtut, but must be rare, as neither Danes nor Greenlanders knew it.

The beautiful Harlequin Duck is a summer visitor, and breeds quite commonly as far north as 69°; it arrives about April, and leaves again early in November. In summer the males collect in small numbers on the fjord.

The King Eider nests sparingly between 67° and 73° N., but north of 73° is more numerous. They arrived at Ivigtut about the middle of February in great numbers, and for the next four weeks were more plentiful than the Common Eider, but after this less in proportion till by the middle of April few remained. It is common in South Greenland in the winter. The eggs of the Greenland Wild Duck, *Anas boschas*, are considerably larger than those of the European bird.

The Kittiwake arrived at Ivigtut about the end of March or

early in April, leaving again towards the end of October. Till the middle of May they keep together, and on clear days in April a flock of some two thousand will rise to a great height,—three or four thousand feet,—so as to be only recognised by their cries as they wheel around. The eggs are laid on the front of a perpendicular cliff during the first ten days in June; the earliest date for a young bird on the wing is August 7th. Their food in June is chiefly a small fish, *Mallotus arcticus*.

The young of the Glaucous and Iceland Gulls, when they leave the nest in August, gather on the flat tracts along the shore, and devour immense quantities of the berries of *Empetrum nigrum*. About one thousand pair of the latter nest on the "bird-cliff," at the head of the fjord, above the Kittiwakes, the lowest nests being built at the height of about 200 feet.

Brünnich's Guillemot breeds in great numbers north of 64°, and not improbably a little south of that line. It is a winter visitor to Ivigtut; in 1856, last seen May 30th, first returning on Nov. 9th. The Little Auk is also a winter visitor, arriving from its breeding quarters about the same time as Brünnich's Murre. The Black Guillemot of the west coast of Greenland appears to be identical with that of the Norwegian and North British shores, and is very common throughout the year. The Puffin of Greenland seems identical with the European *Fratercula arctica*. It breeds sparingly along the west coast, but is more frequent in the northern than southern division of the country. Two forms or geographical races of the Fulmar are recognised, *F. glacialis* and *F. glacialis minor*, the last breeding in vast numbers north of the 69th parallel.

To sum up, Mr. Chamberlain says that of the one hundred and thirty-nine birds, enumerated in Mr. Hagerup's list, fifty-three are purely accidental, and twenty-four so rare that they might be included in the same number, leaving sixty-one species that may be classed as regular inhabitants, resident, or remaining annually for a longer or shorter period in the country, and of these latter some are quite of uncommon occurrence.

It would, however, perhaps have been well, considering the very scanty evidence, to exclude altogether such doubtful occurrences amongst the birds of Greenland as that of the Tufted Puffin and the Pacific Eider.

THE INTRODUCTION OF THE MAGPIE INTO IRELAND.

BY G. E. H. BARRETT HAMILTON.

I HAVE recently come across two passages in the works of some old writers on the County Wexford, which throw some light on the manner and date of the first appearance of the Magpie in Ireland. As they appear to have hitherto escaped the notice of British naturalists, I think it may be well (before quoting and giving a reference to the passages in question) to shortly summarise the information which has been hitherto collected on the subject.

Mr. A. G. More, in the latest edition of his well-known 'List of Irish Birds,' describes the Magpie as "introduced from England previous to 1700," and this statement is no doubt based upon a study of the authors quoted by Thompson (vol. i. p. 328), and Yarrell (ed. iv. vol. ii. pp. 318—320), for some of which information we are indebted to the investigations of Ogilby. The account of the subject given by Yarrell is much fuller than that given by Thompson, as is only to be expected when it is remembered at what different dates these two standard works were published. In the former work several writers are quoted, *viz.*, Ranulphus Higden, who died about 1360; Derricke, who wrote in 1578; Robert Payne (1589); and Fynes Moryson (1617), whose united testimony bears witness to the absence of the Magpie from Ireland up to 1617. Then comes a gap of nearly a century, after which the curtain is lifted upon a vastly different scene, when Dean Swift, writing of Wexford in 1711,* notes that "Magpies have been always there, and nowhere else in Ireland, till of late years." After this the bird seems to have spread very rapidly. It was very common in Cork by 1746, and has now become resident and plentiful throughout Ireland.

The passages which I shall now quote throw considerable light upon the period referred to of about a century, through which the history of the Magpie in Ireland appears never yet to have been traced. The first of these is taken from Griffiths'

* 'Journal to Stella' (Esther Johnson), letter xxvi, under date of July 9th, 1711.

'Chronicles of Wexford,'* a book which is now out of print. On page 39 it is stated that "in the year 1834, a Catalogue of Manuscripts, called 'The Southwell MSS.,' was put up for sale by Mr. Thos. Thorpe, containing descriptions of many Counties, and lesser divisions of Ireland, all of which were written for the use of Sir William Petty, when he was about to make his now celebrated 'Down Survey.'" One of these MSS., extensively quoted on pp. 49—56 of the 'Chronicles,' is an account of Wexford and the Barony of Forth, dated 1682, by Colonel Solomon Richards.† Among several other interesting natural history notes which the Colonel has left to us is one relating to Magpies on pp. 50, 51, which runs as follows:— "One remarque more is, there came with a strong bleake easterly wind, a flight of Magpies, under a dozen, as I remember, out of England, or Wales, as 'tis verilie believed, none having ever been seen in Ireland before. They lighted in the Barony of Forthe, where they have bredd, and are soe increased, that they are now in every village and wood in this county—especially in this Barony abundant—my own garden, though in the Towne of Wexford, is continually frequented by them, and they are spread more thinly into other counties and parts of the Kingdom. The natural Irish much detest them, saying, 'they shall never be rid of the English, while these Magpies remain.' The observation is, that the English Magpies entered Ireland in the same County where the Englishmen first entered it, and in the English Barony alsoe."

It is to be observed that Colonel Richards describes the Magpies from his own observation, and the accuracy of the words, "under a dozen, as I remember," gives the impression that he had himself witnessed their arrival. As to the way in which the introduction was effected, he supports Rutton, who wrote of the Magpie in 1772:—"It is a foreigner, naturalized here since the latter end of K. James the II.d's reign, and is said to have been driven hither by a strong wind." It would be

* Published at Enniscorthy in (?) 1879.

† Colonel Richards is stated (on p. 57 of the 'Chronicles') to have lived at Badleigh, in Devonshire, before he came to Wexford. He continued in Cromwell's army up to 1656, and obtained a grant of lands in the county of Wexford, which was confirmed to him by Charles II. Other details of his life are also given.

interesting if this old tradition could still be found to exist among the inhabitants of the Barony of Forth, where the Colonel lived.

The second passage confirms and supplements the information given by the first. It is taken from "A Chorographic Account of the Southern Part of the County Wexford. Written anno 1684. By Robert Leigh, of Rosegarland. (From the 'Kilkenny Archaeological Journal.')

Edited by Herbert F. Hore." This has been recently reprinted in the Wexford 'People' newspaper. After some remarks on the Baronies of Forth and Bargy, the writer says:—"About 8 years ago there landed in those parts a new sort of planters, out of Wales, a parcel of Magpies (forced, I suppose, by stormey weather), which now breed in severall places in ye Barony of Forthe, and at a place called Baldinstowne, in the Barony of Bargy, and in the wood off Rose Garland, before mentioned, in ye Barony of Shilmaleere."

Thus we have an exact and accurate statement that the Magpie first appeared in Ireland, in the County Wexford, about the year 1676. We have also to observe that the earliest writers who refer to this bird had heard nothing of its supposed introduction into Ireland by the English, but consider it to have arrived unaided. Of course it may have been introduced by man, but there is no proof that this was the case, and we shall be safe in describing the Magpie as having "first appeared in Ireland, in the County Wexford, about the year 1676."

ORNITHOLOGICAL NOTES FROM REDCAR FOR 1890-91.

BY T. H. NELSON.

RING DOTTERELS in 1890 commenced nesting early in April; single eggs were found on the 4th, and a clutch of four was taken on the 19th. I much fear that the colony of Cormorants at Kettlecess is broken up by the propinquity of the railway, which now passes within a few yards of the cliffs. Two or three years ago there were about thirty pairs breeding, but last season I only saw one pair in several visits, and understand that they did not nest there. They may have changed their quarters to some of the other cliffs near Staithes. The Herring Gulls are as

numerous as ever, and several Stock Doves were nesting on the cliffs.

Early in August two Grey Plovers, two Pigmy Curlews, and a Knot, all in perfect summer plumage, were obtained at the Tees-mouth; and a Richardson's Skua, an immature bird, was shot in Tees Bay on the 8th. On the 12th the usual shore-birds—Bar-tailed Godwits, Turnstones, Redshanks, Oystercatchers, Sanderlings, and Dunlins—were to be seen in small flocks. An immense flight of Pigmy Curlews—most unusual for this district—occurred this month. Small parties appear at irregular intervals, and three or four examples may be taken in a season; but on this occasion their numbers far exceeded anything in my experience. On the 26th twenty-one were killed, eleven at one shot, and from that date to the Sept. 25th, I saw no less than 110 which were shot at, or near, the Tees. On their first arrival they were found in flocks by themselves, on the salt-marshes, but after a few days they associated with Dunlins and other small waders. Those which were procured during the latter part of September were all shot by firing into mixed flocks of shore birds. The last I noticed were on the sands on Sept. 25th, nor did I afterwards hear of any others being observed. A few Sandwich and Lesser Terns visited the Tees Mouth, and one or two immature examples of the latter species were shot.

On Sept. 5th the first of the autumn contingent of Grey Plovers, a flock of six, passed to the N.W. 8th. A few young Gannets were in the Bay, and remained for some days fishing among the herrings and sprats. 10th. A flight of Grey Plovers, Sanderlings, Dunlins, and a few Godwits arrived. 11th. Great flocks of Godwits and Knots were on the Tees Sands. I made good bags of both species. 16th. E. moderate wind. A great many Ducks passed to the N.W. A Woodcock flew up the sands, near the fishing-boats, early in the morning. 20th. A great passage of Ducks took place. 23rd. At sea I observed eight Red-throated Divers. 26th. A great arrival of Dunlins; some immense flocks were on the sands at high tide. A few Larks and Chaffinches were crossing on the autumnal migration. 29th. Larks crossing continually. A Honey Buzzard was shot near Whitby, and sent to Mussell, the Middlesbro' taxidermist.

Oct. 2nd, N. wind, moderate. Several flocks of Ducks, a

Heron, and three Skuas passed East Scar. Larks continued to cross daily up to the 8th. 7th. E. wind, rain. An immature Grey Phalarope was shot while swimming among the breakers near Redcar Pier. 8th. N.E., moderate. A great many Ducks passed; a Woodcock was observed. 9th. S.W., light. A great rush of Larks and Green Plovers; they crossed from daylight up to noon. I noticed a white bird among some Larks, which passed me on Coatham Sands. 10th. An adult Buffon's Skua was killed by coming in contact with the telephone-wires on the sand-hills. The first Hooded Crows were seen to-day. This is a week later than the average date of their appearance. 10th to 14th. Larks crossing daily, and Ducks, reported by the fishermen, going to N.W. 13th. Guillemots and Razorbills, in flocks, were flying eastward in the early morning. A few Gannets, Terns, and Skuas, were still in the Bay. 15th. I saw six Shore Larks on East Scar, and a friend who was with me shot two, both fine adult examples. 17th. N.W., gale. Two Snipe came from seaward, and passed over the Scars. 18th. N. gale, rain. Many flocks of Ducks passed. I shot an immature Long-tailed Duck, and another was killed by a fisherman from East Scar. A Goosander and three small flocks of Pomatorhine Skuas flew to the N.W. 19th. N.E. gale, rain. Ducks passing. I saw five Shore Larks. 20th. S.W., light, rain. Many Dunlins and a few flocks of Ducks passed. 21st. S.W., light. A few Larks and Hooded Crows came over. 22nd. Calm, hazy. A rush of Larks, Hooded Crows, and Green Plovers. While off in a boat, E. of Redcar, I shot a Red-throated Diver with a few red feathers on the neck, and an adult Long-tailed Drake. 23rd. S.W., light. A few Hooded Crows and Larks crossed daily to the end of the month. I walked within two or three yards of a Shore Lark and an Arctic Tern, by the edge of the water. 24th. S.W., moderate. Many Larks and Hooded Crows. Two immature Velvet Scoters were shot. 25th. A large Hawk, possibly a Peregrine, carrying a bird in its talons, came from seaward at 10.30 a.m., flying S.W. It dropped the bird on the water, near Redcar Pier, and passed on up the sands about 200 yards away. A Kestrel came over at noon. 26th. N.E. gale. A large number of Skuas flew past to the N.W. 28th. N.W. gale. Two Long-tailed Ducks were shot. 29th. Gale continuing. A Little Grebe was picked up alive on Coatham Sands. A Woodcock

was shot on the sand-hills. 30th. While looking through the telescope at the Lifeboat Station, I distinctly saw a Great Northern Diver swimming near West Scar; I went off in a boat, but could not then see anything of the bird. On Nov. 8th a fine adult male example of this species was shot inside the rocks, and possibly this may be the bird I saw.

In November, between the 1st and 15th, S.W., light. A few Larks and Hooded Crows were observed daily. 18th. S.W., light, hazy. A great flight of Green Plovers. 24th. N., strong, rain. Two Shore Larks were shot on the sands east of Redcar. All those I saw were adult specimens. Several flocks of Ducks passed. 25th. N.E. gale, snow and hail showers. A great rush of Ducks, also many Snow Buntings. 27th to 29th. E. gales and snow. Many Ducks, Dunlins, Larks, and Snow Buntings passed.

On Dec. 1st an adult male Black-throated Diver, in almost perfect summer plumage, was shot within twenty yards of the beach, opposite Redcar. This is the first example in full plumage which I have known here. 2nd. While off in a boat I saw two Great Northern Divers and a large Grebe, but could not come within shot of them. 16th, E. gale, and 19th, S., moderate. A few flocks of Ducks passed. 20th. An intense frost. Three Swans flew past to the N.W. Thousands of Wood Pigeons congregated in the bean-stubbles east of Redcar. All the pools and water-courses on the marshes were frozen hard. 22nd. A Spotted Crake was captured alive in a ditch near Redcar. 27th. Two Swans were on West Scar early in the morning; five others were seen at the Tees Mouth. Many hundreds of Black-headed Gulls assembled on the shore during the severe weather in this month. 31st. A Little Auk was picked up on the beach. Unusual quantities of Scaups were obtained during December and January, many of them being drakes in perfect plumage. The old wild-fowlers say that, forty or fifty years ago, these birds were numerous every winter, and they hardly considered them worth shooting at; but they are by no means common now.

1891. On Jan. 7th a Whooper was shot near Stockton-on-Tees. Several Swans were killed by a puntsman at the Tees-mouth while the hard weather prevailed. 8th. Hard frost. A great rush of Larks to the N.W. 9th. Fine, S.W., light. Three

Swans passed at sea, half a mile away, flying N.W. I do not think we had such severe frosts as were experienced further south, nor was there much snow. The little which did fall quickly melted on the coast-line, and throngs of Fieldfares, Redwings, Larks, Thrushes, and other small birds came down to the sands and fields near the beach; but the ground was frozen so hard that they could find but little sustenance, and many perished from starvation. 16th. My attention was attracted by the notes of some birds of the Lark tribe, at high-water mark, near the sand-hills. On shooting one I saw it was a "stranger," and forwarded it to Mr. Eagle Clarke, of the Edinburgh Museum, but afterwards procured two more, and then, by the aid of Mr. Saunders' 'Manual,' discovered they were Wood Larks (*A. arborea*). Probably they composed a family party, for there were only seven altogether. These are the first I have met with. Is it not an extraordinary time and place for birds of their nature? A local taxidermist, who has been in the habit of snaring song-birds since he was a boy, informs me that, although he has often looked for the Wood Lark, he never saw one until this winter; and Mussell has had only one through his hands in the course of thirty-five years' experience in the practice of taxidermy. 19th. A Scaup drake, swimming near the shore, induced me to take a boat, and go in pursuit. After winging the bird, which escaped by diving (though I secured it afterwards), I shot a strange-looking bird flying past the boat, and this proved to be a Great Crested Grebe; shortly after I obtained three Red-necked Grebes, besides seeing eight or ten others, and a Great Northern Diver, which I could not follow, owing to the cold snow showers, and darkness coming on. Two fishermen, who had heard the shooting, put off in their boat, and shot a Mute Swan and three Red-necked Grebes. They told me they had seen at least twenty. The weather became too rough for boating for some days after the 19th. Between that date and the 27th the fishermen reported most surprising numbers of Grebes at sea; there must have been some hundreds between the Tees and Huntcliffe. Two were picked up alive on the beach, having been driven ashore by the rough seas. 27th. An immature Black-throated Diver and two Red-necked Grebes were shot early in the morning. I went off about 10 o'clock, and obtained a Red-necked Grebe; we saw

several more, but the wind rose and obliged us to come ashore. A few Larks and Green Plover came over. Wind, strong from S.W.

On Feb. 7th another Red-necked Grebe was shot, and four others, and a Great Northern Diver, observed early in the morning. 12th. N. gale, rough sea. Three Grebes were swimming near the shore, at low tide, under the shelter of West Scar. 14th. By the help of the telescope at the Lifeboat look-out, I discovered two fine adult Long-tailed Drakes swimming and diving near Salt Scar, and a Grebe near West Scar. 16th. Two Grebes were inside the rocks. 17th. An immature Black-throated Diver and a Glaucous Gull were shot from a boat between Redcar and Marske. 25th. A wounded Grey Lag Goose was brought in by one of the fishing-cobles. A Lark came over at 1 p.m. The weather during the last week of February was calm and foggy, the sea perfectly smooth. On the 27th I observed a Red-throated Diver within two yards of the shore, near East Scar; at one time, when it dived, there could have been little more than enough water to cover its back.

With regard to the abundance of Grebes this winter, it may probably be attributed to the severe frost which would freeze all the lakes and streams on the Continent, thus driving the Grebes to the open sea, and thence to our shores. Have any readers of 'The Zoologist' noticed an increase of these birds in their localities?

Since writing the above I have heard, in conversation with Messrs. W. J. Clark, of Scarborough, and M. Bailey, of Flamborough, that unusual numbers of Red-necked Grebes were seen in their respective districts in January last.

[A note on this subject by Mr. W. J. Clarke will be found in 'The Zoologist' for May last, p. 193.—ED.]

ON THE HERPETOLOGY OF THE GRAND DUCHY OF BADEN.

BY G. NORMAN DOUGLASS.

(Continued from p. 184.)

II.—Fam. SCINCIDÆ.

Anguis fragilis, L. — There is considerable fluctuation in the numbers of this species (as with some other reptiles) from year to year, dependent, perhaps, on whether the season has been favourable to the production and growth of the young. But, on the whole, a steady decrease has been perceptible up to the spring of 1889, notably near the capital, where it was formerly common enough both in the town itself and in the immediate vicinity.

I have always come across it fairly abundantly on the neighbouring hills, in the wooded parts, as well as more particularly in the large sandstone quarries,—where it can often be discovered under the same stone with a *Coronella levis* or *Tropidonotus natrix*,—but never in the actual Rhine woods. Near Baden Baden it may be seen in great numbers, and, in fact, throughout the whole Black Forest region and on the Kaiserstuhl. In the Bavarian Palatinate it appears no less generally distributed, showing, however, a decided preference for the more hilly districts, though it also occurs in the plain directly opposite Karlsruhe.

Full-sized individuals are rarely met with, probably owing to the wholesale destruction which this species undergoes. Needless to mention that it is considered highly poisonous by the country people, who further accuse it of a special tendency to be swallowed by the grazing cattle (thereby causing their death), and act accordingly. But, apart from this, and the annual destruction involved in the hay-making, a multitude of more natural persecutors take advantage of its insufficient means of self-defence and tardy movements, which seem to suggest blindness. Hence the obscure tints which harmonize admirably, in a general way, with the surroundings.* But within this restricted sphere

* I may refer to a curious instance of more specialised protective resemblance in a species allied to this, given by J. v. Fischer. Speaking of the Skink, he says:—"The wonderful similarity in the coloration of its head to the surrounding sand [the other parts of the body being described as varying in colour] renders it extremely difficult to distinguish the heads peering out of the sand."

of variability there is so much individual variation that it has been said that no two of this species can be found coloured alike.

The upper surfaces of Baden specimens rarely exhibit any decided lines or vertical markings, being usually of uniform shades varying between iron-grey and dark brown, sometimes with a rich coppery iridescence. Lower surfaces grey or of a reddish hue,—throat sometimes almost white,—and the black colouring of these parts, characteristic of the young, is here almost entirely confined to the females, and is of comparatively rare occurrence. This sex is also more inclined to retain the immature black dorsal stripe, which remains most pronounced, as we should expect, in the anterior portions of the animal. I obtained two specimens of a pretty variety near the Donnersberg, in the Northern Palatinate: back of a uniform stone-colour, sides pink coral, down the centre of under surfaces a thin black stripe. In the Alps, both black and bluish coloration of the lower parts is much more frequent, though I have never seen the var. *cæruleoventris*—of a “light sky-blue colour”—described by Mr. Geisenheyner.* With specimens in alcohol this effect is often produced by the black pigment shining through the opaque medium of the loosened epidermis.

The *cyanopunctata* form, mentioned by the same author, occurs also in Baden, but not, apparently, in such abundance as at Kreuznach, and in all the specimens I have examined the characteristic blue spots are not, as elsewhere, continued along the sides and lower parts. They are indiscriminately scattered over the back, perhaps more thickly towards the head, each occupying half a scale or less. This peculiarity seems hereabouts to be confined to adults, and Mr. Haendel, who has paid special attention to this point, tells me that the majority are of female sex. The origin of this coloration appears at present obscure, but it is certain that it cannot be due to any external cause, abrasion, &c., as the blue spots not rarely form longitudinal lines along the surface of the back.

Order III. OPHIDIA.—Fam. I. VIPERIDÆ.

1. *Vipera berus*, L.—The Smooth Snake, *Coronella lævis*, is responsible for many of the reports of the frequency of Adders

* ‘Wirbeltierfauna von Kreuznach,’ 1888.

in some parts of the country. Its metallic coppery hue—the German popular “Kupfernatter” applies therefore equally to both—as well as the ferocity with which it resents attacks, are no doubt accountable for this confusion.

On the whole, I should call this species decidedly scarce (in comparison to other countries) in Baden, having not once met with it, even in the most suitable localities. Nüsslin* states that it is confined to the Black Forest with the river Murg as the northern boundary of its range, and he mentions the occurrence of the var. *prester* at Herrenwies, near Baden Baden.† At this latter place many claim to have observed it, but my belief has received a severe shock since a friend has written to say that after much trouble he succeeded in obtaining a “local” adder, which proved, however, to be merely a blindworm. I have myself spent several afternoons in looking for it on the rocks above the town, where it is said to be numerous.

Towards the eastern side of the Schwarzwald this species becomes more common, being reported as very frequent in the Swabian Hills; whereas in the entire central Rhine district it is referred to as scarce by all who have paid attention to this point. In the Bavarian Palatinate its presence has not yet been authenticated.

The colouring of this class of ophidians has been less influenced than that of others by the effects of “age, sex, season and locality”; terms which are often called into requisition to assist in explaining difficulties. This is partially true of the size, which varies both according to sex, the female being of larger dimensions, and locality, mountainous forms being somewhat smaller in size. I should consider it a mistake to attribute its absence in this part of Germany (as has been done) to the mildness of the climate, for on referring to a map, it will appear that its distribution has been determined by social rather than by physical causes, *i. e.*, that it has been less successful in its combat with other species than with the conditions of nature.

* In ‘Grosherzogthum Baden,’ 1883.

† A local paper recorded the capture of a pair in July, 1887, near Weinhelm, as a great rarity in that district. I note this because more recently it has been stated that the north of the Grand Duchy is entirely exempt from this species. Of course this may again be the result of an error of identification.

For while it is generally true that a large horizontal implies also a large vertical range, the causes which have led to this are by no means the same in all species. As at the high altitudes where *V. berus* is often found, its usual food—mice and other warm-blooded animals—no longer exists, it is obliged to content itself with a diet of the equally hardy *L. vivipara*, which will account to some extent for its dwarfed size.

There is little modification in the colour of this species during the growth of the individual, the adults remaining almost as brightly-coloured as the young. Relying entirely on its venom for self-defence, it has no need of positive protective colouring, as has been maintained, and it is pure chance if its tints are found to harmonize with the surroundings. This is sufficiently shown by the fact that hardly two are coloured alike, even out of the same brood. I have also not remarked any seasonal changes of colour in this species (after desquamation the hues are naturally more vivid); nor are there any pronounced sexual differences in colour, though some shades are more common to one sex.

Its varieties are unlimited, and have given rise to a great deal of confusion—witness many Italian herpetological works—between this species and *V. aspis*. There is much analogous, or parallel, colour variation between these two species, which are further structurally so bound together by a series of intermediate types that, according to some of the best authorities, no distinct line of demarcation can be drawn between them.

I am not aware that the red *Coluber chersa*, L., occurs in the Grand Duchy, but it does in other parts of Southern Germany, and I was interested to notice that it is accredited here, as in parts of England, with greater irritability than the other forms. It is noticeable that this colour is supposed, in other creatures also, to indicate the same temperament.

The black variety has been held to be peculiar to the female sex, probably because these exceed the males in numbers, and are less agile in escaping detection. It is found sporadically throughout the whole range of *V. berus*, but certainly in greatest abundance (though not exclusively), for some unexplained reason, in mountainous districts. I have caught one or two of the ordinary type above 8000 ft. elevation. This form has been known to produce young of the normal colour.

2. *V. aspis*, L.—The existence of this species in the extreme south of the Grand Duchy has at last been satisfactorily proved (see ‘Zoologischer Garten,’ 1890, p. 265), though it had been long suspected (*ibid.* p. 12). This isolated outpost has doubtless been reached from the Swiss Jura by way of Bâle, in the neighbourhood of which town it sometimes occurs.

In Western Germany it is cited from parts of Lothringen, but its distribution there is so far not accurately determined.

3. *V. ammodytes*, L.—A single specimen of this viper was caught, I think, about 1830, in Southern Bavaria, and served for the time to found its claims as a German species. These claims, however, have been shown to be null and void.*

Has any use been assigned to the curious little horn on the head of this snake? According to Leydig, it resembles in structure the wattles of gallinaceous birds, and we might infer from analogy that it served for the same purpose as those of different species of lizards. Similar protuberances are found on the heads of various other snakes, not the least remarkable being the double projection on that of the *Cerastes* viper, which, to judge by the shape of the head in other sand-inhabiting reptiles, would seem to be of considerable inconvenience to its owner. But its accompanying advantages must more than counterbalance this. Brehm suggests that these horns act as organs of touch, by informing the snake of dangers “which its eye, unaccustomed to the daylight, could not perceive.”† They do not, however, appear to be particularly sensitive. It is also improbable, in view of the general adaptive tints of this species, that they should serve to inspire terror into the hearts of would-be persecutors.

Possibly they may be, as Mr. Wallace suggests of the Cobra’s hood,‡ a lawful means of warning, whereby to escape any “experimental tasting” on the part of its foes, and to judge by the difficulty we ourselves encounter in distinguishing poisonous snakes, such a mark of recognition would no doubt prove advantageous. Still, this would be crediting the hawks and other birds which might pounce down upon it with extremely acute powers of vision.

* ‘Leydig, ‘Einheimische Schlangen,’ 1883, p. 31.

† ‘Reptiles,’ p. 486.

‡ ‘Darwinism,’ p. 263.

It is a significant fact that a considerable amount of variety is displayed in the form of these excrescences, and that among the individuals of one species this characteristic sign is not constant in size, that of *ammodytes*, for instance, being often no larger than that of *V. aspis*. It may be asked how the acquisition of the slight nasal projection in this last named—which looks like a transitional stage—can be of any value to its possessor.

But this reminds me of the gradations in the means of warning by sound exhibited by various snakes, which are referred to in Darwin's "Expression of the Emotions,"* whence we may gather that so unpromising an object as the slightly indurated tail-tips of our European vipers may be the foundation of an organ as highly developed as that of the Rattlesnake.

It would be interesting similarly to follow up the various minute steps by which an apparatus so perfected as the poison-glands has been formed. But the greater the specialization—*i. e.* divergence in one direction—the rarer are the connecting links. Still we find here, as everywhere, various degrees of perfection, though it has become difficult to trace how the venomous saliva has been gradually accumulated, intensified, and collocated into its convenient receptacle. Dr. Leydig relates how on exhibiting a *Coronella levis* to some students at Tübingen, the animal inflicted a bite on his wrist, which caused his whole arm to swell up for some days. In this he recognised the possible commencement of the development of these organs: a concession for so staunch an adherent of the immutability of species.

But it is still more curious to see how, while some species are improving this chance of success by increased swiftness or by various methods of protective coloration, others—locally separated and working independently, as it were—have discovered the identical, and not the least peculiar, of the many contrivances to prolong specific existence.

* 'Darwinism,' p. 109 *seq.*

A COMPARATIVE LIST OF THE BIRDS OF HELIGOLAND
AND THOSE OF THE BRITISH ISLANDS.

BY HENRY SEEBOHM.

THE publication of the long-expected work by Heinrich Gätke, to which allusion has been already made (p. 216), enables the reader for the first time to realise the remarkable number of species of birds which have been found in the world-famed island of Heligoland, and to sift the actual captures from the more or less doubtful list of birds which have only been seen, or supposed to have been seen, on that wonderful little island.

Of the 396 species included in the list, there are more than 40 of which the evidence of their occurrence leaves much to be desired. In a few of these cases there seems to be some doubt whether the examples really were procured on Heligoland; and in some cases the examples have been lost, and their identification rests upon the memory of one of the brothers Aenckens, who recognised them years afterwards from skins. In many cases the birds were not captured, and the correctness of their identification cannot be proved. There are no fewer than 75 species which have only once been shot on the island, though in some cases it is supposed that other examples have been seen near enough for identification.

There are, however, nearly 300 species which have been procured more than once upon the island, a large proportion of which pass over regularly every spring and autumn, some of them occasionally in immense numbers.

The Heligoland list is very rich in the typical *Turdina Geocichla varia* appears in both lists, but the *G. sibirica* of the British list is replaced—on what seems to be very insufficient evidence—by *G. dauma*. The four British species of *Turdus* (or five if *T. migratorius* be included) have all occurred on Heligoland, and, in addition, three other American species appear in the Heligoland list—*T. swainsoni*, *T. pallasi*, and *T. fuscescens*, but the correct identification of the two latter is very doubtful. In addition to the three British species of *Merula*, three others are recorded—*M. fuscatus*, *M. ruficollis*, and *M. pallens*, but the identification of the last is unsatisfactory.

Erithacus rubecula is a common spring and autumn visitor to Heligoland. Three Bluethroats appear in the Heligoland list—*E. suecica* with the red spot is common in spring and autumn; *E. leucocyana* with the white spot was common in April, 1877, but is otherwise only known as an accidental visitor; and the so-called *E. wolfi* with no spot on the breast, which is generally supposed to be an accidental variety of the other species, was obtained in March, 1848. In addition to our Nightingale, *E. luscinia*, the larger species, *E. philomela*, has once occurred on Heligoland.

To the three British species of Flycatchers, a fourth, *Muscicapa albicollis*, must be added to complete the Heligoland list.

The genus *Pratincola* is represented by the same two species in both lists; but to the three British species of *Saxicola* three more must be added as stray wanderers to Heligoland—*S. aurita*, *S. morio*, and *S. leucura*, though some doubt attaches to the latter. The same remark applies to the genus *Ruticilla*. In addition to the two British species *R. mesoleuca* may certainly be added, and *R. moussieri* very doubtfully. In addition to *Monticola saxatilis*, *M. cyana* is included in the Heligoland list on the faith of an example caught about the year 1830, and identified years afterwards from memory.

Cinclus melanogaster is an occasional wanderer to Heligoland, as well as to the British Islands, but our resident rufous-breasted race is not known to have occurred on the little German rock.

To complete the Heligoland list of *Turdinæ*, two American species have found their way to the island, with or without the aid of ships—*Harporhynchus rufus*, in the autumn of 1836; and *Mimus carolinensis*, in October, 1840.

Both the Heligoland and British lists have claimed a *Pycnonotus*; the former is said to have been caught in May, 1837, and is recorded as the Palestine species, *P. xantopygus*; the latter was shot near Waterford, in January, 1838, and (if the skin has not been changed) was a South African species, *P. capensis*. The near coincidence of the dates is remarkable.

In the subfamily *Sylviinæ* the Heligoland list is specially remarkable. In addition to the 20 British species it contains 16 others. There can be no doubt that in August, 1856, a *Locustella certhiola* was shot on the island, having presumably wandered thither from Central Siberia; nor can it be denied that Gätke's collection contains an example of *Acrocephalus agri-*

cola, shot in June, 1864, which probably overshot the mark in migrating from its winter quarters to its breeding-grounds in South-east Russia. The genus *Hypolais* is only represented in the British Islands by one species, *H. icterina*, which has been twice shot in June—once in England and once in Ireland. In addition to this species the Heligoland list contains four species. An example of *H. polyglotta* was shot on the 23rd of May, 1846; one of *H. pallida* on the 20th of September, 1883; one of *H. caligata* on the 28th of September, 1851; and one of *H. olivetorum* in May, 1860. These four species all breed in Southern Europe. The four species of the genus *Sylvia* which visit the British Islands every summer, *S. atricapilla*, *S. hortensis*, *S. cinerea*, and *S. curruca*, pass over Heligoland every spring and autumn; and an example of *S. provincialis* is believed to have been caught half a century ago, and a second one seen in May, 1851. *S. nisoria*, which breeds in the south of Sweden, and has now occurred at least five times in the British Islands, is a rare and somewhat irregular visitor to Heligoland. *S. orpheus* has only occurred two or three times in either locality. *S. melanocephala*, like the last-mentioned bird, is a southern species whose claim to be inserted in the Heligoland list rests on a vague identification at least half a century old. There are two forms of *S. galactodes*—the western or typical form, and the eastern form, *S. galactodes familiaris*. It is rather curious that three examples of the former are recorded from the British Islands, whilst three of the latter are supposed by Gätke to have visited Heligoland.

In addition to the four British species of the genera *Phylloscopus*, *P. sibilatrix*, *P. trochilus*, *P. rufus*, and *P. superciliosus*, no fewer than eight are added by Gätke to the Heligoland list. One example of *P. bonelli* was shot in 1861, and a second in 1874, both in October, though the species breeds in Southern Europe. Two species breeding in North-east Europe, *P. borealis* and *P. tristis*, have been shot on Heligoland (the former in Oct. 1854, and the latter in Oct. 1846), as well as two Siberian species, *P. proregulus* and *P. coronata* (the former in Oct. 1845, and the latter in Oct. 1843). Three examples (one shot in Sept. 1878, the second in May 1879, and the third in June 1880) are identified by Gätke as *P. viridanus*, from Turkestan; and an example shot in October, 1867, is unquestionably *P. nitidus*, a species formerly supposed to be confined to the Himalayas, but

now recorded as breeding in the Caucasus (Pleske, 'Vogelfauna Russ. Reichs.,' p. 174). Another Siberian species, *P. furcatus*, is reported as having been seen on the 24th of October, 1876.

An example of an American Warbler, *Sylvicola virens*, was killed on the 19th of November, 1858.

In the subfamily *Parinæ* it is very interesting to note the entire absence of any species of *Sitta*, and though *Parus palustris*, *P. borealis*, and *P. kamtschatkensis* are all included in the list, there is no satisfactory evidence to prove the occurrence of any one of them. As *Sitta cæsia* is unknown in Ireland, and *Parus palustris* is so very rare there, it is especially interesting to learn how seldom they venture across the sea. *P. major* and *P. cæruleus* are common, but *P. ater* is rare, and *P. cristatus* so rare that Gätke has not been able to get an example. *Acredula caudata*, *Panurus biarmicus*, *Certhia familiaris* and *Accentor alpinus* are rare; but *A. modularis*, *Troglodytes parvulus*, *Regulus cristatus* and *R. ignicapillus* are common, whilst *Tichodroma muraria* is unknown.

Ampelis garrulus, *Sturnus vulgaris* and *Pastor roseus* are severally irregular, common and rare in both lists.

All the British *Corvinæ* (eleven species, including *Pyrrhocorax alpinus*) have occurred on Heligoland, and possibly *Persicoreus infaustus* in addition.

In addition to the five British *Laniinæ*, *Lanius isabellinus* and *L. meridionalis* have each been once shot on Heligoland.

Heligoland is somewhat richer in *Fringillinæ* than the British Islands are, but some of the records are very unsatisfactory.

In addition to the ten Buntings which appear in the British list (four of them as accidental visitors) seven other species are claimed for Heligoland. Of these *Emberiza aureola*, which breeds in North Russia, has occurred several times; and *E. pithyornis*, which breeds in Central Siberia, has occurred once. From Southern Europe *E. cæsia* has occurred several times, *E. cia* twice, and *E. pyrrhuloides* once. *E. cinerea* from Southern Europe and *E. luteola* from Turkestan must be regarded as very doubtful additions to the Heligoland list, as they have not been procured.

Of the twelve species and subspecies of the genus *Fringilla* which have been caught in the British Islands, all, except *F. canaria*, are in the Heligoland list, and in addition several other species are supposed to have been seen—*F. nivalis*, *F. citrinella* and *F. pusilla*.

Passer domesticus and *P. montanus* belong to both lists. *Pyrrhula major* is a very irregular visitor to Heligoland, but has not been known to occur in the British Islands, whilst our common *P. vulgaris* has only once occurred on Heligoland.

Carpodacus erythrinus is a very rare visitor to Heligoland, as well as to the British Islands, and there is an example in the Gätke collection which is supposed to be a young bird of *C. roseus*, but there is no evidence that it has been compared with the young of the many allied species.

Pinicola enucleator, *Loxia curvirostra* (both thick- and thin-billed races) and *L. bifasciata* occur in both lists, but the American race of the latter is not known from Heligoland.

Two examples of *Dolychonix oryzivora* from North America have occurred on Heligoland.

The three British Swallows visit Heligoland, and in addition the South European *Hirundo rufula* has once occurred. *H. cahirica* is supposed to have been once seen, but, if not a dark-bellied example of *H. rustica*, the bird was probably *H. tytleri* from Siberia. The American *Progne purpurea* is not known to have occurred on Heligoland.

To the six British species of *Anthus* must be added two examples of *A. ludovicianus*; and to the five British species of *Motacilla* must be added *M. citreola*, *M. borealis*, and, it is said, *M. melanocephala*, to complete the Heligoland list, but, curiously enough, Gätke does not distinguish the two last-mentioned species from each other.

In addition to the six Larks included in the British list, an example of *Alauda piscoletta* was shot in May, 1879; *A. calandra* is said to have been shot half a century ago, and an example of *A. tartarica* was shot in April, 1874.

Of the *Cuculidæ*, *Cuculus canorus* is the only species known to visit Heligoland, *C. glandarius* from Southern Europe, and *Coccyzus americanus* from North America, not having been known to have been procured.

The *Picidæ* are amongst the least migratory of birds; they are almost unknown in Ireland. *Picus martius* and *P. tridactylus*, though both common in Scandinavia, are not known to have occurred either on Heligoland or on any of the British Islands; *P. minor* is also unknown on Heligoland, and *P. leuconotus* and *Gecinus viridis* are only included in the list on the faith of

a single example of each, neither of which was procured. *P. major* is the only Woodpecker known with certainty to have visited Heligoland. *Jynx torquilla*, though a regular summer visitor to England, and an accidental visitor to the Orkneys and Shetlands, has only once occurred in Ireland, and has not been recorded from Heligoland.

Upupa epops is almost as rare in Heligoland as in the British Islands.

Of the *Alcedinidæ*, *Alcedo ispida* is a rare and irregular visitor to Heligoland, and the American *Ceryle alcyon* is not known to have occurred there. Of the *Caprimulgidæ* both lists include *Caprimulgus europæus* as a regular visitor, and *C. ægyptius* as having once occurred. Of the *Cypselidæ* both lists include *Cypselus apus* as a regular visitor, and *C. melba* as an occasional straggler, but the British list also includes *Chætura cadacuta* in the latter category. Of the *Meropidæ*, *Merops apiaster* and *Coracias garrula* are included as more or less accidental visitors in both lists.

There are 27 birds of prey in the Heligoland list and 26 in the British list—*Falco sacer*, *F. lanarius*, *F. eleonoræ*, *Aquila brachydactyla* and *Circus pallidus* of the former taking the place of *Vultur fulvus*, *V. percnopterus*, *Elanoides furcatus* and *Accipiter atricapillus* of the latter list. It must, however, be noted that the evidence in favour of the four first-mentioned birds of prey having really visited Heligoland is very unsatisfactory.

The ten British Owls have all occurred on Heligoland, with the sole exception of *Bubo maximus*.

The Heligoland list is remarkably weak in Herodiones. *Ciconia alba*, *C. nigra*, *Ardea cinerea*, *A. purpurea*, *Botaurus stellaris* and *B. minutus* are common to both lists, but neither *Ardea alba*, *A. garzetta*, *A. comata*, *A. bubulcus*, *Nycticorax nycticorax*, nor *Botaurus lentiginosus*, has been recorded from Heligoland. An example of *Ibis falcinellus* was shot in 1824, but *Platalea leucorodia* has not been observed.

The three British Steganopodes—*Sula bassana*, *Phalacrocorax carbo*, and *P. graculus*—all visit Heligoland.

All the Heligoland Anseres belong to the British list,—*Cygnus olor*, *C. musicus*, *C. bewicki*, *Anser cinereus*, *A. segetum*, *A. brachyrhynchus*, *A. albifrons*, *A. minutus*, *A. hyperboreus*, *A. brenta*, *A. leucopsis*, *Anas boschas*, *A. acuta*, *A. strepera*, *A. penelope*, *A.*

circia, *A. crecca*, *A. clypeata*, *Tadorna cornuta*, *Fuligula nigra*, *F. fusca*, *F. perspicillata*, *F. marila*, *F. cristata*, *F. ferina*, *F. nyroca*, *F. clangula*, *F. glacialis*, *Somateria mollissima*, *S. spectabilis*, *S. stelleri*, *Mergus merganser*, *M. serrator*, and *M. albellus*,—but very few of the occasional visitors to the British Islands have been observed on Heligoland. We have no record of *Anser ruficollis*, *Tadorna rutila*, *Anas americana*, *A. carolinensis*, *A. discors*, *Fuligula rufina*, *F. albeola*, *F. histrionica*, or *Mergus cucullatus*. Probably some of these species have visited Heligoland, but have not been recognised.

The Tubinares are represented in both lists by *Fulmarus glacialis*, *Puffinus major*, *P. griseus*, *P. anglorum*, *Procellaria leachi*, and *P. pelagica*, but the British list also contains *Puffinus obscurus*, *Oceanites wilsoni*, and, if single occurrences be admitted, *Daption capensis*, *Bulweria columbina*, *Æstrelata hæsitata*, and *Æ. torquata*.

The Heligoland *Charadriidæ* differ very slightly from those which visit Britain, except that fewer American visitors have been detected in the smaller area. *Totanus macularius*, *Tringa rufescens* and *Charadrius virginicus* appear in both lists; but the British list contains *Charadrius vociferus*, *Tringa bonapartii*, *T. pectoralis*, *Totanus bartrami*, *T. solitarius*, *T. flavipes*, *Macroramphus griseus*, and *Numenius borealis*, none of which have been known to occur in Heligoland. On the other hand, the British list boasts of a visitor from Southern Europe, *Vanellus gregarius*, but its absence in Heligoland is more than compensated for by the presence of *Numenius tenuirostris* and *Totanus stagnatilis*. The other species common to both lists are *Hæmatopus ostralegus*, *Charadrius minor*, *C. hiaticula*, *C. cantianus*, *C. morinellus*, *C. pluvialis*, *C. fulvus*, *C. helveticus*, *Vanellus cristatus*, *Himantopus avocetta*, *H. melanopterus*, *Phalaropus fulicarius*, *P. hyperboreus*, *Numenius arquatus*, *N. phæopus*, *Totanus pugnax*, *T. hypoleucus*, *T. ochropus*, *T. glareola*, *T. calidris*, *T. fuscus*, *T. glottis*, *Limosa rufa*, *L. melanura*, *Tringa canutus*, *T. subarquata*, *T. alpina*, *T. maritima*, *T. platyrhyncha*, *T. minuta*, *T. temmincki*, *T. arenaria*, *Streptilas interpres*, *Scolopax rusticola*, *S. major*, *S. gallinago*, and *S. gallinula*.

Of the *Cursoriidæ*, *Cursorius gallicus* was shot rather more than half a century ago, but *Glarcola pratincola* is not known to have occurred in Heligoland.

Of the *Ædinemidæ*, *Ædinemus crepitans* is common to both lists.

The Heligoland *Laridæ* are, as might be expected, very similar to those of the British Islands. *Larus glaucus*, *L. leucopterus*, *L. marinus*, *L. fuscus*, *L. argentatus*, *L. canus*, *L. tridactylus*, *L. ridibundus*, *L. minutus*, *Sterna cantiaca*, *S. arctica*, *S. hirundo*, *S. nigra*, *Stercorarius richardsoni*, *S. buffoni*, and *S. pomarinus*, bear somewhat the same relation to each other so far as numbers go in both areas, and the same may be said of the accidental visitors *Larus ichthæetus*, *L. bonapartii*, *L. sabinii*, *L. rossi*, *L. eburneus*, *Sterna caspia*, *S. anglica*, and *S. dougalli*. *Stercorarius catarrhactes* is a very rare visitor to Heligoland; *Sterna fuliginosa*, *S. leucoptera* and *S. hybrida* are not recorded from the little rocky island, but the absence of these southern species is compensated for by the occurrence of two examples of the Arctic species *Larus affinis*.

The Heligoland *Alcidæ* are the same as those in the British list, except that no record has been kept of the probable visits of *Alca impennis* during the last century, and there is an example of one of the allies of *Alca grylle* which remains undetermined in Gätke's collection for want of material with which to compare it.

Only two *Gallinæ* have occurred on Heligoland, *Perdix cinerea* and *Coturnix communis*, leaving *Tetrao mutus*, *T. scoticus*, *T. tetrix*, *T. urogallus*, *Phasianus colchicus* and *Perdix rufa* to the credit of the British list.

There is not nearly so much difference in the respective *Grallæ*. The following are found in both lists:—*Pterocles paradoxus*, *Otis tetrax*, *Grus cinerea*, *G. virgo*, *Rallus aquaticus*, *Crex pratensis*, *C. porzana*, *C. bailloni*, *C. parva*, *Gallinula chloropus*, and *Fulica atra*, leaving *Otis tarda* and *O. macqueeni* to the credit of the British list.

The *Pygopodes* are represented in both lists by *Colymbus glacialis*, *C. arcticus*, *C. septentrionalis*, *Podiceps cristatus*, *P. rubricollis*, *P. cornutus*, *P. nigricollis*, and *P. minor*, but *P. adamsi* appears hitherto to have escaped detection on Heligoland.

There can be little doubt that many more species remain to be discovered as more or less accidental visitors to Heligoland. The ornithological world is profoundly indebted to the inhabitants of Heligoland, especially to the untiring zeal of the Brothers Aenckens, for having detected so many rarities, and to the veteran Gätke for his careful records of observations extending over nearly half a century.

MEMOIR OF THE LATE DR. P. MARTIN DUNCAN, F.R.S.

It is with great regret that we have to record the death of Dr. P. Martin Duncan, which took place, after a long illness, at Gunnersbury, on the 28th May last, in the 67th year of his age.

Born in April, 1824, and educated at Twickenham College, Dr. Duncan entered King's College, London, as a medical student. He matriculated at the University of London in 1841, taking Honours in Anatomy and Physiology in 1844, and the degree of Bachelor of Medicine in 1846, in which year he qualified as a Member of the Royal College of Surgeons. After passing some time as assistant to Dr. Martin, of Rochester, he set up in practice by himself at Colchester, of which city he was subsequently elected Mayor.

Moving to London, he settled down at St. George's Terrace, Regent's Park, having been appointed Professor of Geology at King's College, a post which he held until the time of his death. He was always a busy man, and, when not occupied in preparing his lectures, devoted the whole of his leisure time to original research, making a *specialité* of fossil Corals and Echinoderms. On these subjects he published a considerable number of papers in the 'Annals and Magazine of Natural History,' the 'Geological Magazine,' the 'Quarterly Journal of the Geological Society,' the 'Quarterly Journal of Microscopical Science,' the 'Philosophical Transactions' and 'Proceedings of the Royal Society,' and the 'Journal of the Linnean Society.' In the last-named (vol. xxiii.) he published the latest and one of the most important of his papers, namely, his "Revision of the Echinoidea," occupying four numbers of the Journal.

But he by no means worked in this single groove, his attainments being of a comprehensive order, which fitted him, as occasion required, to deal ably with a great variety of zoological subjects. In 1878 he projected and edited a popular 'Natural History,' which was issued in parts by Messrs. Cassell, the publication of which, in six quarto volumes, was not completed until 1883. In this work he was materially assisted by the late Mr. W. S. Dallas, the late Prof. W. K. Parker, Prof. Boyd Dawkins, Dr. James Murie, Dr. H. Woodward, Prof. Seeley, Messrs. H. W. Bates, R. B. Sharpe, and other well-known specialists. The share

which he himself took in its production extended far beyond the ordinary duties of an Editor. In vol. i. (Jan. 1878) he wrote the article Apes and Monkeys, and a portion of that on Lemurs. In vol. iii. (Dec. 1879) he wrote the sections on Edentata and Marsupialia. To vol. iv. (Dec. 1880) he contributed the articles on Reptilia and Amphibia. The Introduction to the Invertebrata in vol. v. (Dec. 1881) was his, as well as the articles Vermes, Zoophyta, and Infusoria, which appeared in vol. vi., published in Jan. 1883. Thus it will be seen that, besides being Editor, he was one of the largest contributors to this popular and very useful work.

Of less important publications mention may be made of a small octavo volume, 'The Sea Shore,' which was issued by the Society for Promoting Christian Knowledge, in 1879, as one of a series entitled 'Natural History Rambles.' Not confining his attention to the marine plants and animals which may be found on the beach, or in rock-pools, Dr. Duncan treated the subject from a broader point of view, so as to show, in a general way, the various directions in which sea-side rambles may be made interesting and instructive; and the ten chapters relating to animal life furnish an excellent summary of marine zoology, in which the appearance, habits, structure, and physiology of the animals dealt with are described with great clearness, and with an almost total avoidance of so-called hard words.

Dr. Duncan was also an occasional contributor to the 'Popular Science Review,' when under the editorship of his friend the late Mr. W. S. Dallas. In this periodical he published some extremely interesting and instructive articles, such, for instance, as his "Studies amongst Amœbæ," with two plates (1877); "Notes on the Ophiurans, or the Sand and Brittle Stars," with a plate (1878); and an examination of the opinions of Voltaire and Laplace regarding Geology (1880). In all these contributions we see the workings of a thoughtful mind, the notes of a serious reader, an earnest worker, and a sound teacher.

In 1881 the Geological Society awarded him the Wollaston Medal. He was a Fellow of the Royal, Linnean, and Geological Societies, and was a former President of the last named as well as of the Royal Microscopical Society. As a constant attendant at the evening meetings of all these Societies, until within a few months of his decease, his genial presence will be much missed by the many friends by whom he was there surrounded.

NOTES AND QUERIES.

MAMMALIA.

Natterer's Bat in Co. Donegal.—On the 12th June I found a specimen of this bat lying dead on a stone coping by a pond close to my hall-door. To make certain of the species, I forwarded it Mr. A. G. More, and presented it to the Dublin Museum. Acknowledging the receipt of it, Mr. More informed me that he had once received a specimen of this bat from Co. Cork a few years ago, and that previously it was only known in Ireland from a specimen procured in Co. Dublin. Donegal now makes the third Irish county in which it has been obtained.—H. CHICHESTER HART (Carrablagh, Co. Donegal).

[Our correspondent has overlooked several other Irish localities in Wicklow, Kildare, Queen's Co., and Cork, mentioned in an article on this species which was published with a life-sized figure of it in 'The Zoologist' for 1889, pp. 241—248.—ED.]

BIRDS.

The Wood Warbler in the Midlands.—In Mr. Montagu Browne's book on the Birds of Leicestershire and Rutland (noticed in 'The Zoologist,' 1890, p. 116), the Wood Warbler, *Phylloscopus sibilatrix*, is characterised as "a much rarer bird in the Midlands than is supposed," and Mr. Browne adds (p. 57) that he has not seen a specimen for five-and-twenty years. If so, either his opportunities for observation have been very limited, or he has failed to distinguish the Wood Wren from the Willow Wren. When viewed from a little distance, if the birds are silent, these two species, from their resemblance in size and colour, may perchance be confounded; but no one with an ear for music can possibly mistake the very different songs of these two little birds. Rambling lately in the neighbourhood of Sherwood Forest in company with a well-known observer, Mr. Whitaker, of Rainworth, near Mansfield, I was particularly struck with the abundance of Wood Wrens which on June 14th were in full song everywhere. They were commoner, in fact, than the Willow Wren, or perhaps it would be more accurate to say that the song of the Willow Wren was less frequently heard on this date than the song of the Wood Wren. Our method of observation on hearing the notes of the latter species was to approach very quietly until we could detect the author of the song, and then, adjusting our field-glasses, watch the bird in the act of singing. There could be no mistake at all about it; the pale green back, the silvery under parts, the long wings, and the characteristic song, all clearly indicated the species before us, and, in one wood, we noted the presence of at least eleven pairs. As Mr. Whitaker has found as many as seven nests of this bird in one day in the woods at

Rainworth, with the very characteristic eggs, so unlike those of the Willow Wren or Chiffchaff, we must conclude that Mr. Browne's opinion of the scarcity of the Wood Wren in the Midlands was based upon insufficient observation.—J. E. HARTING.

Hawfinch breeding in Devonshire.—With reference to Mr. Pidsley's statement that the Hawfinch has not been known to breed in Devonshire, and his reviewer's impression that the nest has been found by me in South Devon (p. 234), I should like to remark that a nest with young birds of this species was found, though not by me, some years ago near Kingsbridge. One of the old birds and two of the young ones were secured, and preserved, and are now in the possession of Mrs. Elliot, whose husband, the late Mr. J. Elliot, had a very good collection of Devonshire birds. For this information I am indebted to Messrs. Henry Nicholls and E. A. S. Elliot.—W. S. M. D'URBAN (Moorlands, Exmouth).

Habits of the Emu as observed in Confinement.—Amongst the miscellaneous observations published by Jesse from Gilbert White's MS. diary ('Gleanings in Nat. Hist.' 2nd series, p. 177) occurs the following:—"When horses, cows, sheep, and deer feed in wind and rain, they always keep their heads down the wind and their tails to the weather; but birds always perch and choose to fly with their heads to the weather to prevent the wings from ruffling their feathers." Amongst birds the Emu is an exception to this rule, as I have lately had an opportunity of observing. Mr. Whitaker, of Rainworth, near Mansfield, has some of these birds which have the run of a large enclosure, in company with Fallow-deer and a small flock of St. Kilda sheep. Here they do very well, and breed; and at the same time are tame enough to suffer a near approach—near enough to enable one to note the difference of colour in the irides of the old and young birds. When admiring them recently, during a visit paid to Mr. Whitaker, we remarked the habit of this species to sit tail to wind, like deer and sheep, and although the feathers were frequently ruffled by the wind, the birds suffered no apparent inconvenience from it. From this it may be inferred that the long pendulous plumage of the Emu affords as good a protection from the weather as the woolly fleece of a sheep, or the hairy covering of a deer.—J. E. HARTING.

Supposed Occurrence of Orphean Warbler in Devon.—I have just been reading up 'The Zoologist' for 1890, after more than a year's absence from England, and at p. 467, I note the remarks on the "Supposed Occurrence of the Orphean Warbler in Devonshire," by Mr. W. S. M. D'Urban. From his description of the bird observed on April 16th, 1890, its smaller size, as compared side by side with the Blackcap, its pure white throat, and slender beak, I should say that the stranger was probably an adult Black-headed Warbler, *Sylvia melanocephala*. This (often called the

Sardinian Warbler, a misleading name, conducive to confusion with *Sylvia sarda* is a common species in the South of France and the Peninsula (as well as in other parts of Southern Europe), and might easily be swept up with the tide of migration during a gale to our western shores. — HOWARD SAUNDERS (7, Radnor Place, Hyde Park, W).

Distribution of the Lesser Whitethroat in the S.W. of England.—

In the review of Mr. Pidsley's "Birds of Devonshire," in the last number of 'The Zoologist,' my brother, Mr. G. F. Mathew, is quoted as an authority for the nesting of the Lesser Whitethroat (*Sylvia curruca*) in North Devon. He certainly was in error when he made this communication to the 'Naturalist.' I have myself never seen the Lesser Whitethroat either in Cornwall or Devonshire, to which counties it is only a chance visitant. Mr. Rodd regarded it as only an occasional migrant in the autumn. Mr. Gatcombe, my friend and constant correspondent for many years, wrote to me that he had never satisfied himself that he had seen the Lesser Whitethroat in South Devon. Colonel Montagu, who was familiar with this little bird, and had studied it closely in North Wilts, never met with it in Devonshire; and in some of his unpublished notes in my possession, in an account of a driving tour in West Somerset early in May, mentions the delight he felt in detecting a single Lesser Whitethroat on the beach at Minehead, as it was so great a rarity in that part of the kingdom. During the eleven years I resided at Bishop's Lydeard, in West Somerset, I only once saw a pair of Lesser Whitethroats, while my friend and neighbour, Mr. Cecil Smith, had only one local specimen in his collection, and had never been able to secure a nest. Where I now reside, at the extreme east of the county, close on the borders of Wilts, this species occurs regularly every summer, but it is far from common, my garden being the place where I usually see it. During the eight years I lived at Stone Hall, in North Pembrokeshire, I never came across a Lesser Whitethroat, nor did I ever see one in the S.W. of Wales; and the few instances I ever had reported to me of its occurrence were not trustworthy. The following I copy from my MSS. notes on the Lesser Whitethroat in the S.W. peninsula:—"Although fairly common in the east of Somerset, and in the north-eastern parts of Dorsetshire, where Mr. Mansel-Pleydell says it is generally distributed, but not common, this little bird shuns the extreme West of England, being very rare in the west of Somerset and Dorset, and unknown in Devon and Cornwall, except as a chance visitor, or as a straggler with other birds in the flocks departing from this country in the autumn. Mr. Rodd states that it is only met with at Scilly occasionally in the autumn, and is unknown at other times in Cornwall. Dr. Bullmore writes, 'It is occasionally seen, but is not nearly so plentiful as the Common Whitethroat'; but I imagine that he is mistaken, and that Mr. Rodd's statement that this warbler never visits Cornwall is

correct. Mr. Hill does not know of it in the Lizard district. Mr. D'Urban includes the Lesser Whitethroat among the birds which visit and nest in South Devon in the summer, but I suspect that here, too, is an error. Bellamy adds it to his South Devon list as 'rare.' In North Devon I have never seen it. Colonel Montagu never met with it in Devonshire, almost a decisive authority for its non-appearance. It is true that every year some change or other takes place in the distribution of birds, some which a few years since were rarely seen in a certain locality being now commonly met with; while others, which used to be frequent, have disappeared, owing to well-ascertained causes; but I do not believe that any change has affected the range of the Lesser Whitethroat to extend it further towards the west." By the way, Exmoor does not belong to Devonshire, for which county both Mr. Pidsley and the reviewer of his book seem to claim it.—MURRAY A. MATHEW (Buckland Dinham, Frome).

Hybrid Finches at the Crystal Palace Bird Show.—In Mr. A. H. Macpherson's note on this subject (pp. 188-9), no notice is taken of four remarkable mules, which caused amongst the judges considerable discussion. It is a general belief, I find, amongst "fanciers" that mules are always infertile, the singular argument put forth being that their fertility "would be against nature," whatever that may mean. The four birds in question were stated by Mr. Dye, who bred them, and with whom I have been in correspondence, to have been produced thus: three from a Linnet and Canary mule hen and a Canary cock, which (as might be expected) were almost indistinguishable from Canaries; and one from a Linnet and Canary mule hen and a Linnet cock, which was almost indistinguishable from a pure Linnet. The last-named was rather a weakly bird, and drooped one wing, from having been injured in the nest. I see no reason to doubt Mr. Dye's statement, and it is quite in accordance with several cases of fertility I have met with both among birds and mammalian hybrids.—J. JENNER WEIR (Chirbury, Beckenham, Kent).

Greater Shearwater and Dipper in Kent.—On October 29th, 1890, an adult male Greater Shearwater (*Puffinus major*) was found alive by a boy on the rocks at Ramsgate, and somewhere about the same time, or at any rate between that date and Christmas, a Dipper (*Cinclus aquaticus*) was shot on the rocks at Margate. The Shearwater was taken to Mr. Softley, who, by feeding it on fish, kept it alive until May 9th (more than six months), hoping that it would lay an egg, a futile hope, as it proved to be a male. The Dipper had a good pectoral band of chestnut, showing it belonged to the English species, which is only recorded as having occurred once before amongst the 'Birds of East Kent,' by Mr. Dowker, and the Greater Shearwater is not mentioned by him.—J. H. GURNEY (Keswick Hall, Norwich).

Spotted Crake at Scarborough.—I had recently an opportunity of examining a female specimen of *Crex porzana*, which was picked up dead on the railway, near Scarborough, on the morning of April 29th, having evidently flown against the telegraph-wires. It was in good condition, and the ovaries contained eggs in an advanced stage of development.—WILLIAM J. CLARKE (44, Huntriss Row, Scarborough).

FISHES.

Development of Fishes.—At a recent meeting of the Natural History Society of Glasgow, the last of the winter session, Prof. M'Intosh addressed the Society on "The Development and Life-histories of some of the Food-Fishes," and submitted a series of lantern-views illustrating the successive stages from the unfertilised ovum to the adult fish. In the course of the introductory remarks, he directed attention to three principal types of eggs, distinguished by having their protoplasmic contents simple or accompanied by few or many oil-globules. In the third type the numerous globules are sometimes grouped in the form of a circular band surrounding the protoplasm. Pelagic eggs, or those set free in the deeper water, differ essentially in many ways from ova deposited at the sea-bottom. The latter are subject to various disadvantages, such as liability to be swept from their resting-place and stranded, or destruction through the attacks of animal foes; and as they are generally deposited in clusters, and are occasionally brightly tinted, they are readily discovered by fishes, such as the Haddock, which prey upon the ova of other species. The eggs of the Lump-sucker, commonly found on our shores, are generally devoured by Rooks and Crows. On the other hand, pelagic eggs nearly always have a colourless yolk, and so escape unseen in the water. They are carried about by the currents, and widely distributed throughout the shallower waters and bays. Taking the Cod as a type of the food-fishes, Prof. M'Intosh illustrated and described the various stages in its life-history. After fertilisation, the protoplasm streams towards one end of the egg, where it collects so as to form a cap-like disk. This, by a process of division and repeated subdivision, becomes enlarged and flattened, and ultimately assumes the form of the embryonic fish. The growth of the embryo, and the development of its eye, heart, liver, notochord, &c., were minutely described, and reference was made to the results of recent investigations successfully undertaken by Prof. Prince and others. After the young fish has emerged from the egg, its mouth remains closed, but it derives nourishment from the yolk-sac attached to the abdominal part of the body, and carried about until it becomes wholly absorbed. The mouth then opens, and the fish begins to feed on the minute organisms which abound in the waters. Remarkable changes take place in the coloration of the growing fish. At one time the colour is distributed in dark bands, at another it is spread in small blotches,

and still later it presents a chequered or tessellated appearance. Numerous illustrations of the development of other food-fishes were submitted for comparison, and attention was directed to the chief points of interest presented.

REPTILIA.

Average Length of Viper.—I should be very glad to know the average length of the adult Viper. Bell, in his 'British Reptiles,' does not give it, nor is it mentioned in Cooke's 'British Reptiles.' Early in May I found a Viper on the Quantock Hills, which measured twenty-five inches, but this seems an unusual size. This specimen was a fine "black" variety. Above, the colour was very dark, and the dorsal line almost black. The under parts were a glossy uniform black. The Viper was very torpid and very fat, from which I conclude that either it had just finished a full meal or was a female on the point of gestation. The countryfolk of Somersetshire have a profound belief that the bite of a Viper proves fatal on the anniversary of the day of its infliction.—E. P. LARKEN (Gatton Tower, Reigate).

[According to our experience, the British Viper usually does not exceed twenty or twenty-two inches, but some allowance must doubtless be made for the age of the specimens measured.—ED.]

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

May 24, 1889, *Anniversary Meeting.*—Prof. STEWART, President, in the chair.

Messrs. W. D. Crotch, C. Wilson, and Prof. R. Wallace were admitted Fellows of the Society.

The Treasurer presented his Annual Report, duly audited, and the Secretary having announced the elections and deaths during the past twelve months, the usual ballot took place for new members of Council, when the following were elected:—Messrs. C. B. Clarke, G. B. Howes, Arthur Lister, St. G. Mivart, and F. W. Oliver. The President and officers were re-elected.

The usual formal business having been transacted, the President proceeded to deliver his annual Address, taking for his subject "The Secondary Sexual Characters of Animals and Plants," of which he gave several interesting examples, illustrating his remarks with graphic sketches in coloured chalks. On the motion of Mr. H. Druce, seconded by Mr. C. Tyler, a vote of thanks was accorded to the President for his able address, with a request that he would allow it to be printed.

The Linnean Society's Gold Medal for the year 1891 was then formally awarded to Dr. Edouard Bornet, of Paris, for his researches in Botany, and, on his behalf, was presented to M. Raymond Lecomte, Secretary to the French Embassy.

The proceedings then terminated.

June 4.—Prof. STEWART, President, in the chair.

The following were elected Fellows:—Messrs. W. Somerville, H. S. Fergusson, W. F. Weldon, A. C. Jones, and L. A. Waddell.

After nominating as Vice-Presidents, Mr. A. W. Bennett, Dr. Braithwaite, Mr. F. Crisp, and Dr. St. G. Mivart, the President took occasion to refer to the loss which the Society had sustained by the recent death of a Vice-President, Prof. P. Martin Duncan, F.R.S. His genial presence at the meetings, no less than his valued contributions to the publications of the Society, would, he felt sure, be missed by everyone.

Sir Walter Sendall, who was present as a visitor, exhibited a curious cocoon of a moth belonging to the genus *Tinea*, and made some remarks on its construction and peculiar coloration.

The President exhibited a case of Lepidoptera and Coleoptera which he had selected to illustrate some of the more notable secondary sexual characters in insects, and made some interesting explanatory observations.

Dr. John Lowe exhibited some eggs of *Mantis religiosa*, which he had found adhering to the under-sides of stones on mountain-sides in the Riviera.

On behalf of Mr. J. Hanbury, Mr. W. H. Beeby exhibited and made remarks on a sterile form of *Ranunculus acris*, on which some criticism was offered by Prof. H. Marshall Ward.

A paper by Mr. M. C. Potter was read on diseases of the leaf of the cocoa-nut tree. The specimens examined had been received from Ceylon, through Dr. Trimen, and in Mr. Potter's opinion the diseases noticed were referable to three causes, namely, to the rays of the sun, to the ravages of insects, and to Fungi. These were separately considered, and descriptions were given of the different appearance which the leaves, thus variously affected, presented. A discussion followed, in which Prof. H. Marshall Ward criticised in some detail the observations which had reference chiefly to Fungi. Two papers followed, by Dr. P. H. Carpenter, on some Arctic *Comatulæ*, and on some *Crinoidea* from Madeira, upon which Mr. W. Percy Sladen offered critical remarks.

The President then gave an abstract of a paper which he had prepared on a hermaphrodite Mackerel, and exhibited the specimen on which his observations were founded, referring also to the recent cases of hermaphroditism in the Trout and Cod, which had been brought to the notice of the Society. A commentary by Prof. G. B. Howes brought the proceedings to a close.

ZOOLOGICAL SOCIETY OF LONDON.

June 2, 1891.—Prof. W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of May, calling special attention to a female Water-buck Antelope, *Cobus ellipsiprymnus*, from British East Africa, presented by Mr. George S. Mackenzie, and to three Blanford's Rats, *Mus blanfordi*, from Kadapa, Madras, received in exchange, new to the collection.

Mr. Sclater made some remarks on the animals which he had noticed during a recent visit to the Zoological Gardens of Paris, Ghent, Antwerp, Rotterdam, Amsterdam, and the Hague.

Prof. Newton exhibited (on behalf of Prof. Stirling, of the University of Adelaide), a drawing, being the first received in Europe, representing the remarkable new Australian Mammal lately described by Prof. Stirling as *Notoryctes typhlops*, which was stated to be the Mole-type of the order Marsupialia. For a description see 'The Zoologist,' 1880, p. 424.

The Secretary (on behalf of Mr. F. E. Blaauw) showed some Long-tailed Tits shot in Holland, and sent to this country for the purpose of ascertaining whether they belonged to the British form, *Acredula rosea*, or the white-headed continental form, *A. caudata*. They were referable to the former.

Mr. F. Finn exhibited a hybrid Duck, bred in the Society's Gardens, believed to be bred between a male Chilian Pintail, *Dafila spinicauda*, and a female Summer Duck, *Aix sponsa*.

A communication was read from Dr. O. F. Moellendorff, containing a revised list of the Land and Freshwater Shells of Perak, with descriptions of some new species.

A communication was read from Dr. G. E. Dobson, containing a sketch of the derivation and distribution of the Mammals of the order Insectivora found in the New World.

Mr. G. A. Boulenger read a report on Reptiles, Batrachians, and Fishes of which specimens had been collected for the West Indian Exploration Committee in some of the Lesser Antilles, and deposited in the British Museum.

A communication was read from Mr. Hamilton H. Druce, containing an account of the Butterflies of the family *Lycanida*, obtained by Mr. C. M. Woodford in the Solomon Islands.

June 16.—Dr. ST. GEORGE MIVART, F.R.S., Vice-President, in the chair.

Mr. H. A. Bryden exhibited an abnormal pair of horns of a cow Eland obtained in the North Kalahari, and made remarks on the structure of the feet of the Lechée Antelope.

Mr. Howard Saunders exhibited and made remarks on a nearly white skin of a Tiger obtained in Northern India by Major D. Robinson. Lieut.-Col. Godwin Austin remarked that he had once, many years ago, come across a white Tiger in India, but had failed to secure it.

Mr. Saunders exhibited specimens of the eggs of a Gull, *Larus maculipennis*, and of a Tern, *Sterna trudeaui*, from Argentina.

Mr. Sclater read an extract from a letter received from Dr. Bolau, describing two Sea Eagles living in the Zoological Garden, Hamburg, and considered to be referable to Steller's Sea Eagle, *Haliaëtus pelagicus*. One of these, received from Corea, Mr. Sclater pointed out probably belonged to the species described in the Society's 'Proceedings' by Taczanowski as *H. branickii*.

Dr. R. Bowdler Sharpe gave a short account of the proceedings of the International Ornithological Congress recently held at Budapest, in which he had taken part.

Mr. G. A. Boulenger read a paper entitled "A Contribution to our Knowledge of the Races of *Rana esculenta* and their Geographical Distribution." Mr. Boulenger proposed to recognise four forms of this widely-spread species of Frog, and pointed out the characters upon which these races were based and the areas which they occupy.

Mr. Oldfield Thomas read some notes on various species of Ungulates, which he had made during a recent examination of the specimens of this group of Mammals in the British Museum.

Mr. Edgar A. Smith gave an account of a large collection of Marine Shells from Aden. To this were added some remarks upon the relationship of the Molluscan Fauna of the Red Sea with that of the Mediterranean. A second communication from Mr. Smith contained descriptions of some new species of Shells, based on examples obtained during the 'Challenger' Expedition.

Mr. H. A. Bryden read some notes on the present distribution of the Giraffe south of the Zambesi, and made some remarks on the best means on procuring living specimens of this animal for European collections.

A communication was read from Messrs. Mole and Urich, containing notes on some of the Reptiles of Trinidad, of which they had transmitted living examples to the Society's Menagerie.

Mr. F. E. Beddard read some additional notes upon the anatomy of *Hapalemur griseus* made during a recent examination of two specimens of this Lemur.

Mr. E. B. Poulton, F.R.S., gave an account of an interesting example of protective mimicry discovered by Mr. W. L. Sclater in British Guiana. This was an immature form of an unknown species of Homopterous insect of the family *Membracidae*, which mimics the Cooshie Ant, *Æcodoma cephalotes*.

This meeting closed the session.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

June 3, 1891.—Mr. FREDERICK DU CANE GODMAN, M.A., F.R.S., President, in the chair.

Mr. J. M. Ayde, of Somerford Grange, Christchurch, Hants, and the Rev. John Seymour St. John, B.A., of 42, Castlewood Road, Stamford Hill, N., were elected Fellows; and Mr. R. A. Dallas Beeching, was admitted into the Society.

Mr. E. B. Poulton exhibited living larvæ of *Endromis versicolora*, and commented on their habits.

Mr. W. F. H. Blandford called attention to the fact that the larvæ of *Liparis monacha* remained in small groups on the bark of the tree for about a week after emerging from the eggs, and that this fact was taken advantage of by the German foresters to destroy them. Also that he had himself verified the statement that uric acid can be detected in the malpighian tubes of insects. Mr. M'Lachlan agreed that the demonstration that the malpighian tubes were of the nature of renal organs was now satisfactory.

Mr. C. J. Gahan exhibited two species of Coleoptera that he considered to possess a mimetic resemblance, viz. *Estigmene chinensis*, one of the *Hispidæ*, and a nondescript Lamiid allied to *Pemptolasius*. He called attention to a peculiar structure of the antennæ in the latter by which the resemblance was increased.

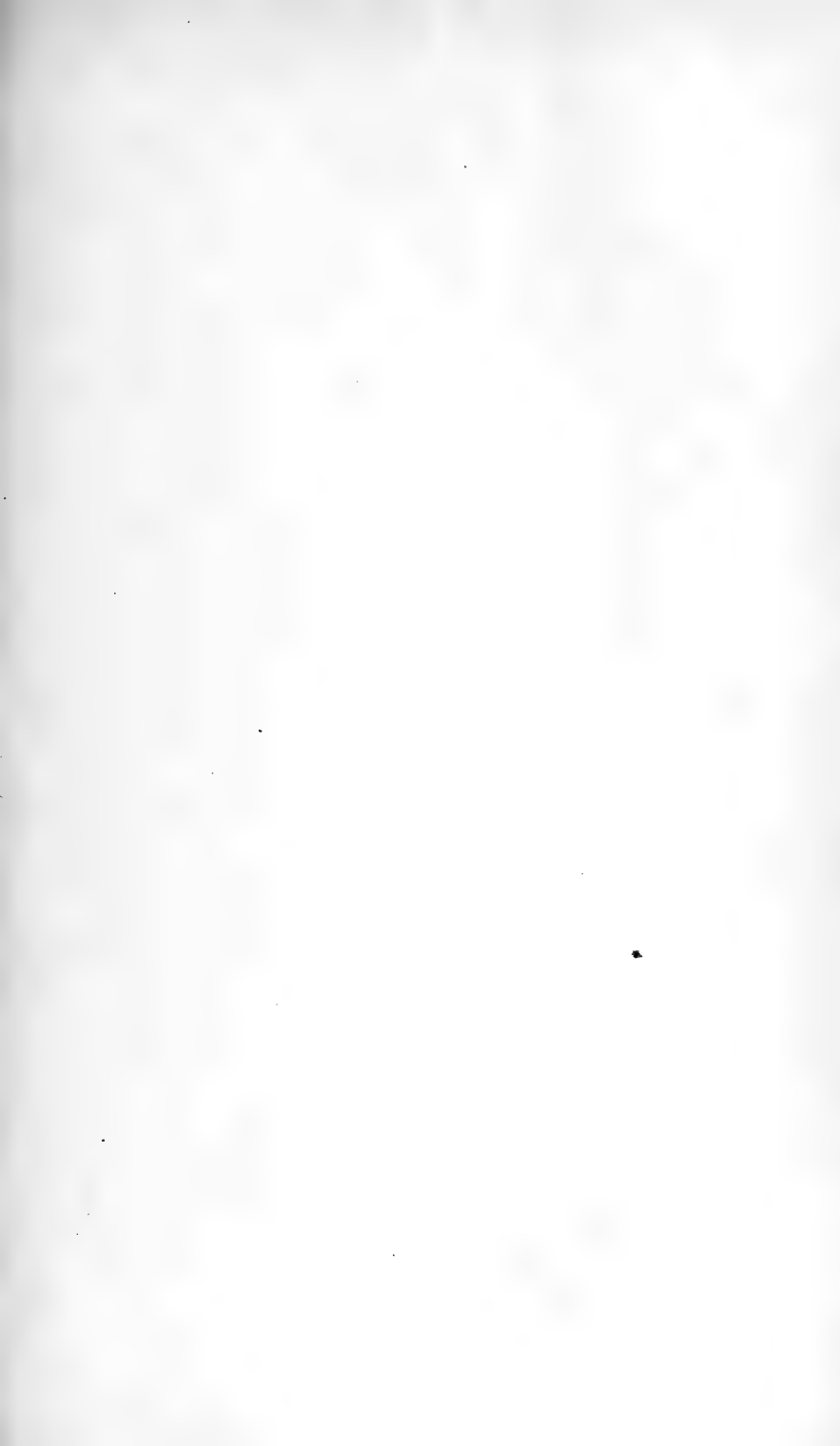
Mr. J. W. Tutt exhibited a hybrid between *Amphidasis prodromaria* and *A. betularia*, obtained by Dr. Chapman. Mr. Stainton commented on the fact that the two insects appeared at different times; and Mr. Tutt stated that the *A. betularia* had been subjected to forcing, so as to cause it to emerge at the same time as *A. prodromaria*.

Mr. Tutt also exhibited forms of *Caradrina*, some of which he said were considered distinct on the Continent, though they were not recognised as such in this country, viz. *Caradrina taraxaci (blanda)*, *C. superstes*, Tr., from Sligo, and *C. superstes*, H.-S., considered as synonymous with *superstes*, Tr., but apparently more closely allied to *C. ambigua*.

Mr. B. A. Bristowe exhibited varieties of *Arctia menthastri*, some of which had been fed on mulberry and others on walnut; no difference was observed in the variation.

Mr. G. Elisha exhibited larvæ in their cases of *Coleophora vibicigerella* and *C. maritimella*.

Mr. A. G. Butler communicated a paper entitled "Additional notes on the synonymy of the genera of Noctuid Moths."—DAVID SHARP, V.P., Acting Secretary.





L. Hutchinson lith.

The Polecat.

West, Newman imp.

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[No. 176.

THE POLECAT, *MUSTELA PUTORIUS*.

BY THE EDITOR.

PLATE III.

OWING chiefly to the increased attention paid to the preservation of game, the Polecat, Fomart, or Fitchet, has of late years suffered considerable persecution, and at the present time must be regarded as one of the rarer British animals.

Twenty or five-and-twenty years ago it was comparatively common in most of the big woods in the home counties, and within a very few miles of London there were several parishes (to the north-west of the metropolis) wherein its haunts were well known to the writer.

In Lord Mansfield's woods at Hampstead and Highgate, at the time referred to, they might often be seen hanging up with other "vermin" on the keeper's gallows, and the mention of this locality recalls to memory a curious incident connected with its occurrence there which may be worth mentioning. It must have been about the summer of 1866 or 1867 that rambling alone one afternoon in Ken Wood, with a pocketful of chip-boxes for eggs, insects, or shells of any land molluscs that might come to hand, I stood for some minutes before the keeper's tree to examine the dead bodies of his latest victims, and was particularly struck with a fine large Polecat, which, having been first trapped, had then been killed by a blow on the head which had partly laid bare the skull. It had hung suspended so long as to have become quite dessicated, and, as the skull was perfect, I was tempted to remove

it for the purpose of cleansing and preserving it. Hardly had I commenced operations with my pocket-knife when I was struck by the extraordinary number of spiders which issued from the interstices of the dried skin and made off in all directions. Wondering to what species they might belong, I proceeded to catch and box as many as I could before they disappeared, and the same evening I despatched them by post for identification to my friend Mr. O. Pickard-Cambridge, in Dorsetshire, begging him to tell me something about them. I was soon afterwards agreeably surprised to hear from him that I had forwarded specimens of an apparently undescribed species of *Linyphia*, but that, as I had sent only females and young males, the fact could not be positively asserted until some adult males could be examined. These I tried in vain to procure by returning to the keeper's tree and searching around it. But the Polecat, for want of the head by which it had been suspended, having fallen to the ground and been kicked aside, was no longer to be found, and my knowledge of spiders being too rudimentary to enable me to recognise for certain the species of which I was in search, I could only catch what spiders I could see in the immediate neighbourhood, in the hope that amongst them there might be what was wanted. But this did not prove to be the case, and I thus lost the chance of being announced as the discoverer of a new species. But this by the way—a trifling incident *à propos* of a former haunt of the Polecat in MIDDLESEX. Other localities noticed in those days as sheltering Polecats were Hendon, Edgewarebury, Stanmore, Harrow, the well-springs at Willesden, and Kingsbury, where I once helped to unearth a family-party of six—namely, two old ones and four full-grown young ones—from a cavity in a grotto made of large loose flints and covered with ferns and stonécrops, within sight of our windows. I had discovered their lair by observing their footprints round the cairn after rain, and lifting off the flints one by one, and as noiselessly as possible, we at length discovered them curled up like Ferrets. The mysterious disappearance of numerous ducklings and chickens from our poultry-yard, which had been for some time noticed, was now more than hinted at; but, strange to say, there were very few *rejectamenta* in the cairn. The conclusion, I think, at which we arrived was, that the Polecats were too clever to bring their prey home with them to such an exposed spot, and must have therefore

"dined out" every evening. At any rate, it was not the remains of their prey lying about which betrayed their whereabouts.

In the woodlands of SURREY and SUSSEX, in years gone by, I have occasionally come across traces of the Polecat, and seen recently-killed specimens strung up by the keepers, or brought home to be stuffed by the local taxidermist. But of late years this animal has become very much scarcer, and bids fair to be known only by the stuffed specimens in the keepers' cottages.

Some keepers, wiser in their generation, instead of destroying them, are glad now and then to get one alive, to cross with their Ferrets. And they are no doubt right; for the hybrids thus produced are very good rat-killers, especially in stacks, where great activity is necessary.

Mr. J. H. Cowley, of Callipers, Rickmansworth, has some Polecats which were caught at Wadesden and at Stoke Mandeville, in BUCKINGHAMSHIRE, in 1888 and 1889, which are tame enough to handle. He has crossed one with a Ferret, and reared a number of young ones which have turned out very good workers.

In the West of England it would seem that the Polecat is very nearly if not quite extinct. Of DEVONSHIRE, in 1883, Mr. D'Urban wrote:—"I very much fear that this animal has become extinct, if not in Devon, at any rate in the Exeter district. I have not seen one alive since 1852. The game-keepers to whom I have spoken about it all say they have not met with one for a long time, and I have not seen any recently-killed ones hung up in the places where such trophies are usually suspended." Subsequently to the publication of this note (Zool. 1883, p. 25), Mr. D'Urban communicated some interesting statistics illustrating the gradual extinction of the Polecat in his county (Zool. 1884, p. 189). From these he concluded, "it seems only too probable that in North and East, perhaps also in South Devon, the Polecat is now extinct, but that a very few still linger in the extreme western portion of the county."

The last Polecat heard of in CORNWALL, where it is believed to be nearly exterminated, was one taken in March, 1890, in Upton Wood, Lewanick, in the eastern part of the county, as reported by Mr. F. R. Rodd (Zool. 1890, p. 134). In 1885, the late Mr. Thomas Cornish, of Penzance, wrote (Zool. 1885, p. 107) that one had been captured near Madron, about two

miles from Penzance, but he added that during the thirty-seven years in which he had been resident in West Cornwall he had never until then seen one alive or dead. It would appear, however, from a subsequent communication by Mr. A. H. Cocks (*tom. cit.* p. 145) that the Polecat is not quite so rare in Cornwall as Mr. Cornish supposed, for he himself had received a live one from Penzance a few years ago, and had heard of one being obtained in East Cornwall in 1880 on Col. Gryll's property at Lewarne, about five miles west of Liskeard.

In the Midlands the Polecat is reported to be now very rare. In LEICESTERSHIRE, for example, it is stated that none have been met with for many years (Zool. 1885, pp. 165, 166), although the Rev. A. Matthews, of Gumley, Market Harborough, writing in 1884, did not then consider it as uncommon in his neighbourhood (Zool. 1884, p. 271).

In OXFORDSHIRE, according to Mr. O. V. Aplin, it is very scarce towards the north of the county, where of late years only a few solitary ones have been met with; as at Adderbury, on the banks of the Sorbrook, in 1872; on Todmorton Heath in 1875; at Souldern in 1876; and at Banbury in 1880. In central Oxfordshire, where there are large woods, Polecats are rather more numerous. A taxidermist at Oxford, in Sept. 1885, had no less than eight sent to him for preservation, four of which were from the neighbourhood of Thame.

In NORTHAMPTONSHIRE, in October, 1883, a Polecat was killed near Aynhoe.

In WARWICKSHIRE, as Mr. O. V. Aplin informs me, an old ratcatcher, in 1883, stated that he had killed one at Farnborough seven years previously, but had seen none since; in 1882 a very fine old one was killed at Watergate in South Warwickshire.

In ESSEX, Dr. Laver, of Colchester, remembers it as being frequently met with, but states that it is now becoming very rare, and is in many districts already extinct (Trans. Essex Field Club, vol. ii. p. 167).

In SUFFOLK, according to Mr. G. T. Rope, the Polecat has been completely exterminated throughout the eastern part of the county, and in the west it is very nearly extinct. In March, 1888, one was caught at Mildenhall in a trap set for an Otter (Zool. 1888, p. 183).

Twenty years ago Mr. Thomas Southwell, of Norwich,

reported this animal as "by no means common in NORFOLK" (Trans. Norf. Nat. Soc. vol. i., 1870, p. 76), and referred to the observations made by the late Rev. H. T. Frere in the neighbourhood of Diss. Subsequently Mr. Frere himself communicated some notes on the subject to 'The Zoologist' (1888, p. 221), stating that in his boyhood (1849) the animal was far more common, and that at that time not a year passed without several being killed, especially in the autumn, when they made their way up from the fen to the dry land. "Matters are much altered now," he writes; "they are not extinct, but decidedly rare. From Rydon and Bressingham, where I knew them formerly, I hear that one is never seen now" (1888).

In LINCOLNSHIRE, Canon Fowler, in reporting the capture of a Polecat near Grantham (Zool. 1882, p. 230), expressed the opinion that the animal was becoming very rare in that district; but Mr. Cordeaux reports that it is still fairly common in those parts of the county where game is not preserved.

Messrs. Clarke and Roebuck, in YORKSHIRE, characterise it as "irregularly distributed, extremely rare, and fast becoming extinct; although half a century ago it was generally abundant."

When Messrs. Mennell and Perkins, in 1864, printed their Catalogue of the Mammalia of NORTHUMBERLAND and DURHAM, in vol. vi. of the Trans. Tyneside Nat. Field Club, they were able to write of the Polecat, "still plentiful in both counties," but a quarter of a century has since elapsed, and it may be far otherwise now. It would seem from all accounts, however, that at the present day in England the stronghold of the Polecat is in the north. From the Churchwardens' Accounts for the parish of Corbridge-on-Tyne, it appears that Polecats were at one time extremely abundant there; for there are frequent entries in the books of payments in reward for "fulmarts heads." The price paid for one was fourpence, and between the years 1677 and 1724 no less than 653 of these animals were destroyed in that parish alone.*

In CUMBERLAND,† WESTMORELAND, and N.E. LANCASHIRE, hunting the Polecat with hounds was at one time a very favourite sport, and is still practised to a limited extent. But it is a sport

* See 'The Zoologist,' 1881, p. 172.

† As to East Cumberland, see 'Zoologist,' 1881, p. 162.

sui generis; not, as in the case of fox or hare, pursued in broad daylight while the animal is just ahead of the hounds, but at early dawn when the Polecat, nocturnal in its habits, has travelled a considerable distance during the night, and is perhaps safe in his lair before the hounds are laid on.

Mr. Thomas Farrall, in reply to my enquiries some time since, sent the following account of Polecat hunting in Cumberland. It was published in 'The Field' of May 5th, 1883, and is the more interesting for the information it conveys on the subject of this animal's haunts and habits. He says:—

"Hunting the Polecat, or Fomart, has long been a favourite sport on the lowlands of Cumberland. Mr. Thomas Ruston, of Aspatria, an enthusiastic sportsman, has hunted this animal for nearly fifty years, and within that period packs of hounds for this particular branch of sport have been stationed at Ellenborough, Isell, Wigton, and Thrustonfield. The only pack now kept for the purpose is that owned by Mr. Joseph Langcake, of 'The Outgang,' Aspatria.

"Polecats may be hunted either by day or by moonlight, but William Barnes, who hunts Mr. Langcake's pack, prefers the latter. The hunting season commences with February, the chief months being March and April (the breeding season), and lasts until the meadows are well clothed with grass, and likely to sustain injury from the trampling of too ardent sportsmen. At this time of year, male Fomarts have been known to travel many miles in the course of a night, so that it is far more easy to drop upon one as he takes his 'walks abroad,' than to surprise him in his lair. On being pursued, he instinctively makes for his native ground, but, if hotly pressed, will, if possible, take refuge in any drain which chances to be in the immediate locality. Once *sub terra* he is very difficult to unearth. A little explanation is here needed. It must not be supposed that the Polecat enters a pipe which is discharging water. The run he takes is what is known as an old sod or stick drain, put down in the moss in the primitive days of agriculture; and the land having since been drained deeper with pipes or tiles, the original water-courses are left dry, and form famous places of refuge for any small animal which goes to ground. Thus the chances of killing in such a place are not very great.

"At a wayside inn near Maryport is a splendid case of stuffed Polecats killed by the Ellenborough hunt at intervals extending over a period of thirty years."

In 1883, at the date of Mr. Farrall's communication, Polecats were reported to be plentiful in the district embracing the sandy slopes of the Solway, the mosses of Abbey Holme, and the

adjoining waste known as Wedholme Flow. Here (he says) they breed and rear their young:—

“Nests are often found by the hunters when digging out an animal that has gone to ground. Scottish-like, they are made up of ‘but and ben;’ that is, they consist of two distinct parts—one made of leaves for the reception and rearing of the young, and the other serving as a storehouse for food. In the latter compartment have been found young rabbits, leverets, partridge chicks, ducklings, larks, frogs, and even eels. The frogs, though alive, were stunned by a puncture on the top of the head, and were thus in a half-unconscious state. In the spring of the year the poultry yards of the Abbey Holme farmers suffer much from the depredations of Fomarts. On two holdings at Plaskett Lands over sixty head of young poultry disappeared in a short space of time.

“The female Polecat generally selects her lair in the autumn, occupies it during the winter, and brings forth her young in it in the spring. She has usually four or five at a time, so that the species multiplies rapidly, notwithstanding that they are assiduously watched and trapped by local gamekeepers.

“In the early part of the season the hunters seek the Polecat on the banks of the open cuts, locally designated ‘sowes;’ later on they quest the fallow breaks and drier grounds. The usual time for ‘throwing off’ is 10 in the evening (by moonlight) and 3 to 4 in the morning (by daylight). The average length of a run is from three to five miles, but occasionally an old ‘varmint’ affords a chase of from eight to ten miles. An aged Polecat always dies game, being sure to make a spring and bite some of the dogs before he receives his *coup de grace*. One recently taken was very old, without a single tooth in either jaw, his coat ragged and poor, and his skin covered with ticks.

“In April, 1883, the Aspatria pack, consisting of otter-hounds and a quartet of terriers, had two splendid runs with what was believed to be the same Fomart, for he led them exactly over the same ground, a distance of seven miles. On April 21st they found him on the high land overlooking the village of West Newton, gave chase as far as Allonby, where he doubled and made a circuit by way of Cooper, and down into the meadows, then took refuge in a sod drain, and, as it was getting on towards midnight, the pack was called off, no attempt being made to unearth ‘the varmint.’”

Another correspondent, who desired that his name might be withheld, sent the following account of the sport as formerly practised in Lancashire:—

“You ask for information on the hunting of the Polecat, so I will venture to give you a short sketch of this kind of sport, as it was formerly

followed in the neighbourhood of Rochdale. It is now about twenty-five years since it was discontinued, and, though I was then too young to have actually taken part in the hunt myself, I well remember seeing the hounds at the time, and have often heard its glories described by the followers, many of whom are still living. The hounds were quite distinct from the modern harrier, but I have not sufficient knowledge to say of what breed they were, though they seemed to approach the old-fashioned pied white harrier type. They were about 18 in. or 20 in. in height, rather strongly built, with rough hair, long ears, wonderful nose, and gifted with deep mellow music. They did not possess much speed, nor was that considered a necessary qualification. [They were probably otter hounds.—ED.]

“Spring was the time for hunting the Foumart, just after the close of hare-hunting. The animals were caught in a trap, generally placed close to a country well, and were turned out the night before it was intended to hunt them. A dog Foumart would often show splendid sport, and I have heard of more than one run of eight miles as the crow flies, which is much farther than I ever knew a hare to go. On the other hand, the uncertainty of hunting was never more shown than with the Foumart. Sometimes the run ended at the first fence; at another time the hounds would run all round a field, then across from side to side in a most tantalising manner. I have been assured that on one occasion the late Mr. Entwistle, of Foxholes, hunted one Foumart for a whole week, bringing the hounds to the same spot the morning after where they had left off the evening before. The followers were never mounted. Capt. Hopwood, of Hopwood Hall, was wont to ride over from there to Newby, a distance of seven miles, and then put up his horse and follow the chase afoot.”

Some additional facts of interest are contained in the following letter, dated 12th May, 1883, which carries the sport into North Wales, and shows how keenly it was pursued in the moorland country of North-East Lancashire and the Lake district:—

“Foumart-hunting has for a length of time been carried on in a scratch way in Westmoreland, Lancashire, and other counties. Capt. Hopwood, of Hopwood, in Lancashire, achieved the greatest success in this branch of sport, and became the possessor of a fine pack of foulmart-hounds, unequalled for beauty, nose, and staunchness. It required great skill and time to bring them to perfection and make the pack free from riot (such as fox, otter, or sweetmart), and in this he thoroughly succeeded. None of his pack would own any scent but that of the Foulmart. They were of the same breed as the modern otter-hound, but superior in size and make to any I have seen in the different packs now existing. Capt. Hopwood chiefly hunted in the vale and moorland country of north-east Lancashire and in the Lake country of Lancashire and Westmoreland. In Wales, in

Merionethshire and Montgomeryshire he was able to follow the chase mounted, as were also his whips; but in Lancashire and the Lake country this was impracticable, owing to the boggy nature of the moors and steepness of the fells. To such perfection in nose and dash did he bring his hounds, that it was impossible for any one, except himself and the best Lancashire runners of the day, to keep at all on terms with them. He usually began hunting at daybreak, casting on till a drag was struck of a Foulmart, that had been travelling in the night. The length of the runs in the spring and early summer were extraordinary—often ten, fifteen, and over twenty miles, usually straight, and over a wild mountainous country. They generally ran the Foulmart to ground, and would often have another long run the next day, from the spot where they had marked and left him. To give an instance or two of the length of runs with the Foulmart, I will quote the following. In Wales they struck a drag on the left bank of Bala Lake, opposite Bala, and ran him into the country above Nannai, Sir Robert Vaughan's place, near Dolgelly—a real wild mountain run, without a single cast being made, and the distance at least twenty-two miles. In the Lake country I remember a run wonderful in length and the roughness of the country traversed. A drag was struck in the woods near Newby Bridge. They ran him through Graythwaite and Hawkshead, over the Braythy river, across Laughrigg Fell and the deep Rothay river, and killed him in the fells above Ambleside. This run must have been from eighteen to twenty miles in length. I could name several others, but space forbids. In conclusion, I may state that Capt. Hopwood never hunted at night—a course which is only taken for the purpose of killing the Foulmart, by hunting up to him while still travelling, giving him little or no chance of escape. Nor were the Foulmarts ever caught in traps, or turned out to hunt. The Captain only hunted on the strictest principles of wild and fair sport, and his pack will long be remembered in the counties over which he hunted."

It will be inferred from the foregoing statements that Foulmart is the common name for the Polecat in the North of England, as it is also in Scotland. In the South it is almost invariably called Polecat, except perhaps by north country keepers who have moved south, and who know it by its north country name.

The word "Polecat," says Bell ('British Quadrupeds,' 2nd ed. p. 206), is perhaps nothing more than "Polish cat." This I think most improbable, for the name is used by Chaucer. Prof. Skeat suggests "pool-cat," *i. e.* a cat living in a hole or burrow, since the Gaelic *poll* and Cornish *pol* signifies a hole or pit, as well as a pool.

The past and present distribution of the Polecat in Scotland has been already so well traced by Mr. J. A. Harvie Brown (Zool.

1881, pp. 161—171), that it is unnecessary to go over the ground again. The result of his enquiries shows that in most of the Scottish counties the Polecat has become very much scarcer of late years, and that in many of them it is now extinct. He attributes this decrease, in a great measure, to the employment of steel or iron traps for the destruction of Rabbits, and remarks that, as a rule, the Polecat only survives where Rabbits do *not* abound and are *not* systematically trapped, and where Polecats consequently are obliged to subsist on other kinds of food.

In the 'Scottish Naturalist' for July, 1891, Mr. Robert Service has an interesting article on "The Old Fur Market of Dumfries," in which he shows the proportions in which skins of Hare, Rabbit, Otter, and Fomart were brought in for sale between the years 1816 and 1874, and the prices which were paid for them. In 1829 we find that 400 Fomarts were sold; in 1831, 600; in 1840, they were still "in considerable numbers;" in 1854, "getting scarce;" in 1858, "very scarce;" in 1866, a dozen only were brought in, since which time none have been forthcoming. The price varied as the skins became scarcer, from 12s. to 36s. per furriers' dozen, which meant twelve of the best full-sized skins, or a greater number of inferior ones; and in addition to skins received by the packmen (in exchange for goods) in all the parishes of Dumfriesshire and the Shire and Stewartry of Galloway, supplies were forwarded from other counties—Ayr, Lanark, Peebles, Selkirk, Roxburgh, Cumberland, and Northumberland. Fomart skins, or as they are called in the old Reports, "Fitches," were mostly manufactured into ladies' boas, and old wardrobes in Scotland still contain specimens. The fur market fell into decay when railways were completed, and commercial travellers, directly representing the great furriers of the South, began to collect the skins at the farmhouses instead of leaving the local pedlars and dealers to do so.

In Ireland, says Thompson (Nat. Hist. Irel., Mamm. p. 8), the Polecat is not positively known to exist, although said to inhabit the wild woods of Kerry. He received notes of the capture in several other counties of animals *supposed* to be of this species, but their identity was not satisfactorily proved. Two killed many years ago at Rosemount, Grey Abbey, Co. Down, seemed, from accurate description (says Thompson), to have been

Polecats; but it does not seem to have occurred to him that they might have been escaped Ferrets. The Polecat is not included in the late Prof. Leith Adams's "List of Recent and Extinct Irish Mammals" (Proc. Roy. Dubl. Soc. 1878, p. 41).

There can no longer be any doubt that the Polecat is the wild ancestor of the Ferret, notwithstanding that so many writers have concurred in describing the two as distinct species. There are positively no cranial, dental, or other structural characters by which they can be distinguished,* and the brown variety of the Ferret is so like a Polecat that it might well be mistaken for one. See the remarks of Mr. A. H. Cocks on this subject, 'Zoologist,' 1880, p. 396.

In regard to the early use of Ferrets, it may be remarked that they were employed by Genghis Khan in his imperial hunting circle at Termed in 1221,† and are mentioned by the Emperor Frederick II. of Germany as animals used for hunting in 1245.‡ They were doubtless introduced into England by the Romans, to whom we are also indebted for the Pheasant and the Fallow-deer.

In Richard the Second's time, 1390, a statute was passed prohibiting any one from keeping or using greyhounds and *fyrets* who had not lands or tenements of the annual value of 40s. (See 'Zoologist,' 1888, p. 20.) Both the *fycheu* and the *fyret* are mentioned in 'Thystorye of Reynard the Foxe,' as printed by Caxton in 1481 (ed. Percy Society, p. 109).

The use of Ferrets and nets for taking rabbits in Cumberland in 1621 is clearly indicated by entries in the 'Household Book' of Lord William Howard, of Naworth. Thus:—

"Tho. Warriner Feb. 4. A wallet for the ferrets viij d. Corde viij d. An yron for his staffe xiiij d. A hanck of yarn for mending his net vj d."

Again, under date 1624, July 16:—

"For ferrets bought at Broham by the Warriner iij s. viij d."; and 1633, March 18:—

"For seven firets bought of Tho. the Warriner, x s."

With regard to the homing instinct in Ferrets, see 'The Field,' 1873, Jan. 25, Feb. 1, and Feb. 8; and 1886, Jan. 23 and 30.

* See 'The Field,' 3rd Feb. 1872.

† Ranking, 'Historical Researches on the Sports of the Mongols and Romans,' 1826, p. 33.

‡ 'De Arte Venandi,' ed. Schneider, 1788, i. p. 3.

As to the habits of the Polecat, I do not propose to repeat statements that may be found in Bell's 'British Quadrupeds,' for I take it for granted that a copy of this book is in the hands of every reader of 'The Zoologist.' For this reason, also, I omit a detailed description of the animal, which is so similar in size, shape, and colour to a brown Ferret, that every one must be familiar with its appearance.

But I may mention a few points which Bell has overlooked, and perhaps supplement others with additional information. First, with regard to the period of gestation. Bell tells us (p. 206) that the female brings forth from four to six young, in May or June; but says nothing about the gestation, nor about the condition of the young at birth. The period, as has been ascertained by breeding in confinement, is six weeks. The young are born blind, and do not open their eyes for a month.

In regard to food, several instances have come to my knowledge which show the Polecat's partiality for frogs and fish, especially eels. It is doubtless well known that eels slide over the dewy grass in the early morning on their way from one water to another, and thus get caught *en route* by the Polecat.

I do not remember any reported instance of a Polecat being seen in the water in pursuit of eels or other fish, although many observers have testified to the fact of fish remains being discovered in the animal's lair. But as I have many times seen Stoats and Weasels swim, I see no reason to doubt that Polecats are equally clever in the water, while the frequent discovery of fish-bones in their haunts suggests that they are really much more aquatic in their habits than their smaller relatives.*

Just as Stoats and Weasels, which sometimes hunt in packs, have been known to attack men and dogs,† so have Polecats occasionally been known to do the same.‡

On the other hand, Polecats are easily tamed if not hurt when they are caught, in which case handling makes them spiteful

* Mr. J. H. B. Cowley, of Callipers, Rickmansworth, informs me that he has seen a half-bred Polecat swim across a stream where a rat had just crossed.

† E. T. Booth, 'The Field,' 6th Oct. 1883; 'The Gamekeeper at Home,' p. 121, 2nd. ed.; and W. Shand, 'The Field,' 25th July, 1891.

‡ 'The Naturalist,' 1854, vol. iv. p. 95; and John Colquhoun, 'Ferae Naturæ of the British Islands,' 1873, p. 13.

when touched. They have little or no smell, *unless irritated*, when, like the Weasel and Stoat, they can emit a very strong odour. They are easily kept in health if fed on bread and milk, with a good supply of rats, mice, small birds, and frogs.

Mr. Cowley, who has two live Polecats at the present time, tells me that a freshly killed dead cat is a great delicacy to them, as it is to Ferrets, particularly when they get low in condition, and pulls them up sooner than anything. If allowed to get too low, he says, they get foot-rot, even though kept scrupulously clean, and this disease is not always confined to the feet, but appears like a fungoid growth on the ears, tail, and other parts of the body. If taken in time, however, it may be readily cured by a dressing of oil of tar, after paring away the excrescences.

Mr. Cowley writes :—

“The two Polecats I now have are both males and live together. They have both bred with Ferrets, which I believe are only domesticated Polecats, the white ones being albinos and sports of nature. They improve the breed of ordinary Ferrets by making them stronger in constitution, and by making them work quicker and longer than ordinary Ferrets, which get lazy and slow after they are two years old. They want more handling and more work when growing than ordinary Ferrets do, or they get shy of being picked up. The second cross is perhaps the best for general purposes, although the first cross are capital rat-workers round stacks where agility is wanted. I have seen a half-bred Polecat swim across a stream where a rat had just crossed, a thing I never saw an ordinary Ferret do.

“One thing I never could make out, and this is a point which might interest readers of ‘The Zoologist,’ namely, what does a wild Stoat or Polecat do when badly bitten by rats? All ratcatchers know to their cost how many Ferrets die from being badly bitten in the head. It festers and swells, and in a few days often proves fatal. I very seldom lose one now, however, for I find that carbolic oil brushed over the wound soon heals it. But what can a wild animal do? It must get bitten sometimes, though I must say I never saw a Stoat or Weasel with any bad scars. Have they any means of curing themselves by rubbing against any plant, or how do you account for their immunity? They often kill full-grown rats, we know.”

Their greater activity probably enables them to avoid attack.

Bellamy states in his ‘Natural History of South Devon’ (p. 194) that a white variety of the Polecat, taken at Marley, South Devon, was in the possession of Mr. G. Leach, but this may have been an escaped Ferret. I never saw or heard of a

truly wild white Polecat, although I have seen a pure white Stoat (which had not even the usual black tip to the tail), and also a pure white Weasel.

In 'The Zoologist' for 1878 (p. 55), a curious case of hydrophobia resulting from the bite of a wild Polecat is quoted by Mr. Southwell from the Journal of Robert Marsham, of Stratton Strawless, the friend and correspondent of Gilbert White.

ON THE COMMON WREN OF THE SHETLAND ISLANDS.

BY HENRY SEEBOHM.

Mr. Richard M. Barrington has sent me four examples of a species of Wren from the Shetland Islands, with the request that I would examine them, and give the readers of 'The Zoologist' what information I could respecting them. This I have great pleasure in doing.

I may premise, that in the colour of the upper parts the various species of Wrens in Europe and Asia completely intergrade. It is impossible to draw a hard and fast line at any point between the palest desert forms from Algeria or Turkestan, and the darkest tropical forms from the Himalayas. The tropical forms appear to be more distinctly barred on the upper parts than is usual in temperate regions; but some examples from France and Norway equal them in this respect. In the colour of the under parts there does, however, seem to be a gap between the dark birds of India, China and Japan, and the paler birds of Europe and Western Asia.

The Common Wren, *Troglodytes parvulus*, appears to be confined to the Western Palæarctic Region. It varies in three directions,—in dimensions, in colour, and in the amount of barring across the feathers. The Faroese race is the largest and the most barred, and is fairly entitled to be regarded as sub-specifically distinct under the name of *Troglodytes parvulus borealis*. The Shetland race only differs from it in probably being, on an average, intermediate in size between it and the typical form. In Algeria in the west, and in Turkestan in the east, the palest and least rufous examples are found, which are known as *Troglodytes parvulus pallidus*. On St. Kilda a fourth

form occurs which is as conspicuously barred as the Faroese and Shetland race, and which is intermediate between them in size, whilst it scarcely differs from the Algerian and Turkestan race in colour, and may fairly be regarded as subspecifically distinct under the name of *Troglodytes parvulus hirtensis*.

The typical form of the Common Wren varies in length of wing from 1·7 to 2·0 inches. Out of ten examples two measure 1·85, whilst four are larger and four are smaller, so that the mean between the two extremes appears to represent a fair average. The length of tail varies from 1·1 to 1·37 inches, the average of the ten examples being 1·22. The length of the culmen varies from ·45 to ·56 inches, the average of the ten examples being ·515. The length of the hallux, without the claw, varies from ·34 to ·40, the average being ·37.

The range of variation appears to be as nearly as possible ten per cent. from the mean in each direction; the mean being, wing 1·85, tail 1·22, culmen ·51, and hallux ·37. Although the number of examples that have been measured from the Shetland Islands, St. Kilda, and the Faroe Islands is scarcely sufficient to establish an average, there can be little doubt that the average size of these three races is greater than that of the typical race; and there is no doubt whatever that the maximum dimensions exceed those of the typical race.

Four examples of the Shetland Island race of the Common Wren vary in length of wing from 1·81 to 1·96, in length of tail from 1·11 to 1·22, in length of culmen from ·56 to ·6, and in length of hallux, without the claw, from ·4 to ·43; the mean being, wing 1·91, tail 1·18, culmen ·58, hallux ·41.

Three examples of the Faroese race of the Common Wren vary in length of wing from 1·95 to 2·15, in length of tail from 1·36 to 1·5, in length of culmen from ·58 to ·62, and in length of hallux, without the claw, from ·41 to ·43.

It thus appears that whilst the Shetland form of the Common Wren is on an average a larger bird than the typical form, but is not quite so large on an average as the Faroese form, it nevertheless intergrades with both, so that none of the European forms can claim more than subspecific rank on the ground of size.

The typical form of the Common Wren also varies considerably in the robustness of its feet. They are generally very slender, but occasionally examples are found in which they are

comparatively stout and clumsy. In examples from the Shetland Islands and from St. Kilda, robust feet appear to be the rule and slender feet the exception; whilst so far as is known the Faroe Island race always has robust feet.

The Common Wren only moults once a year, in autumn. When newly moulted the colour is very rufous, almost coffee-coloured; but before the end of the summer the brilliancy of the colour is lessened by wear and tear, and the more or less faded and dirty coffee-colour looks slightly browner and greyer. The abrasion of the feathers, and probably also some direct accession of colour in spring, causes the bars across the lower back and the under parts to become more distinct than they are in newly moulted birds, but it is very unusual to find more than obscure traces of bars, even in the most abraded examples, on the upper back or breast.

The insular races of the Common Wren are of course subject to the same seasonal variation of colour as the typical form, but in summer plumage (and probably also in autumn dress) the bars across both the upper and under parts are very much more conspicuous than they are in the most pronounced examples of the typical form, and they extend to the upper back and breast, which is very rarely the case in the typical form.

There is also a marked difference in the general colour of the various races. I have not seen recently moulted examples of the insular races, but in comparison with the faded coffee-brown of the summer plumage of the typical form, the Shetland and Faroe races may be described as sooty-brown, and the St. Kilda race as greyish-brown on the upper parts.

Until a series of recently moulted autumn examples of the insular races have been obtained, it is impossible to say whether any of the European races of the Common Wren ought to be regarded as specifically distinct from the typical form; but there can be no doubt that there are three or four subspecific forms that must be recognized in some way, and I cannot see any better way than that of calling the typical race *Troglodytes parvulus*, the desert race in Algeria and Turkestan *T. parvulus pallidus*, the St. Kilda race *T. parvulus hirtensis*, and the Shetland and Faroe race *T. parvulus borealis*.

An example from the Skellig Rocks, on the south-west coast of Ireland, and one from the outer Hebrides, both belong to the

typical form, but Mr. Barrington informs me that he has seen examples from Iceland, in the Copenhagen Museum, which appeared to him to be larger than the Shetland race.

The average size of the eggs of the Faroese Wren is greater than those of the typical form. A clutch of five eggs of the former in my collection weighs as much as a clutch of seven of the latter.

NOTES ON THE BIRDS OF DONEGAL.

BY HENRY CHICHESTER HART, B.A., F.L.S.

THE following notes form a summary of many years' observations, chiefly taken in the summer half of the year in the Co. Donegal. For the last few years, however, I have resided in the county during the greater part of the winter. I have quoted from a paper, printed in the 'Magazine of Natural History,' in the year 1832 (vol. v. p. 580), by Mr. J. V. Stewart, of Ards, who made a considerable collection of birds in this county. From Mr. A. G. More's 'List of Irish Birds' I have also made extracts, and I have to thank the latter author for some further notes which I should have otherwise overlooked. From the 'Report on the Migration of Birds (Ireland),' by Mr. R. Barrington, I have obtained some information, while Thompson's 'Birds of Ireland' has of course been referred to, as well as Sir R. Payne Gallwey's 'Fowler in Ireland' for the aquatic species. But the bulk of the observations are my own, well supplemented by the notes and remarks of my friend Mr. Arthur Brooke, of Killybegs. The species that breed in Donegal are marked with an asterisk (*).

*GOLDEN EAGLE, *Aquila chrysaëtus*, Linn.—Breeds annually on one mountain, on the west coast of Donegal, though other former breeding-places in this county are now deserted. I saw a Golden Eagle near the summit of Errigal in June, 1888. One was shot by Lord Leitrim's keeper on Lough Salt Mountain in the summer of 1890. I have a Golden Eagle's egg taken in the Poisoned Glen, Dunlewy, about forty years ago. My friend Mr. Arthur Brooke,† of Killybegs, obtained two young birds

† I am indebted to this gentleman for a series of notes which he very kindly put together at my request, and which are here distinguished by his initials.

from the eyrie alluded to in 1887, which are still living in confinement. In 1890 two others were reared at the same breeding-place. In this neighbourhood three Golden Eagles have been trapped in the last twenty-four years.

*WHITE-TAILED EAGLE, *Haliaëtus albicilla*, Linn.—Formerly common in the district where I live (Fanet), but I have not seen one for nearly twenty years, when I saw two on Slieve League. It is not so long as that, however, since this species was to be found at Horn Head, where, of recent years, like the last-named, it has been exterminated by the owner, Mr. C. Stewart. “Major Hamilton, of Brown Hall, has a stuffed White-tailed Eagle, which he shot near Finntown in 1849” (A. B.). Sea Eagles bred at Malin Head thirty years ago. A man used to rob the nest of hares, lambs, &c., brought to the young ones, which were cruelly rendered incapable of availing themselves of the food which the old ones brought. Mr. J. V. Stewart wrote of the White-tailed Eagle as very common about Ards in 1828.

*PEREGRINE FALCON, *Falco peregrinus*, Gmelin.—Breeds in many places in the county. I have noted the following:—Dunaff Head; the Bin, Fanet; Rossgull; Horn Head; Tory Island; Aranmore Island; Breaghy Head; island outside Bunbeg, near Gweedore; Knockalla, Fanet; Slieve League; Melmore. I have seen the birds at their breeding-places during the last ten or fifteen years, and the species does not appear to be decreasing. As it is a migrant, and absent when gunners are abroad, it escapes better than other birds of prey. The Peregrine is usually at war with the Raven during the breeding season, driving it from too near an approach to its nest. But the latter often holds its own breeding-place in the same range of cliffs, and is by no means a vanquished foe. “Breeds also on Tor More and at Lough Belshade; the former on the coast near Glen Head, and the latter in the mountains above Lough Eske” (A. B.). No doubt there are several other breeding-places. Mr. Stewart called the Peregrine “rare” in his time (1836).

GREENLAND FALCON, *F. candicans*, Gmel.—One was obtained near Greencastle in Innishowen, by Mr. Leake in 1877; another in 1884, on the west coast of Donegal (‘Report on Migration of Birds,’ R. M. B.).

ICELAND FALCON, *F. islandicus*, Gmel.—Mr. Longworth caught one alive at Glenmore, in the Finn Valley, in 1883.

[SPOTTED EAGLE, *Aquila nœvia*, Gmel.—One mentioned by Thompson, was obtained at Horn Head. Probably a mistake.]

*MERLIN, *F. esalon*, Gmel.—Met with, but sparingly, on the moors throughout the county. It breeds, I believe, both at Glenalla and Carrablagh, though I have not found the nest. At the latter place, however, in early summer, I have seen Merlins striking down Yellowhammers and Titlarks after most interesting flights. The Merlin is by no means uncommon in the south-west of the county. Breeds on the moors near Lough Divna, to the north of Carrick. Eggs have been taken near Pettigo by Sir John Leslie's keeper.

*KESTREL, *F. tinnunculus*, Linn.—Breeds in the sea-cliffs in many places, but rare, or absent, in winter.

*SPARROWHAWK, *Accipiter nisus*, Linn.—Commoner than the last-named, and resident throughout the year.

COMMON BUZZARD, *Buteo vulgaris*, Leach.—About Donegal, and between that and Ballyshannon, in the summer of 1883, I saw several of these birds. At Glenalla, till about 1880, I used to see them annually in summer, but recently I have seldom observed them. In 1883 I saw several Buzzards on the Mourne Mountains, in the Co. Down. Mr. Stewart, in 1830, described the Buzzard as "common and resident."

HEN HARRIER, *Circus cyaneus*, Linn.—I have only once seen this bird in Donegal—one in June, 1888—on the moor above Dunlewy, near Gweedore.

SNOWY OWL, *Nyctea nivea*, Daudin.—One, a female bird in the second year's plumage, was obtained by the light-keeper on Innistrathull, off Malin Head, on Nov. 19th, 1882. It is preserved in the National Museum, Dublin.

EAGLE OWL, *Strix bubo*, Linn.—About sixty years ago an Eagle Owl was captured alive in a potato-field at Glenalla, and kept in confinement some days. This circumstance has often been narrated to me by my father and uncle who then lived there as young people. My aunt, who was a very accurate old lady, had a distinct recollection of the tall, upright ear-tufts. The late Mr. J. V. Stewart, of Ards, stated that four of the "Great Eared Owl, *S. bubo*," visited his neighbourhood in 1820—1830 in a storm from the north. From the circumstance of their coming with a snow-storm from the north, Mr. More believes them to have been Snowy Owls. But Mr. Stewart, in 1832, distinctly

referred to the "Great Eared Owl," and he was an excellent ornithologist.

*WHITE or BARN OWL, *Strix flammea*, Linn.; *LONG-EARED OWL, *Otus vulgaris*, Flem.—Both these species are resident, and breed at Glenalla and elsewhere.

SHORT-EARED OWL, *Otus brachyotus*, Forster.—Mr. Arthur Brooke informs me that he has twice shot this Owl on snipe-ground in the marsh at St. John's Point, near Killybegs, where it appears annually, and is known as the "Woodcock Owl," from the time of its arrival. One was shot near Carrablagh by a local fowler two years ago (1889), and he informed me that they arrive there annually at the end of October.

*SPOTTED FLYCATCHER, *Muscicapa grisola*, Linn.—Apparently not a common visitor, but I have seen pairs at Fahan (1881), and at Glenalla several times. "A pair bred for two or three years in succession in the trellis against the White House (Killybegs) about twenty years ago. Since then I never saw one here till this year (1889), when a pair brought out their young in the same trellis, about five yards from the same spot. Another pair bred in the garden at Bonny Glen, Inver" (A. B.).

GREAT GREY SHRIKE, *Lanius excubitor*; Linn.—Mr. Brooke writes:—"Archdeacon Cox tells me that about twelve years ago a man named Bold, an ex-gauger, who lived near Dunglow, gave him a specimen of the Butcher-bird, or Great Grey Shrike, obtained in that locality, and that he had sent it to the Natural History Society, Dublin."

GOLDEN ORIOLE, *Oriolus galbula*, Linn.—In 1881 Archdeacon Cox obtained one near Glenties, a female bird. Another was obtained some twenty-five years ago at Salt Hill, near Mount Charles, and was preserved by the Russell family, then living there.

*DIPPER, *Cinclus aquaticus*, Bechstein.—Not unfrequent, and breeding by mountain streams throughout Donegal. Mr. Brooke regards it as "Common all through south-west Donegal, and one of the earliest breeders we have. He has obtained the eggs at the end of March."

*MISTLE THRUSH, *Turdus viscivorus*, Linn.—Common at all seasons, and occurring throughout the winter more freely than the other resident Thrushes. In the neighbourhood of Killybegs, owing no doubt to the scarcity of trees, Mr. Brooke has

found Mistle Thrushes' nests in strange places, as on the ground in shelter of a rock, on the top of an espalier by a frequented garden-path, and in a pear tree against a garden-wall. In the latter position it was destroyed by the gardener, but the birds rebuilt their nest in the same spot, with the addition of a piece of muslin, as if to direct attention to it. The second brood was unmolested. Another nest, placed in a tree, was destroyed by Rooks as fast as it was built, and finally the Thrushes gave it up in despair (A. B.). These birds appear to me to be more abundant in Ireland than they were ten to twenty years ago—and more audacious. Thompson states that the first Mistle Thrush's nest known in the North of Ireland was found in 1808.

***SONG THRUSH**, *T. musicus*, Linn.—Common in the breeding season, but deserts us at Carrablagh when this is over.

REDWING, *T. iliacus*, Linn.—Never an abundant winter visitor, except perhaps in a hard season.

***BLACKBIRD**, *T. merula*, Linn.—Common, and abundant throughout the year. “A pair brought out two broods in succession in the same nest, in a holly-bush in my garden, the year before last” (A. B.).

***RING OUZEL**, *T. torquatus*, Linn.—These birds breed in scattered localities in lonely mountain glens throughout the county. By no means rare. In this district they breed at Knockalla, Glenalla, Auchterlinn, and Lough Salt, &c. In September and October they appear in small flocks, usually less than a dozen, and frequent rocky places about the mountain tops before leaving for the winter. “Very common during the breeding season in all the mountains of S.W. Donegal” (A. B.).

FIELDFARE, *T. pilaris*, Linn.—Apparently a commoner winter visitor to Carrablagh than the Redwing. In 1890 one was seen as early as October 13th.

***HEDGESPARROW**, *Accentor modularis*, Linn.—Not unfrequent throughout the year, but much commoner in summer.

***REDBREAST**, *Erythacus rubecula*, Linn.—The commonest resident, one season with another, at Carrablagh.

BLACK REDSTART, *Ruticilla titys*, Scopoli.—In 1881 one was seen at Greencastle, Innishowen, by the same observer who obtained the Greenland Falcon above mentioned.

***STONECHAT**, *Saxicola rubicola*, Linn.—Frequent. Small numbers remain through the winter.

*WHINCHAT, *S. rubetra*, Linn.—Very local. In 1880 I saw two pairs about Trawenagh Bay, near Dunglow, in the N.W. corner of Donegal, and in 1886 I met with a pair by the river Termon, a mile or two above Pettigo, during the summer. Never seen about Fanet. The Whinchat utters a clear Chaffinch-like whistle before its chatter, and the chatter is much weaker than that of the Stonechat.

*WHEATEAR, *S. oenanthe*, Linn.—A common summer visitor, arriving in the beginning of April and remaining till the end of September. "Very common during the breeding season in every part of S.W. Donegal. I once took a nest with six eggs out of a rabbit-hole on Rathlin O'Beirne Island, and saw one of these birds so late as Oct. 7th, 1880. The first I ever saw was on April 4th, 1880" (A. B.).

*SEDGE WARBLER, *Acrocephalus schoenobaenus*, Linn.—Kindrum, Lough Fern, River Finn, River Erne, are haunts of the Sedge Warbler, and no doubt other places. But it is not a common visitor, owing to the absence of suitable haunts. Mr. Brooke has found two nests within a mile of Killybegs.

BLACKCAP, *Sylvia atricapilla*, Linn.—Very rare in Donegal. At the end of May, 1881, a pair frequented the plantation behind the garden of Rathmullan House, Lough Swilly.

*WHITETHROAT, *S. rufa*, Boddaert. — Not unfrequent in many parts of the county in summer, but visits Fanet sparingly. "Common during the breeding season about Killybegs, and returning to breed in the same place, if not disturbed" (A. B.).

WOOD WREN, *Phylloscopus sibilatrix*, Bechstein.—A very rare visitor. One shot by me at Glenalla, in June, 1879, is now in the National Museum in Dublin. There were two pairs there on that occasion, and I had heard them at Glenalla in previous years, but I have never met with the species elsewhere in Donegal. (See Zool. 1879, p. 341.)

*WILLOW WREN, *P. trochilus*, Linn.—A common summer visitor. Rarely sings a second time in September at Glenalla, where it arrives nearly a week later than the Chiffchaff.

*CHIFFCHAFF, *P. rufus*, Bechst.—As common as the last, or more so, in woodland places like Glenalla. The Chiffchaff seldom frequents open hedgerows as the Willow Wren does. It may usually be heard at Glenalla, giving a second song,

on fine days at the beginning of September. It generally arrives the second week of April at Glenalla.

*GOLDEN-CRESTED WREN, *Regulus cristatus*, Koch.—Resident and common wherever there are spruces or silver firs.

*COMMON WREN, *Troglodytes parvulus*, Koch.—Common and resident. Often met with in summer in most remote places on steep mountain cliffs. I may quote Slieve League and Bluestack in this county, and Brandon in Kerry, on the sea-precipices, in both of which lonely places I disturbed these birds, which are usually found dwelling near houses.

*TREE CREEPER, *Certhia familiaris*, Linn.—Apparently very scarce in Donegal, though ascertained to occur in Letterkenny. I have seen it at Ards, on the shores of Sheephaven Bay, where there is a sufficiency of timber. The nest has been taken at Marble Hill, I have been informed, by the Rev. A. Stuart, or one of his sons. Mr. J. V. Stewart wrote (1830) that it was a very rare resident at Ards.

*GREATER TIT, *Parus major*, Linn.—Frequent in summer; scattered and of uncertain distribution in winter.

*BLUE TIT, *P. cæruleus*, Linn.—Common and resident.

*COAL TIT, *P. ater*, Linn.—Not quite so common as either of the last-named species, but frequent at Glenalla, Rathmullan, &c. "Not uncommon at Killybegs" (A. B.).

*LONG-TAILED TIT, *Acredula caudata*, Linn.—Not rare, and occurs in small travelling parties in winter. I have found their nests at Glenalla and Rathmullan. "Are to be seen at this season of the year (January), in flocks up to a dozen or so, about the woods at Lough Eske and Ardnamona, where they breed" (A. B.).

MARSH TIT, *Parus palustris*, Linn.—I saw one at Carrablagh in November, 1889, and I observed it carefully: there was no white on the nape. This bird appears to be very rare in Ireland.

WAXWING, *Ampelis garrulus*, Linn.—Mr. Murphy, of Dunfanaghy, obtained a specimen of this rare winter visitor in that neighbourhood in 1881 (A. B.).

(To be continued.)

NOTES AND QUERIES.

MAMMALIA.

The Marten in Co. Down.—Mr. Sheals, the taxidermist, of Belfast, reports that a large male Marten, *Martes sylvatica*, Nils., was trapped by Major Maxwell's keeper at Finnebrogue, Downpatrick, on the 4th April last. No doubt the keeper was rejoiced, but naturalists will hear of the occurrence with regret. This beautiful animal, once so great an ornament in all our large woods, even in the South of England, is—like the Wolf of old—being gradually driven northward and westward into the wilder parts of the country, where it is becoming gradually exterminated.—J. E. HARTING.

Note on the Water Vole.—To what extent does the Water Vole hibernate? My attention has been drawn to this question by the following facts:—In mild winters Voles are not at all uncommonly seen along our streams all the season. In spells of sharp weather, when the ground is covered with snow, their tracks and other marks of their presence are often seen on the banks. Last spring and summer Water Voles were exceptionally abundant along a stretch of the Swere in this and the next parish. In spring they were wonderfully tame, and would sit on the opposite bank in full view until almost touched with the point of a fishing-rod. In summer evenings, as I walked up the stream, they plumped off the banks every few yards. On the same water there are hardly any this summer. One evening last week I walked along four meadows without seeing a single Vole. The only solution seems to be that the late hard winter has killed them nearly all.—O. V. APLIN (Bloxham, Oxon).

Irish Localities for Natterer's Bat.—In an editorial foot-note (p. 271), it is suggested that my friend Mr. Hart and I have overlooked several known Irish localities for this bat. But, as I still believe that only four localities, and only one specimen from each, can as yet be reckoned in Ireland, I hope a few words of explanation may not be out of place. Mr. Mangan's locality of Enniskerry (Nat. Hist. Soc. Dublin, 1844) refers, no doubt, to the same specimen which is recorded by Mr. M'Coy (A. N. H. xv. p. 270) as having been obtained at "the Scalp," which lies close to Enniskerry, and is just on the border where the counties of Wicklow and Dublin meet. My friend Mr. Barrington gives this locality to Wicklow; Thompson says "near Dublin," and Bell correctly gives it as "a rugged pass between the counties of Dublin and Wicklow;" all these refer to the same original specimen, which may, accordingly, be credited to either county. "Kildare and Queen's County" refer to the bats taken by the late Dr. J. R. Kinahan at Tankardstown Bridge, which is on the borders of these two counties. These bats were at first announced as *V. Nattereri*,

but afterwards were found to belong to *V. Daubentonii*, a mistake which was corrected by Dr. Kinahan himself, as mentioned by Mr. Kelsall (Zool. 1889, p. 309). This leaves one at "the Scalp," one in County Cork (Zool. 1883, p. 294), one taken in County Longford and now in the British Museum (Zool. 1889, p. 248), and now a fourth in Donegal; and it is curious that only a single example has been taken in of each these four localities.—A. G. MORE (74, Leinster Road, Dublin).

The Noctule and Serotine Bats in Kent.—Having read the admirable paper on the Serotine Bat, *Vesperugo serotinus*, in 'The Zoologist' (pp. 201—205), I am prompted to give you the result of my observations on this and the Noctule Bat in Kent. As both these bats are abundant here, and I have kept them under observation during the last four or five years, I write with the greater confidence. True to their former habits, the Noctules appeared from the gable of my house this year in their former abundance and at their usual season. On May 1st, when I first observed them, I counted fourteen emerge from their winter quarters at 8 p.m.; but the weather following this evening not being propitious, I did not observe them again until June 4th, on which night I counted sixty-seven as they issued from the gable of the house at 8.15 p.m. On June 12th, at 8 p.m., 120 emerged from the same place: since then they appeared in decreasing numbers. I cannot make out exactly what weather they prefer, for on that evening it was clear and cold; while on the 16th, it being cloudy and mild, thirty-one bats came out at 7.50 p.m., and I waited in vain till 8.30 expecting others to appear. A few days later I watched for them, and but one appeared; however, they had not then all left the neighbourhood, for on June 28th I saw four or five at 8.30 p.m., flying very high. In previous years they deserted my house at about the same time of the year, and I am convinced they migrate somewhere, for they are not seen in July or August, except a few during the early part of July. I imagine the Noctules roost in the tall trees, now well out in foliage, but the greater part of them disappear from the neighbourhood. When frequenting the house they return about 9 p.m., and when many are out they may be seen flying round like a swarm of bees, waiting their opportunity to retire into the hole from which they emerged. Another curious circumstance I may relate: although I have watched them most closely as they appeared from the house, I never could detect the least difference in their size, or see any that looked like young ones. When and where they breed is to me a mystery. The Noctules generally seem very fat, notwithstanding their having such short feeding hours. While frequenting the house they are generally infested with parasites, and our people are glad to see them depart. With regard to the Serotine Bat, *Vesperugo serotinus*, although it is never so abundant here as the Noctule, there are generally five or six to be seen during the summer months in and about my garden. They come out sooner in the

year than the Noctules, and are to be seen at times during the whole summer. Although their appearance on the wing is similar, as you justly observe, the proximity in size and their appearance together has doubtless on many occasions caused the two species to be confounded. To the attentive observer the two species may be readily distinguished. According to my observation, the Serotine never flies at such a height as the Noctule. It is much less rapid in its flight, and its general habit is to hawk about trees and lanes; it sometimes doubles down nearly to the ground, and flies so low that you might strike it down with a whip. I believe the Rev. A. C. Bury must have been mistaken when he wrote of the Serotine the statement quoted in your article (p. 203), wherein he remarked, "As the night got on, they flew higher, and between 9.30 and 9.45 they flew altogether out of gunshot in height." In this case it was probably the Noctules observed out of gunshot. I have watched the Serotine to try to find some corroboration of this, but in every case I have found that it rarely flies higher than the tops of the trees in this neighbourhood, while the Noctule's flight is at a much greater height. The Serotine is often found in pairs hunting in the same neighbourhood. On June 28th I watched them till nearly dark, and the Noctules were abroad at the same time, so that I could easily compare them. The Noctule flies with a more curved and pointed wing, taking a long range, and appearing in the distance something like a Snipe in the air.—GEORGE DOWKER (Stourmouth, Wingham, Kent).

CETACEA.

Sibbald's Rorqual on the Irish Coast.—The following particulars respecting the first recorded instance of Sibbald's Rorqual (*Balenoptera sibbaldii*, J. E. Gray) on the coast of Ireland, may be acceptable as supplementary to those given by Mr. Crouch (p. 215). About the end of March Mr. A. G. More drew my attention to several notices in the daily papers of the stranding of a large whale at the mouth of Wexford Harbour. One of these notices, which appeared in the 'Evening Telegraph,' ran as follows:—"On Wednesday [March 25th] Edward Wickham, a fisherman, living at the Fort, at the entrance to the harbour, had his attention attracted to an unusual disturbance in the sea just opposite Hantoons, below the Fort. He made out the back and fins of a huge Whale rolling and beating the waves in a struggle apparently to get off the sand-bank, which makes the sea there quite shallow. The pilots at the Fort station also perceived the struggle, and they and Wickham continued to watch the strange animal during the day, and pilots Blake and Saunders and Wickham subsequently put off in a boat with the object of getting a closer inspection, but they did not care to venture too near. On the following morning, however, Wickham ventured to approach in his boat, the struggles of the big whale having become less and less. He managed to get close enough to plunge

a long knife into it under one of the side fins, which had the result of ending its troubles. The Board of Trade has been communicated with, with a view to having the unwieldy carcass removed. It is now lying just in front of the harbour. There is no doubt that this strange visitor, coming quite unintentionally into shallow water, grounded on the Swanton Bank." On reading this report I at once wrote to several friends in Wexford for further particulars, with the result that Mr. E. A. Gibbon very kindly secured for me a small piece of the baleen. This I forwarded to Mr. More, who when he saw it at once said that it belonged to a specimen of Sibbald's Rorqual. Unfortunately I was unable to visit the whale until after the blubber and some of the bones had been removed, but the Wexford papers kept their readers informed as to what became of it. On April 3rd it was sold by auction by Mr. Plowman, Receiver of Wreck, and was knocked down for £111 to Mr. William Armstrong, of Wexford, who has kindly given me some interesting particulars regarding the dimensions and colour at the time of his purchase. He tells me that its total length was about 82 feet. The colour was black above and dark slate-colour beneath, with patches rather tending to grey. The upper surface of the flippers was black, the under surface greenish white; their length was $10\frac{1}{2}$ ft., their breadth about 30 in. The dorsal fin was 11 in. high and 28 in. long; its posterior edge was 16 ft. from the division of the tail. The tail measured 16 ft. across its outer edge. The baleen, of which 500 blades were taken out of the mouth, was uniformly black. These blades were fringed at their ends and curved at their sides, and measured from 12 to 29 in. in length, and from 9 to 22 in. in width at their widest part. Those which were near the apex of the jaws were smaller, more numerous, and upright. All were imbedded in the roof of the mouth to a depth of about 4 in. A series of longitudinal folds of skin about 2 in. wide ran from head to belly, with a space between each stripe of 9 in., which gives an appearance of a clinker-built boat; the stripes stand out about $\frac{1}{4}$ in. above the spaces between. The blubber was rather tough and fibrous, and not very rich; it was from 10 to 4 in. thick on the back. The eye was about 4 in. in diameter. The entire skeleton, with the baleen, was purchased by Dr. A. Günther for the British Museum of Natural History, and is being prepared under the supervision of Mr. E. Gerrard. The rudimentary pelvic bones were fortunately secured, and were found to be 16 in. long: they appeared more like muscles than bones. The state of these bones and of other parts of the whale led Mr. Gerrard to think that it was, despite its immense size, still immature. Although Sibbald's Rorqual has not hitherto been recorded by name from the Irish coast, Mr. More thinks that no doubt the whale killed at Cork in 1844, and probably some of the other large Rorquals mentioned by Thompson (*Nat. Hist. Ireland*, vol. iv.), belonged to this species. In addition to the gentlemen whose names I have already mentioned, I have to thank

Dr. R. F. Scharff, of the Dublin Museum of Science and Art, and Mr. W. Higginbotham, of Wexford, for kind assistance. — G. H. BARRETT HAMILTON (Kilmanock, New Ross, Co. Wexford).

BIRDS.

The Icterine Warbler in Holderness.—An adult male example of *Hypolais icterina*, which I recently examined, was obtained at Easington, in Holderness, on May 28th, and brought to Mr. Philip Loten, of that place, by a boy, but whether picked up dead, or killed by a stone or with a catapult, is uncertain, as several small birds were brought to Mr. Loten's shop by the village boys about that time. It was skinned and put on one side, under the doubtful impression that it might be only a Wood Wren. It is very possible that the Icterine Warbler occurs more frequently than is generally supposed during migration in spring and autumn on the east coast, passing unrecognised in the crowd of various small migrants then on the move. This Yorkshire specimen of *Hypolais icterina*, compared with four skins of *H. polyglotta* obtained near Tangiers by Mr. Hewetson last spring, is altogether a larger bird, and with the wings proportionately longer, reaching to nearly the middle of the tail, and the yellow colour of the under parts is less intense. From the known range of the two, *H. icterina* is much more likely to occur on migration in Great Britain than its congener, although doubtless this too will be recorded sooner or later as having turned up, and not improbably in the south-western counties or in Ireland. Mr. Gätke says ('Die Vogelwarte Helgoland') that forty or fifty years ago the Icterine Warbler was quite common, but now, with the changed climate in the spring, it has become so rare that only one or two are sometimes seen on exceptionally warm days in May, and on the return journey in August it is rarer still, although occasionally one or another may be found in the potato-plots. It has once nested in Heligoland in 1876, when a pair brought off five young in his neighbour's garden. The Polyglott Warbler has occurred once, on May 23rd, in 1846. In the present example the second primary is a little, but decidedly, longer than the fourth. This is worthy of notice, as Mr. Seebohm (Brit. Mus. Cat. Birds, v. p. 76) says, "second primary generally between the fourth and fifth." Prof. Newton also (Yarrell's Brit. Birds, vol. i. p. 362), pointing out the distinguishing points between this and the Polyglott Warbler, says:—"The second primary in the Icterine Warbler is longer than the fifth, and equal, or nearly equal, to the fourth, which is shorter than the third, while in its ally the second primary is equal to the sixth, and the third and fourth are largest." So that it appears the relative proportion of the primaries is hardly to be depended upon as a permanent character in distinguishing this species. The Easington bird, and first Yorkshire example, is now in the possession of Mr. W. Eagle Clarke, of the Science and Art Museum, Edinburgh.

Mr. Clarke has since informed me that he finds the second primary is .085 in. longer than the fourth; thus it is the second longest in the wing, the third being the longest.—JOHN CORDEAUX (Great Cotes, Ulceby).

The Lesser Whitethroat in Devon.—Having read Mr. Pidsley's 'Birds of Devon,' and the letters in 'The Zoologist' from Mr. D'Urban and the Rev. M. A. Mathew on the subject, I should be glad of the opportunity of stating that five years ago when I was at Blundell's School, Tiverton, I myself found a nest of the Lesser Whitethroat containing five eggs. I could point out the exact spot now. It was at a place about seventy yards north-east of the intersection of the river Loman and the railway, a quarter of a mile or so from the school. I saw the hen bird clearly on several occasions. In the collection of a schoolfellow there were two eggs of this species which I think were found in the same neighbourhood. I remember also our house-boy on one occasion bringing three unblown eggs of this bird which he had just found. These facts, I think, are sufficiently conclusive of the nesting of the Lesser Whitethroat in North Devon.—MAURICE STUBBS (Wavertree Rectory, Liverpool).

The Lesser Whitethroat in Devon.—As there seems to be a certain amount of conflicting evidence respecting the distribution of *Sylvia curruca* in this county, I may say that, in my 'Birds of Devonshire,' I have remarked that it is "a rare summer visitant, but has not as yet been found breeding in the county." With regard to this latter statement, I am now convinced that the Lesser Whitethroat *has* nested in Devon, and still does so, as since the publication of the 'Birds of Devonshire,' an ornithological correspondent who has resided for seven years in South Devon wrote me that, in June, 1884, he discovered a nest of this bird containing four eggs, and also another nest in 1887, both clutches being at the present time in his cabinet. A third nest of four eggs was obtained by the same gentleman from Dawlish, near Exeter, and given to me, and are now in my cabinet. I should be glad therefore if those who possess a copy of the 'Birds of Devonshire' would substitute the foregoing remarks for my statement that "it has not as yet been found breeding in the county," as up to the time of publication I had no knowledge, nor was I aware that the Lesser Whitethroat had ever been discovered nesting in Devon, although no trouble was spared by me in endeavouring to establish it as a breeding species.—WM. E. H. PIDSLY (Blue Hayes House, Broadclyst, Exeter).

Unusual nesting-place for a Magpie.—When staying with my brother at Wiston, near Leicester, last spring, I was surprised, when driving along a well-used turnpike-road, to see a Magpie's nest in the road-side hedge, and not more than eight feet from the ground. The nest was completed, but had no eggs in it. Though there are a good number of Magpies about, they usually build in the high trees which abound in the hedgerows

of large pastures. I was almost as much struck with the lowness of the nest as the exposed position in which it was placed.—J. WHITAKER (Rainworth, Notts).

Montagu's Harrier breeding in Sussex.—Mr. Pratt, of Brighton, has a female specimen of this rare bird. It was shot at Patcham, near Brighton, on June 17th, among sand-heaps and fern. When picked up a lark's egg was found in its throat, with which perhaps it may have been about to feed its young. The plumage showed that the bird had been brooding, the under parts being in places denuded of feathers.—H. D. GORDON (Harting Vicarage, Petersfield).

[What a shame to have killed this bird in June, just at a time when it probably had young to provide for! The species is always sufficiently rare to stand in need of all the protection that can be given to it.—ED.]

On *Lanius excubitor* and *Lanius major*.—There can be little doubt that Mr. Aplin is wise in suggesting the advisability of more criticism being desirable towards the solution of ornithological enigmas through the press. But whether the vexed question of the specific or non-specific character of *Lanius excubitor* with one white wing-spot can be determined thereby is a little questionable. Whilst anxious for further knowledge in this matter myself, I am conscious that a few facts are worth many theories in scientific questions, and propose therefore simply to note, for the benefit of those interested in these most attractive birds, a few observations which have been based upon specimens of my own:—(1). As a rule, Grey Shrikes (if adult), having two wing-spots, have pale grey rumps and upper tail-coverts. An exception to this rule, however, is at hand in a very old bird from Saxony. (2). In Grey Shrikes with only one wing-spot, *i. e.* with no white on the secondaries, the general coloration above is decidedly darker than is the case in typical *L. excubitor*, including the rump and upper tail-coverts; and the writer certainly has no recollection of having seen a specimen with a white rump. (3). In all the specimens of *L. major* examined, some degree of vermiculation beneath may be observed, except in a specimen from the Volga, which, however, from its more strongly hooked bill and somewhat paler general colouring, might be a hybrid with *L. homeyeri*. 4. In the young of both forms of the Grey Shrikes, the under surface of the body seems always to be more or less vermiculated. A very young bird, labelled *L. homeyeri*, has a perfectly plain under surface, *i. e.* without any cross-barring whatever. It would be exceedingly interesting to discover in what proportion the two forms known as *excubitor* and *major* are met with in England. Probably they might be put down at about half-and-half, but, as this is largely guesswork, it cannot be worth much. For further elucidation of this important point, it would be a great assistance if those who record the occurrence of Grey Shrikes in 'The Zoologist,' or elsewhere,

would make a point of ascertaining, first of all, to which of the two forms their records relate, giving the result of their examination.—J. BACKHOUSE (Harrogate).

Crossbills and Siskins breeding in Co. Waterford.—The Crossbills that bred here last year (Zool. 1890, p. 199) seem to have deserted us, but have been replaced this spring by several pairs of Siskins, birds equally deserving of the name of gipsy migrants. Since my former notice of this species (Zool. 1883, p. 493), I have seldom seen Siskins in the breeding season, and until this year have not seen a nest here since 1857. On the 21st April last a Siskin's nest was pointed out to me, far out from the trunk, on a long pendent branch of an old silver fir, over forty feet from the ground, overhanging the road that leads to my stables. So dense was the foliage that I could hardly distinguish the nest, but I repeatedly saw the Siskins going to it, first alighting on bare sprays of the branch, and then creeping into it. On the 5th May, the young Siskins having been heard from the nest, my coachman ascended the silver fir, and five little Siskins, fully fledged, took flight successively to neighbouring trees. We caught and caged two. The parents, especially the old male, approached us closely with solicitous cries. The nest is not placed on the main stem of the branch, but on one of the fan-like expansions growing over it, another of which, dense with green foliage or needles of the fir, overspread it, and concealed it from Magpies, just leaving head-room for the Siskins to enter and leave it. Unlike the nest described by Mr. Ellison (Zool. 1886, p. 340), this wanted the foundation of twigs, being composed of green moss, with a few tufts of silvery lichens and root-fibres, white hairs and old thistle-down. Within were a few feathers, with finer vegetable down, hairs, &c. Four or five other pairs of Siskins frequent groups of similar old silver and Scotch firs in other parts of the demesne this spring, leaving no doubt that they are breeding there. On the 18th May a pair of Siskins were discovered to be completing a new nest on a long branch of a larch not twenty feet from the ground, close to where I had repeatedly observed Siskins, and heard one sing on 31st March and 5th April. It was in the same group of trees in which a pair of Crossbills bred last year, on the hill not very far from the site of the last nest. I saw the female enter the nest and wriggle round, as though settling it, and heard the male on the 18th and following days warbling on an adjoining tree. On the 24th and 25th the hen bird was observed to be sitting in the nest, and on the 26th I took it. It was overshadowed by sprigs of the larch, as the two former nests had been by tufts of the Scotch and silver firs. It partly rested on the main stem of the branch, and partly on offshoots, and was composed of green moss mixed with a little sheep's wool, and lined with fine dried grass-stems and hairs. It contained four eggs, large for a Siskin, with the pale blue ground colour of our native Siskin's eggs, sparingly marked with pale red, and some few

bold spots of blackish red-brown. They showed no evidence of incubation. On the 23rd May my coachman saw a brood of five Siskins on tall trees, where Siskins had been noticed for weeks past, near the stable-yard, and two other pairs frequented other groups of tall silver and spruce firs near the garden. Altogether I know of seven or eight spots where I believe Siskins to have bred here this spring. On the 21st May, when in the plantation at the Giant's Rock, I saw a brood of young full-grown Crossbills accompanying their parents, and following them from tree to tree, crying "chit-oo, chit-oo, chit, chit," as they importuned them for food. Several other persons here have also observed the broods of Crossbills recently on the move in the plantations. On the 15th May a second Siskin's nest was discovered here, not far from a part of the plantation where I had repeatedly observed a male Siskin singing since the end of March. It was at the extremity of an upper branch of a Scotch fir, more than thirty feet from the ground, and was shaded overhead by the thick tufts of green needles. This tree stood right opposite, and not many yards from, the bay window of the sitting-room of a house on the top of the hill among the plantations, the same house in the vicinity of which three Crossbill's nests were discovered last year. The female Siskin was seen to be sitting, and could with difficulty be got to leave the nest. When this was done, to get a sight of her, she would quietly flit to an adjoining tree, and return in a few moments to the nest. Having ascertained that there were eggs, I proceeded to cut the branch, first having it supported by my man from the top of the tree with a long crooked rod. Having cut the branch, we carefully pulled it in until the nest was reached, the Siskin continuing to sit while we were drawing in the branch. After it was cut, I thus had a full view of her at close quarters. The nest has a number of small dead twigs of Scotch fir incorporated with its foundation and sides, and is composed of green moss, with a few tufts of fine silver-coloured lichens and a little fine dried grass, which latter forms the principal lining, there being no feathers in the nest, but a quantity of strong black horse-hair forms the rim, both internally and externally. It measures about three and half inches in external diameter, and less than two inches inside. The five eggs, which had not been long incubated, have the same greenish blue ground colour as the three other Irish clutches of Siskin's eggs I have seen, not quite so blue as Lesser Redpolls' eggs, but of a more decided shade than two continental clutches of Siskin's eggs, which are very pallid. Each egg is zoned round the larger end with pale red spots, and there is an occasional spot and streak, irregularly placed, of blackish red-brown. In an adjoining tree, also a Scotch fir, and in a similar position at the end of an upper branch, is the nest of a Goldfinch which contained, on the 16th May, young several days old. Thus the Goldfinch and Siskin were next-door neighbours. This is the earliest brood of Goldfinch I have met with. On the 7th May,

Mr. James Johnston, of Bray, Co. Wicklow, kindly sent me a nest of Siskin in the branch of a spruce fir, taken by him in the forest near Powerscourt Waterfall, where these birds breed regularly. It is built of similar materials to the nest last described, except that the rim of horse-hair is wanting. There were four eggs in the last stage of incubation, which were unfortunately broken in transit.—R. J. USSHER (Cappagh, Co. Waterford).

Reminiscences of the Kite in Lincolnshire.—I lately heard the following from an old man, 77 years of age, now a considerable farmer, but who began life as an assistant to a gamekeeper. He well remembers when he was a boy that the “gleade” was very common in the big woods near Louth—he had seen scores of them; during a great part of the day they were on the wing, flying and soaring in circles at a great elevation on motionless wings. His father kept a good many geese, and almost the first job he was put to as a child was to tent goslings. If the least remiss in his duty, down swooped one of the ever-watchful Kites, and in an instant one of his charges was carried off. Not only were they skilful foragers in the poultry-yard, but equally adept at carrying off linen from the drying-grounds and hedges, illustrating the well-known line of Shakespeare—

“When the Kite builds look to lesser linen.”

Winter's Tale, Act iv. Sc. 2.

Handkerchiefs, socks, and specially children's clothing, disappeared, to be used as building materials for their nests; and he had many a time to climb trees in the woods to recover these lost articles.—JOHN CORDEAUX (Great Cotes, Ulceby).

Redwings singing in April.—During the afternoon of April 11th, when under some very tall trees, I heard a twittering song of birds which I at first took for Starlings, but on looking through my glasses I found the notes proceeded from a small flock of Redwings. The song was something like that of the Starling, with several notes like those of the Song Thrush, but much lower. The sun was shining, and the song continued for some time, ceasing occasionally and then recommencing, several birds singing at the same time. I never before heard the Redwing sing in England.—J. WHITAKER (Rainworth, Notts).

[Some years ago there was a long discussion in this journal on the question whether the Redwing ever sings in England, the result of which tended to show that it is very exceptional, doubtless because this bird, being a winter visitant, leaves the country before the usual time for its coming into song. See ‘*Zoologist*,’ 1864, pp. 8946, 9040, 9104, 9106.—ED.]

The Wood Warbler and White Wagtail in the Midlands.—If Mr. Montagu Browne would now take the trouble of visiting Charnwood Forest, he might (provided he really knows a live Wood Warbler) at once

satisfy himself as to its occurrence in Leicestershire. The bird is now there in about its usual numbers. In South Notts we have a few pairs breeding regularly every year. The small woods about Gedling, Burton Joyce, and Bulcote all being tenanted. Clifton Grove generally contains a pair, and it may also be met with in the parishes of Barton and Thrumpton, and in the woods on the Kingston estate. In the neighbouring county of Derbyshire I met with a few pairs near Hayfield, in the High Peak, and also at Ashover in the Amber Vale. I have little doubt that further research would find it breeding in the woods at Miller's Dale, and also in suitable localities along the course of the Derwent as far south as Derby. A recent writer in 'Science Gossip' alludes to its abundance near the village of Birley, in North Derbyshire. In the low-lying parts of the county it is probably only seen on migration, a large tract of country in the Trent Valley being very unsuitable to its habits. In Warwickshire I have identified the Wood Warbler in Frankton Wood, near to the village of Stretton-on-Dunsmore. Ryton Wood, in the same locality, also looks a very promising place for its occurrence. I have received eggs from Shropshire. In passing, I may refer to another species which Mr. Browne treats in his original manner—*viz.* the White Wagtail. During the present spring I have identified eight specimens of this bird within a very short distance of the Leicestershire border, and I have been careful to acquire evidence which places the matter beyond dispute. I should be glad to hear if this species has lately been observed in Exton Park. It is to be hoped that ere long some higher authority will prepare a more complete account of the Birds of Leicestershire than the existing work by Mr. Browne.—F. B. WHITLOCK (Beeston, Notts).

Interbreeding of the Pied and White Wagtails.—At the present time there may be seen in this village a Wagtail's nest with young, of which the parents are a cock Pied Wagtail and a hen White Wagtail. The nest is built about six feet from the ground in a pyracanthus trained against the wall of a house not far from my own; six eggs were laid and nearly, if not quite, all hatched. The hen bird is very tame, and has given me such good opportunities of seeing her on the nest, and also through a glass when on the ground and on the roof of a building, that I am certain of her identity; she has a black head strongly contrasted with her grey back. Dr. Günther informs me that a similar case of interbreeding, mentioned on his authority in Mr. Saunders' 'Illustrated Manual,' occurred in 1889 at Woolpit, which joins our village. Most of the readers of 'The Zoologist' have seen the family group of Wagtails in the National Collection which were obtained in Norfolk, in which the cock is a White and the hen a Pied Wagtail. Now comes the question, would the hybrids be fertile, either paired with one another or with a typical example of either the Pied or White Wagtail? Again, would the mature hybrids develop

an intermediate plumage, or resemble one or other parent? Both cases occur when the Black and Grey Crows interbreed. Pied Wagtails nest in our ivy wall every year, and the hen birds are always tame, so I have a pretty good acquaintance with their plumage, but the hen bird of the nest above mentioned is quite unlike any Wagtail I have ever seen here.—
JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Scops Owl in Norfolk.—A male of this species, in good plumage and condition, was shot at Walsingham Abbey, by a keeper of Mr. Henry Lee Warner, on May 21st, 1891. The keeper mistook it for a "Blue Hawk" (*i. e.* male Sparrowhawk), as it flew down a glade, the afternoon being cold, dull, and rainy, otherwise it would not have been interfered with; for Owls receive careful protection from the proprietor of Walsingham Abbey. The keeper at once took the bird to Mr. Lee Warner, who has preserved it. Messrs. Gurney and Southwell, writing of this species ('List of Norfolk Birds,' 1886), remark that "The only example obtained in the last fifty-eight years, and indeed the only one which can be implicitly relied on, was one picked up by a boy, in November, 1861, on the road which runs beneath the lighthouse at Cromer." Prof. Newton (4th ed. Yarrell's 'British Birds') writes that this "species, which is known as a regular summer migrant in most parts of Southern Europe, arriving and departing with the Swallow, is in this country but a casual visitor; and that we have it at all is probably due to the fact that the examples observed have been stragglers which have lost their way." The capture of this species in Norfolk, at such opposite seasons as May and November, coincides with the migratory habits of this pretty little Owl, for these months are likely periods for a straggler to arrive on our shores. The stomach of this specimen was entirely filled with the remains of beetles.—H. W. FEILDEN (Wells, Norfolk).

Short-eared Owls in Essex in May.—Whilst looking for the nests of some Gulls, *Larus ridibundus*, on the bentlings near Walton-on-the-Naze, on Whit-Monday last, I flushed a Short-eared Owl. It had just killed a Black-headed Gull, and had commenced to pluck and eat it; the blood was flowing from the dead bird. Being very fearless, it did not fly more than ten yards at a time; most probably it was breeding somewhere near. It was about one mile distant from the spot where I saw Short-eared Owls in August, 1884, and two miles from where they bred in 1889 (see Zool. 1889, p. 453).—F. KERRY (Harwich).

Tufted Ducks nesting in Nottinghamshire.—We have had three pairs of Tufted Ducks nesting this summer on the islands in the lake here close to the house. One of these nests is on the top of a Wild Ducks' nest, the Wild Ducks having left about a month before the Tufted Ducks began to lay.—J. WHITAKER (Rainworth, Notts).

Variety of the Common Heron.—I have seen recently a Common Heron, *Ardea cinerea*, which was caught on board a fishing-smack in the North Sea, and brought, in the flesh, to the shop of Mr. Jefferies, of Grimsby, for preservation. It is apparently an adult female in good bright healthy plumage. The peculiarity of this bird is the very remarkable abnormal colouring of the soft parts, so very different from the ordinary type, so much so that Mr. Jefferies insisted it must be distinct. The irides are red—that is, red-currant colour; lores a light purplish red; posterior half of beak red, anterior yellow; legs and feet red, the front scutella on the tarsi almost coral-red, approaching in colour the same parts in the French Partridge, and subsequently drying to a brownish red.—
JOHN CORDEAUX (Great Cotes, Ulceby).

Notes from Great Yarmouth.—During the shooting season of 1890–91 the following birds have been shot or seen in the vicinity of Great Yarmouth:—Three Pectoral Sandpipers on Sept. 10th, 12th, and 13th. A Spotted Redshank, Oct. 3rd. Buffon's Skua, on Breydon Water, Oct. 20th; the crop was full of earthworms. A Pomatorhine Skua, same date, on beach. Seven Purple Sandpipers in October. Large flocks of Woodcocks on Oct. 20th, 29th, and first week in November. Storm Petrel taken alive from a cat on 27th. Red-necked Phalarope on the 29th. Three Polish Swans brought to market from the Broads, Oct. 30th. Six Shovellers and several Scaups in market, Nov. 1st, and Long-tailed Duck on the 3rd. Redshanks shot Nov. 8th and Dec. 22nd; unusual here in winter. Eight Shore Larks trapped early in November. Snow Buntings plentiful first half November. Several Bearded Tits in market on Nov. 19th. Twenty Swans seen on Breydon Nov. 29th. Hungry Hooded Crows seen chasing Dunlins Nov. 30th. A Wigeon struck telegraph-wire on Dec. 7th. Three Bewick's Swans, two mature, one young, in market Dec. 6th. A number of dead Kittiwakes washed up on beach Dec. 14th. On Dec. 16th the sea off Yarmouth was alive with Scaup and other "hard-weather fowl." Bewick's Swan seen in the market on Dec. 20th; also, same date, two White-fronted Geese, sixteen Pochards, twenty-three Scaups, twenty Tufted Ducks, one Shoveller, nine Wigeon, and one Shellduck in the market. On the same date nineteen Woodcocks in market, and a great number and variety of other birds. Three Mute Swans (undoubtedly wild) in market Dec. 23rd. Seven Wood Larks shot on Dec. 20th. During the last week in December a great number of starving Black-headed Gulls were caught in clap-nets; several were taken by boys by means of tubs, soletrunks, &c., tilted up by sticks, and dropped over them by means of a long cord. Two Pink-footed Geese in market Dec. 30th. Flock of Turnstones seen on beach Dec. 30th, and two Bean Geese killed on the 31st. Saw two large flocks of Brent Geese on Jan. 6th; several shot on Breydon next day. Fork-tailed Petrel shot on the beach Jan. 6th, and a Little Gull (immature) on the 7th. Two

adult Whooper Swans in market on Jan. 12th, and Red-necked Grebe on the 20th: another soon after. Bean Goose, weighing 7 lbs., in market on the 24th. Three or four Slavonian Grebes shot early in January. A flock of about ninety Swans seen on the marshes on the 20th. Montagu's Harrier in market on the 31st. Smew (adult males in particular) were exceptionally numerous in January and February. — A. PATTERSON & B. DYE (Great Yarmouth).

Albino Twites in Ireland.—Early last year Mr. Robert A. Simms, of Ballymena, Co. Antrim, told me that a shepherd named Arthur M'Allister had a white bird alive, which he obtained under the following circumstances:—In the summer of 1887, while his children were playing on a mountain near Newtown Crommelin, North Antrim, they flushed from the ground three white fledgling birds, all of which they caught. Two died within a day or two, and were thrown away; but the third, which is the subject of this note, attracted the attention of Mr. Simms, who fortunately happened to be in the district about the time. It lived, as he has since told me, in the possession of the shepherd until the middle of December, 1890. On the 16th December Mr. Simms obtained the dead bird, and sent it to Mr. Robert Patterson, of Belfast, who had it stuffed, and at the request of Mr. Simms, very kindly sent it to me. The bird is a Twite, *Linota flavirostris*, and, with the exception of a small rust-coloured patch on the rump (characteristic of the male bird), is perfectly white; the legs and claws are also nearly white, and the bill is pinky, rather than yellow; in the living bird the eyes were pink, as in all albinos. It is worthy of note that three albino birds were produced from one nest.—EDGAR R. WAITE (The Museum, Leeds).

Egyptian Goose in Devon.—An adult male of this species was shot on the river Exe on May 9th. It was in good plumage, and not the slightest trace of its ever having been in captivity was visible. The probable cause of its appearance at that time of the year is that possibly during the past severe winter a pair of these birds wandered from their home, wherever that might be; one no doubt fell to the gun of a wildfowler, whilst the survivor has wandered about in search of its companion up to the time of its destruction in May last. From enquiries made, I find that no Egyptian Geese are kept within several miles of the place where this bird was shot; in fact, I think I am right in saying that none are kept in this county. Like the Canada Goose, it is an introduced species, and has never been known to cross the Mediterranean in a wild state, hence my reason for not including it in my 'Birds of Devonshire.' The bird in question is now being preserved for my collection.—WM. E. H. PIDSLEY (Blue Hayes House, Broadclyst, Devon).

Dipper nesting in March.—While fishing on the North Esk, Forfarshire, on March 28th, I found the nest of a Water Ouzel, containing young

ones. This fact will doubtless interest many of your readers. The nest was finely sheltered, and the old birds were very busy feeding their brood. In February we had some lovely days; but March was very severe. In the face of the past month's inclemency these hardy little birds have succeeded thus far in rearing their young. I have in former years found the Dipper's nest in the month of March, but never so early with young. Some ornithologists fix the Dipper's nidification about the middle of April. Now, in my experience, which extends over a long course of years, I have found the Dipper building at the end of February and throughout March.—R. N. KERR (King Street, Dundee).

Golden Oriole in Co. Galway.—An adult male Golden Oriole, *Oriolus galbula*, was obtained at Letterfrank, Co. Galway, on the 20th of April last. It is an exceedingly rare bird in Ireland in the adult plumage; the specimens that have come under my notice (only about three or four) have been all females or immature males, and were met with chiefly on the east coast.—EDWARD WILLIAMS (2, Dame Street, Dublin).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

June 18.—Prof. STEWART, President, in the chair.

Messrs. Herbert Jones and John Bidgood were admitted Fellows of the Society, and Mr. C. W. Slater was elected.

Mr. W. H. Beeby exhibited specimens of *Hieracium protractum* and other plants collected in Shetland.

Mr. Stuart Samuel exhibited a dwarf specimen of *Acer palmatum*, and made some remarks on the dwarf trees artificially produced by the Japanese.

Mr. R. V. Sherring showed some cases of dried Bananas, and described a new method of preservation adopted in Jamaica to save waste of small parcels of fruit which would be otherwise unsaleable.

Mr. A. W. Bennett exhibited and made remarks upon a specimen of *Selaginella lepidophylla*, which was found to possess remarkable vitality, and upon proper treatment to resume its normal appearance after having been gathered some months.

Dr. R. A. Prior exhibited samples of the Spiked Star of Bethlehem, *Ornithogalum pyrenaicum*, and stated that although described in British Floras as a rare plant, it is so abundant in the hill pastures around Bath that it is brought to the market there in large quantities under the name of French Asparagus and sold for a penny a bunch.

Mr. R. A. Rolfe showed two hybrid Odontoglossums with the parent

plants, namely, *O. wilckeanum* (produced from *O. crispum* and *O. luteo-purpureum*) and *O. excellens* (produced from *O. pescatorei* and *O. triumphans*). These had first appeared as natural hybrids out of imported plants, and the parentage was subsequently ascertained under cultivation.

On behalf of Sir George Macpherson Grant, Mr. J. E. Harting exhibited some curiously abnormal horns of the Roe-deer (the result of disease) which had been taken from an animal found dead near Forres, N. B. For the purpose of comparison, he exhibited some normal heads of the Roe from other parts of Scotland and from Germany, and made some remarks on the causes of variation in the size and form of the antlers to which Roe-deer were peculiarly liable.

A paper was then read by Mr. Spencer Moore on the true nature of "callus," and in continuation of former remarks on the same subject (Linn. Soc. Journ., Bot. vol. xxvii. Nos. 187, 188). He showed that the outer sieve-plates of the Fig are obliterated by a substance giving all the dye reactions of callus, which does not peptonise and will not yield proteid reactions. Many of the inner sieve-plates he found to be stopped up with a proteid callus resembling in every way the substance of Ballia stoppers, and the proteid callus of the Vegetable Marrow. It appeared that true callus would dissolve in a solution of gum-arabic, but whether by agency of a ferment or of an acid he had not yet determined.

A second paper by Mr. Spencer Moore dealt with the alleged existence of protein in the walls of vegetable cells, and the microscopical detection of glucosides therein.

ENTOMOLOGICAL SOCIETY OF LONDON.

July 1, 1891. — Mr. FREDERICK DUCANE GODMAN, M.A., F.R.S., President, in the chair.

The Rev. John Isabell, of St. Sennen Rectory, Penzance, was elected a Fellow of the Society.

Mr. Jacoby exhibited a specimen of a species of Coleoptera belonging to the family *Galerucidae*, with the maxillary palpi extraordinarily developed.

The Rev. Canon Fowler, on behalf of Mr. Wroughton, Conservator of Forests, Poona, exhibited specimens of a bug imitating an ant, *Polyrachis spiniger*, and of a spider imitating a species of *Mutilla*, and read the following notes:—"I have taken a good many specimens of a bug which has achieved a very fair imitation of *Polyrachis spiniger* (under the same stone with which it may be found), even to the extent of evolving a pedicel and spines in what, were it an ant, would be its metanotum. Curiously enough, however, these spines are apparently not alike in any two specimens. Is it that this bug is still waiting for one of its race to accidentally sport spines more like those of *P. spiniger*, and thus to set the ball of evolution rolling afresh?"

or is it that the present rough copy of *spiniger's* spines is found sufficient to deceive? The bug has also been found in the Nilgherries. Mr. Rothney remarks on the above species:—‘I have not found the species mimicking *Mutilla*; but in Calcutta and Barrackpore, where *P. spiniger* is a tree ant, forming its net by spinning together the twigs of a shrub, the mimicking bug also assumes arboreal habits, and may be found on the trunks of trees with the ants.’”

Mr. Porritt exhibited living specimens of *Eupithecia extensaria* and *Geometra smaragdaria*: the position assumed by the former proved conclusively that it had rightly been placed in the genus *Eupithecia*.

Mr. Crowley exhibited two specimens of a *Papilio* from the Khasia hills, belonging to an undescribed species allied to *P. papone*, sub-generic section *Chilades*. Col. Swinhoe remarked that he possessed a specimen from Northern Burmah. Mr. Moore and others took part in the discussion which followed.

Mr. Dallas Beeching exhibited a specimen of *Plusia moneta*, recently taken by himself at High Woods, Tonbridge, and specimens of *Gonopteryx cleopatra*, lent him for exhibition, which were alleged to have come from the same locality.

Dr. Algernon Chapman exhibited the larva of *Micropteryx calthella*, and read the following notes:—“The larvæ were obtained by placing moths in a cage with damp moss, dead leaves, and other *débris* off the surface of the ground. Into this the moths crept to a depth of half-an-inch, forcing their way into narrow cavities, and laid their eggs in groups of six or twelve. The eggs are clothed with fine hairs, tipped with refractive particles. The larva, about a millimetre in length, possesses on each segment eight processes of a globular form raised on a very slight pedicle. Besides the thoracic legs, each of the abdominal segments (eight) possesses a pair of minute jointed legs of the same type as the thoracic. There are also a pair of long jointed antennæ.”

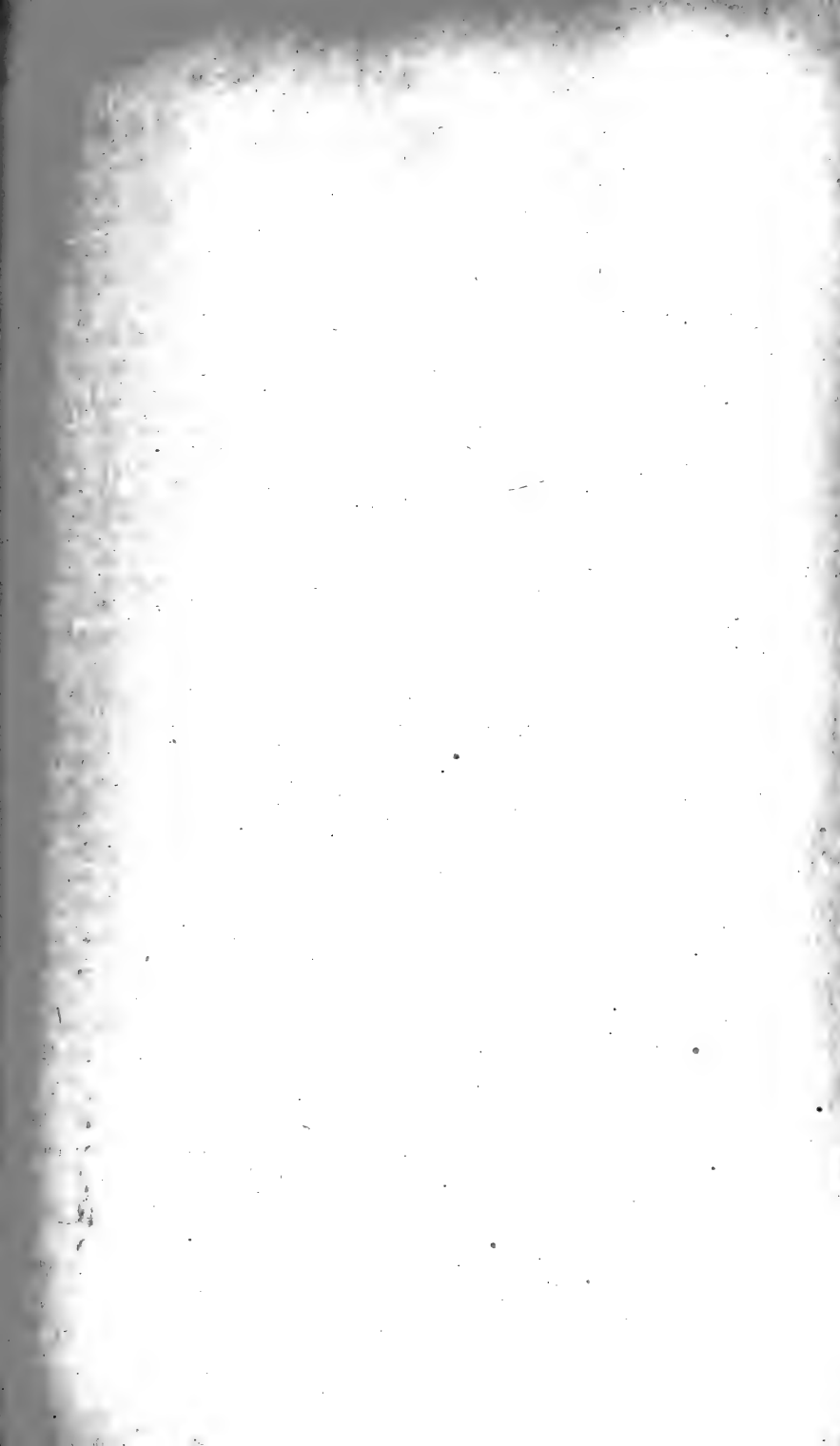
Col. Swinhoe read a paper “On new species of Heterocera from the Khasia Hills.”

Mr. Crowley read a paper “On a new species of *Prothoe*.”

Mr. C. J. Gahan read a paper “On the South American species of *Diabrotica*,” Part II., being a continuation of Dr. Baly’s paper on the same genus published in the Society’s Transactions for 1890, Part I.

Mr. W. F. Kirby communicated a paper entitled “Notes on the Orthopterous family *Mecopodidæ*.”

Prof. Westwood communicated a paper entitled “Notes on *Siphonophora artocarp*,” referring to an appendage of the eyes which had been overlooked in his previous description. — H. GOSS & W. W. FOWLER, *Hon. Secretaries*.





L. Hutchinson lith.

West Newman imp.

The Fox.
Vulpes vulgaris, Brisson.

THE ZOOLOGIST.

THIRD SERIES.

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THE FOX, *VULPES VULGARIS*.

BY THE EDITOR.

PLATE II.

AGAINST all British wild animals that are not edible, with one exception, the hand of man is constantly raised. Against Polecats and Stoats, Martens, Weasels, Otters, Badgers, Hedgehogs, and Squirrels, to say nothing of Rats, Mice, and Voles, an unceasing warfare is carried on, and the wonder is that the list of British mammals is so long as it is. The Bear, the Wolf, and the Wild Boar have already succumbed, and the day probably is not very far distant when the Wild Cat and the Marten will also be extinct.

The one exception is the Fox. He alone is protected; not by any written law, but by custom and common consent; and the man who would kill a Fox in any other way than by hunting him with hounds, would be regarded as guilty of a crime, branded as a "vulpecide," and held up to obloquy by all sportsmen.

Why is not the same consideration shown to the Otter? He also is hunted with hounds, of which there are at least a dozen packs in the United Kingdom; but alas! he is also shot, trapped, or worried to death upon every opportunity; nor is there, at times, humanity enough displayed to spare even the female Otter and young if they happen to be encountered. It is strange that those who pride themselves on supporting what is termed the legitimate sport of hunting wild animals with hounds, do not insist as much on the protection of Otters as they do of Foxes.

The Fox, then, holds an exceptional position, and it has been asserted by many an enthusiastic speaker at a Hunt Dinner that he is sensible of the consideration shown him. In what way, it may be asked, does he give proof of this? By abstaining from depredation in the immediate neighbourhood where he is protected, and poaching only at a distance. Many instances of this have been adduced, not only in relation to poultry and rabbits, of which Foxes are particularly fond, but also in the case of lambs. The hill shepherds assert that they have often known a Fox to have his earth on their ground, but never to kill any lambs but at a distance from home. This may savour of gratitude for the protection afforded him, but it is more likely that it is merely an illustration of the animal's hereditary cunning which prompts him to avoid leaving traces of his work which might lead to the discovery of his lair.

A remarkable illustration of this occurred in Shropshire in 1881. On the 13th May in that year, Mr. Charles Nock, of Norton House, Shifnal, wrote that an old dog-Fox, the vixen, and three cubs about three months old had that day been unearthed in his poultry-yard. They were 38 yards from the house door and 22 yards from the poultry-house, and though ducks and fowls were all round and about the den, not one was killed or molested.

A somewhat similar case was reported in August, 1887, by Mr. B. Morris, of Bucklers, Great Tey, Essex, of a Fox which had its earth in an old haulm wall in a roadside farmyard.

"At Tey Brook," he says, "there has been for many years one of the strongest Foxes' earths in the East Essex Hunt, and the Foxes have always been well cared for; but for some reason the vixen took a fancy to this old haulm wall in the bullock yard, and there this year (1887) had her cubs; the wall has been made thirty years or more. It is situate within twenty yards of a high road much frequented, and the farm men are constantly in and out, it being one of the regular farmyards on the homestead. A few weeks back, when the cubs were young, a man at plough close by saw the old vixen leave the kennel in the wall, and go to a rabbit hole, scrape four or five young ones out, and carry them all at once to the cubs; she did not in the least mind the man."

Rabbits have no greater enemy than the Fox (except man),

and yet Foxes and Rabbits have sometimes been found in the same earth, from which they have been bolted with a ferret (See 'The Field,' Nov. 13th and 20th, 1886). Occasionally, however, the Fox declines to be thus summarily evicted, and kills the ferret. Instances of this are recorded in 'The Field' of March 14th, and April 4th, 1885.

In light, dry soils Foxes will dig out a good roomy burrow to lie in, or will appropriate that of a Rabbit or Badger. In wet clay soil they will lie above ground, amongst gorse or other bushes, or under roots of old trees, or in the hollows of them. The moorland Foxes will lie out some distance in the heather, curled up in a snug form. You may come upon them sometimes when deer-stalking.

Huntsmen often assert that Foxes and Badgers do not agree; that the latter drive the former away, and that therefore they ought to be destroyed. This is a mistake, for they not only do not interfere with one another, but have been known to occupy adjoining chambers in the same earth. I have mentioned several instances of this in my account of the Badger ('Zoologist,' 1888, pp. 5—10). Huntsmen are apt to be a little hard upon all animals except the particular one which it is their pleasure to pursue. This, and this alone, must be protected; all others must give way.

Although much has been written on the subject, it is not quite clear who first kept a pack of hounds exclusively for hunting the Fox. In the early days of hunting, Foxes, like other noxious animals, were unearthed, mobbed, and killed anyhow, being regarded as vermin. We need only turn to such works as Blount's 'Ancient Tenures' to find numerous instances of grants of land held by the service of killing the Fox, Wolf, Otter, Gray or Badger, and Wild Cat. But then they were pursued not so much for the pleasure of hunting, as for the satisfaction of destroying a noxious animal, and this service was rendered in lieu of rent. Even so late as the days of the Stuarts, Foxes were indiscriminately slaughtered in the woods whenever a great hunt took place, and it is certain that packs of hounds were kept for the chase of the Stag, Buck, Hare, and even Otter, long before the Fox was raised to the dignity of being hunted in the same way.* Harriers,

* The history of the Devon and Somerset Stag-hounds can be traced back to the year 1598, when Hugh Pollard, Queen Elizabeth's Ranger, kept a pack

for example, were kept in the time of Edward II., as we know from the treatise on Hare-hunting composed by his huntsman Guillaume Twici. The authors of the volume on 'Hunting,' in the Badminton Library, are clearly in error when they state (p. 33) that Fox-hunting, as we know it now, may be said to have come in with this century.

Lord Wilton has expressed the opinion that there were no regular Foxhounds till the close of the last century,* but this also is a mistake, for it is clear, from the description given in Somerville's 'Chace' (Book III.), that Fox-hunting was a recognised field sport at the time that this poem was written:—

“ Hark ! what loud shouts
 Re-echo thro' the groves ! he breaks away ;
 Shrill horns proclaim his flight. Each straggling hound
 Strains o'er the lawn to reach the distant pack.
 'Tis triumph all and joy. * * *
 What lengths we pass ! where will the wandering chace
 Lead us bewilder'd ? Smooth as the swallows skim
 The new shorn mead, and far more swift, we fly.
 See the brave pack, how to the head they press
 Justling in close array ; then more diffuse
 Obliquely wheel, while from their opening mouths
 The vollied thunder breaks.”

This celebrated poem was first printed in 1735, when George II. was king, and I find in my Common-place Book a note to the effect that in 1740 a pack of twenty-five couples of Foxhounds belonging to Thomas Fownes, Esq., of Stapleton, Dorset, was advertised for sale in the 'Evening Post' of Nov. 11th and 13th of that year.

This pack of Foxhounds is believed to have been the first established in the South of England. The Rev. William Chafin, in his very entertaining 'Anecdotes of Cranbourne Chase,' a book which is now difficult to procure, remarks (2nd ed. 1818, p. 42):—

at Simonsbath. From that time down to 1825 the sport flourished under various masters, particularly under Sir Thomas Acland (the second of the name), and the late Lord Fortescue, who kept the hounds at Castle Hill in 1802, and again from 1812 to 1818.

* See 'The Field,' Sept. 22nd, 1883, in a review of Col. Babington's Records of the Fife Fox-hounds,' Blackwood & Sons, 1883.

“I believe that the first real steady pack of Foxhounds established in the western part of England was by Thomas Fownes, Esq., of Stapleton, in Dorsetshire, about the year 1730. They were as handsome and fully as complete in every respect as any of the most celebrated packs of the present day (1818). The owner, meeting with some worldly disappointments, was obliged to dispose of them, and they were sold to Mr. Bowes in Yorkshire, the father of the late Lady Strathmore, at an immense price for those days. They were taken into Yorkshire by their own attendants, and after having been viewed and much admired in their kennel, a day was fixed for making trial of them in the field, to meet at a famous gorse-cover near.”

After describing the result, namely, two splendid runs, both of which ended in a “kill,” the writer continues:—

“This pack was probably the progenitors of the very fine ones used in the north. Before this pack was raised in Dorsetshire, the hounds which hunted in Cranbourne Chase *hunted all animals promiscuously*, except the deer, from which they were necessarily made steady, otherwise they would not have been suffered to hunt at all in it.”

But assuming that Mr. Chafin is right as regards Dorsetshire, and that Mr. Fownes’s pack of Foxhounds was the first raised in that county, or even, as he says, in the West of England, it is certain that riding to Foxhounds was a sport practised in other parts of England at least fifty years previously. We have only to turn to the descriptions and plates in Blome’s fine folio work, ‘The Gentleman’s Recreation,’ published in 1686, to be convinced of this. Here we find the old mode of Fox-hunting contrasted with the new.

After remarking that “the country people receiving great damages from foxes by their destruction of poultry, rabbits, lambs, &c., were not wanting in their endeavours to destroy them,” he explains the method employed:—

“And the ways by them used (by what I can understand) was by a great company of people, with dogs of all kinds, assembled together, to go to such woods and coverts where they thought they were, and so to beset the place, whilst others went in to beat and force them out with some of the dogs, to be either coursed by the rest of the dogs, or taken in nets or bags set on the outsides for that purpose. But *of late years*, by experience, the mother of invention, the knowledge of this is arrived to far greater perfection, being now become a very healthful recreation to such as delight therein; so that I shall in a brief and clear method give you a modern account of Fox-hunting as it is at this day (1686) used by the most expert in this chase.”

After pointing out that the best season for Fox-hunting is in the months of November, December, January, February, and March, and that the hounds or Beagles *generally made use of* are such that have good mettle, are stout and well-quartered, and should differ according to the country where they are hunted—the northern hound and the southern beagle making a good strain for this sport—he proceeds to describe “the method now observed in hunting the Fox.” The first thing, he says, was to find the “earth,” and the night before hunting to stop all the holes, “except the main hole that is most beaten, which stop not until daybreak for fear of stopping him in”—very good advice. This done, the huntsman was to draw the wood or covert with a few steady hounds only, and not to throw in the rest of the pack until the others had found their Fox and were on his line. The Fox then finding himself so hotly pursued that he cannot stay in the coverts he is acquainted with—

“Is unwillingly forced to forsake them, and trust wholly to his feet, leading them from wood to wood, a ring of four, six, or ten miles, and sometimes endways about twenty miles, trying all the earths he knows, which as near as possible should be stopped the night before as aforesaid.”

“Many times they kill the Fox upon the turf; but if he gets to an ‘earth,’ and enters it, they cry *Ho-up*, as at the death, supposing the chase ended, and blow a horn to call in the company.”

A little lower down (p. 89) our author remarks:—“Sometimes he is reserved alive, and hunted another day, which is called a *bag-fox*.” So that bag-foxes were known two centuries ago, and Fox-hunting then was pretty much what it is now, except that, with improved breeding, hounds are now much faster and stancher than they used to be. It is strange that in the ‘Badminton’ Volume on Hunting the writer of the first chapter on the history and literature of hunting should have committed himself to the statement (p. 33) that “Fox-hunting, as we know it now, may be said to have come in with this century.”

With this brief reference to the subject I must be content. It would be beside my present purpose to trace the history or development of Fox-hunting in England, or to refer to the details of a sport on which so many and such excellent books have been written. But as many interesting features in the character of the Fox have been noted by observant Fox-hunters, it will not

be out of place to mention a few which have not as yet found their way into any text-book.

The shifts and expedients indulged in by Foxes when hard-pressed are interesting examples of their sagacity, but, for obvious reasons, are seldom, if ever, seen by the hunting man. If noticed at all, it is by some chance passer-by who is not hunting; by the second whip, who has been told to stay behind to prosecute inquiries as to the sudden disappearance; or by some member of the field, more curious than his fellows as to the habits of the Fox. In stone-wall countries, such as part of the Duke of Beaufort's, the Heythrop, or Cotswold countries, Foxes have been known to jump on to the top of a wall, and to run some distance before jumping down again. Where they do this, it will generally be found that they make their spring as far from the wall as possible; and there are many instances of Foxes seeking still further to baffle hounds by running a wall till within a few feet of the corner, and then jumping on to the one forming the other boundary of the angle. It would seem, too, as though Foxes were familiar with the fact of scent being difficult to follow in water, as, where marshes come in the line of a run, a Fox will often lay up in a bed of reeds, if he has to wade through water before reaching them. In the Vine country a Fox was accustomed to run the same line time after time, and eluded the hounds by jumping first on the top of a pleached fence, thence to a wall, and thence to the roof of an uninhabited cottage, by the chimney of which he lay down out of sight. One of the most curious devices for self-preservation was shown by a Fox in the Fitzwilliam country. This Fox, after changing his direction several times, and vainly seeking shelter in a bed of rushes, made straight for the railway, and lay down on the permanent way. The rapid approach of a train necessitated the withdrawal of the hounds, but the Fox maintained his position until the train was close to him, when he got up and made good his escape. Unless he was in a manner conscious of the fact that the huntsman's prudence would not allow the hounds to remain on the line, it is difficult to understand what could have prompted him to remain in a position not unattended with danger.* When pressed by hounds, Foxes have taken refuge up trees, and in hollow stumps,

* 'The Field,' Jan. 2nd, 1886.

almost as often as they have sought safety in drains or out-houses. Possibly a Fox's instinct—people are given to call it intelligence now—may tell him that hounds cannot follow him up a tree; and, as it is an all but invariable rule with a Fox to repeat on subsequent occasions any manœuvre that may once have been attended with success, it is not surprising that plenty of authentic instances of tree-climbing by Foxes are to be met with.

In 'The Field' of Jan. 2nd, 1886, an account is given of a Fox taking to the sea. This happened during a run with the East Sussex hounds in December, 1885. The meet, says an eye-witness, was at St. Leonard's Green, and the Fox was found in Hollington Church Wood, when, crossing the S. E. R., he headed across the marshes for Pebsham, through which he raced hard pressed by a single hound. He crossed the L. B. and S. C. R. close to Bulverhythe, and ran on to the beach, where the hound gave up and came back to the body of the pack, which was running another Fox found in Pebsham. "We got them off and brought them on to the beach where the Fox was last viewed. Here we heard that, after lying under the breakwater for a few minutes, he had taken to the sea, and we could just view him floating about three-quarters of a mile out. A boat was dispatched to bring him ashore; on reaching him he was found to be alive, but the boatman, not caring to risk a bite, hit him on the head with a scull. He was given to the hounds, who broke him up on the beach." For a Fox to swim nearly a mile out to sea, and to be found alive after being in the water for thirty minutes, is an occurrence, if not without parallel, at least worthy of record.

Were a Fox-hunter asked whether hounds "retrieve," he would probably laugh at the idea. Such a thing, however, has been known to occur. In December, 1880, the Grove Hounds met at Gringley-on-the-Hill, and the Fox, after a good run, took to the bank of the river Idle, near Misterton, where he was headed by a barge, and took refuge in a neighbouring brick-yard. From this place he was soon unearthed, and made for the river. He managed to reach the opposite bank, where he was hauled down and worried, and, as the huntsman could not get to the hounds, it was fully expected they would tear him in pieces "ere ever they were got to." But what was the surprise of everyone to see, on

a call from the master, one of the hounds take the Fox in his mouth and commence a vigorous swim to the opposite side (which he reached after a little difficulty, being several times "ducked" by his brethren), and safely deposit the Fox at his master's feet.*

As possessing "a head for country"—a gift denied to many of those who ride in pursuit—the Fox has an established reputation. He will be turned from his point time after time, run short for an hour at a stretch, and yet, as soon as circumstances allow, will go straight away from his original point, unless he should happen to go back to the place at which he was found. A Fox has been known to return seventy miles to his "earth," and this not once, but three times. He was caught in Yorkshire, and sent into Lancashire to be hunted by the hounds of the late Mr. Fitzherbert Brockholes, of Claughton Hall, Garstang, and his identity was established by his having been marked in the ear by the Fox-catcher. This story I had from my friend Capt. F. H. Salvin, who was living in Yorkshire at the time, and was well acquainted with Mr. Brockholes, who gave him all the details.

The nature of their bringing up exercises a great influence on their style of running. Exmoor and Dartmoor Foxes—all mountain Foxes, in fact—have a long way to travel for their food, and this gives them, besides a wide knowledge of country, the best of condition. Next comes the woodland Fox; and, last of all, the Fox bred and nurtured in small gorses, whose knowledge of country is confined to his own parish. When any Fox is found, the most natural course for him to take is the one he has been accustomed to tread in his search for food, and the wider it is the further he will go. When forced out of his country, he has nothing but speed and stamina to depend upon for safety. Earths, drains, and woodlands are unknown to him, and there is nothing for him but to go straight. When hounds run a bag-fox, he often takes them straight for the same reason.

It would be too much to assert that Foxes do no harm in game-preserves; but it is doubtful if they do half the damage laid at their door, that is to say, if the keeper does his duty properly. The breeding season of the birds is the time when

* 'The Field,' Dec. 18th, 1880.

vixen Foxes have to get food for their young, and during that period the gamekeeper, having orders to preserve Foxes and Pheasants—a by no means impossible combination—should supply the Foxes with rabbits and rooks. If this be done, birds will rarely be touched. For their own eating, an old Fox of either sex will rarely, if ever, touch a sitting hen; though, if proper food be not provided, the vixen will sometimes catch up a hen Pheasant from her nest for the sake of her young. By the time the cubs are big enough to earn their own living, the Pheasants will have taken to roost in trees, and be out of the way of Foxes. Still, I do not say that where Pheasants abound a few will not fall a prey to Foxes, especially when there is a dearth of rabbits. Those who are curious in such matters should take the opportunity afforded by a moonlight night, of watching the vixen capturing rabbits for her family. It is seldom that she pounces upon them from some ambush, nor does she more often attempt to run one down. On the contrary, she shows herself in good time, that her prospective prey may have ample opportunity of seeing her. On her first appearance, some of the rabbits will probably scuttle away for some distance, before sitting on their hind legs to have another look; others will squat close to the ground. Judging by the vixen's plans—the dog seldom or never does any foraging, except for himself—one would think that she had never seen the rabbits. She will roll on her back, play with her brush, trot in a circle, and regularly cheat the bunnies into the belief that she has no design upon them. When they have become reassured and begun to feed again, she is among them with a bound, and secures enough for herself and family. She is very fond of field mice, and will dig out and eat quantities of them, in this respect rendering good service to the farmers. The Hedgehog also falls a prey to the Fox, as it does to the Badger, and indeed, very little comes amiss to this midnight marauder. In default of fresh food a Fox will devour dead fish cast up or left on the shore, and other carrion, and will scratch on a dunghill for any refuse animal-matter that may be buried there. One fine October morning, while out Pheasant-shooting, I came out of a covert into a grass-field, in one corner of which stood a large heap of manure. On the top of this heap was lying at full length a fine old dog-Fox, dead, but not stiff. He had evidently picked up some poisonous substance which

must have proved almost immediately fatal, for when found he could not have been very long dead.

In February, 1881, one of Lord Egmont's gardeners, in Sussex, set a trap for an Otter on the bank of the river not far from the house. It was set close to the water, and baited with the remains of a good-sized roach picked up on the bank, and partly eaten by an Otter. The following morning the trap was occupied by a very old dog-Fox. He had eaten all the rest of the roach except the head, and, in his struggles to free himself from the trap, had rolled into the water and was drowned. It was thought strange that a Fox should be tempted with stale fish when there were plenty of Rabbits and Pheasants in the immediate neighbourhood.

If not very hungry at the time, a Fox will bury what he kills, and return to it later, and perhaps bring a friend with him to dine (see 'Zoologist,' 1885, p. 164). He has been known to carry off a wounded Hare, and a winged Partridge in sight of a shooting party, undeterred by shouts and other demonstrations. No doubt on these occasions there was a litter of cubs to be provided for, and food had to be obtained at all hazards.

Foxes breed in winter, and the young are born about the end of March or beginning of April, the period of gestation being two months. Unless some accident happens to the first litter, only one lot of cubs is produced in a year, and the number is from three to six. They are born blind, and, like puppies, remain so for nine or ten days.* They take eighteen months to reach their full size, and their average duration of life, as in the case of the dog, is about twelve years. When she has her cubs, the vixen Fox seldom lies far from her "earth," and if she finds her retreat discovered will carry the cubs away one by one in her mouth. A vixen Fox in the possession of Mr. Edward Gataene, of Gataene, in Shropshire, produced young while in captivity, having made an "earth" for their reception by scratching up a large flagstone. But the cubs having been looked at too much by persons curious to see them, she destroyed them when only a few days old.†

It is a happy provision of Nature that young Foxes are unable

* For a description of Fox-cubs ten days old, see 'The Zoologist,' 1871, p. 2638.

† Eyton, Mag. Zool. & Bot. vol. ii. p. 541.

to see for some time after birth. If they could, they might just manage to crawl to the mouth of the earth, and die of cold, or be carried off by some passer-by.

It is generally supposed that the Fox is not capable of being tamed, and that its temper is too irritable and uncertain to admit of its being handled like a dog. I cannot help thinking that this results from the mode of treatment usually adopted. Generally speaking, the so-called tame Fox is chained up to a kennel, in which it spends nearly all its time, except when feeding, or into which it is driven by every passer-by. Every one who has had experience of dogs knows how irritable and snappish they become if continually chained up. It is doubtless the same with Foxes. If given greater liberty, and with proper precautions taken to prevent escape, their snappishness arising from mistrust would disappear. A gentleman of my acquaintance, living not far from London, but whose name I forbear to mention lest he should be besieged by too many curious visitors, has a brace of tame Foxes which are never chained up, but are allowed the run of his garden for some time every day, and are shut in at night in a comfortable outhouse. High wire-netting being strained along the top of the garden-walls, and leaning inwards, prevents any attempt at escape, and it is one of the prettiest sights imaginable to see these two Foxes, in the highest condition of health and fur, chasing each other round and over the lawn, waving their brushes to and fro, and at times going at their best pace in thorough enjoyment of the liberty allowed them. They were obtained when young, and are now, I believe, in their third year. Under this sensible treatment they present a very different appearance to the half-starved, cowering, snappish-looking animals one too often sees chained to a small kennel.

The Fox is too well-known an animal to stand in need here of particular description. I will therefore refer only to two points which have been barely touched upon by Bell, and some discussion of which would have made his account of this animal more complete, namely, the peculiarity of the eyes, and the occasional variation in the colour of the fur. In dogs, however great the intensity of light to which they may be exposed, the iris uniformly contracts round the pupil in the form of a circle; whereas in Foxes, if observed during the day, or under the influence of a strong light, it is seen to close in a vertical

direction, the pupils assuming the figure of a section of a double convex lens. The object of this provision is evidently to exclude the rays of light in a much greater degree than would be compatible with the structure of a circular pupil, and it is consequently only found in those nocturnal animals in which the faculty of vision is capable of being exercised through the medium of a comparatively small proportion of light.

As regards the occasional variation in the colour of the fur, it may be remarked that Foxes, as a rule, do not vary much in this respect. Bell has noticed (p. 231) an individual taken in Warwickshire that had all the under parts of a greyish-black hue, and, being scarcely full-grown, it was thought that with age the dark parts would have assumed their ordinary colour.

In July, 1889, a Fox was seen in the New Forest, which, at a little distance, appeared to be uniformly black, except the under parts, which were much greyer (Zool. 1890, p. 17), and Mr. Aplin has noticed the occasional appearance of a blackish variety in Oxfordshire (Zool. 1890, p. 97).

White Foxes have been met with in Germany, and on two occasions in Somersetshire (Zool. 1886, pp. 104, 331). In one of these, which was critically examined after death by the late Mr. Cecil Smith, of Bishops Lydeard, near Taunton, it was particularly noticed that the eyes were of the normal colour, and not pink, as in a true albino.

While on the subject of colour, I may remark that the white "tag" to the brush is not peculiar to either sex, although it is generally supposed that the dog-Fox alone has it. Those which have a black "tag" to the brush, if their history could be traced, would probably be found to have been imported from Belgium, for I have remarked, when looking over a lot of Belgian Fox-tails, sent over for dusting furniture and pictures, that the majority of these were black or dark at the extremity.

The female Fox is generally smaller than the male, and her head is narrower and more pointed; old vixens, too, are generally darker on the back than old males.

It is a curious thing, in connection with Fox-preserving, how few vixens are killed by hounds. Ask any huntsman or whip how many he handles in the course of a season, and he will tell you very few. They must go somewhere, if not in front of the hounds, and this of itself is sufficient to show that Foxes do not

always get fair play, even where fair play is intended by the master.

But my particular Fox has been hunted (on paper) long enough, and, not to weary my readers with too long a run, I must now "whip off," and cry "Gone to ground! who-whoop!"

NOTES ON THE BIRDS OF DONEGAL.

BY HENRY CHICHESTER HART, B.A., F.L.S.

(Continued from p. 303.)

***PIED WAGTAIL**, *Motacilla lugubris*, Temm.—Resident. Commoner in summer in the open country, especially near the sea, as along the north coast of Fanet. In winter, comes more inland, to the neighbourhood of dwellings, as about Glenalla, Rathmullan, &c., and by the lakes in Fanet.

WHITE WAGTAIL, *M. alba*, Linn.—On July 26th I saw five of these birds picking along the sloblands of Trawbreaga Bay, below Carndonagh, in Innishowen. They at once attracted my attention on account of their colour being so dull. They gave me ample time for observation—at least one of them did, and both flight- and call-note appeared to me weaker than that of our common species. The back was dull grey, and the breast below dull white. No black showed conspicuously, except on the upper part of the breast, and only the sides of the throat and tail (in flight) showed pure white, the general colour being dull grey. On this coast there is a great extent of muddy shore bared by the tide, and they made their way in short indeterminate flights out over the slob. It occurred to me at once that perhaps they were young and old of the Pied Wagtail; but there were none of the ordinary type among them; nor do I know if the colours agree with those of the young Pied. None of them were more than twenty paces from me, and one or two only four or five, while I jotted down some notes. I think there can be no doubt they were *M. alba*.

***GREY WAGTAIL**, *M. sulphurea*, Bechst.—Not unfrequent in summer, and returns to breed at the same stations regularly. I have recorded in 'The Zoologist' (1878, p. 390) my observation of a congregation of these birds coming to roost together at the reeds of a mountain lake in western Donegal in August: they were probably on their migration.

*MEADOW PIPIT, *Anthus pratensis*, Linn.—Common in summer. Remains in reduced numbers in winter.

*ROCK PIPIT, *A. obscurus*, Latham.—Common along the coast, breeding in many places: a decreased number remains the winter. "Breeds in great numbers on Innisduff Island" (A. B.).

*SISKIN, *Chrysomitris spinus*, Linn.—"I have seen this bird at Lough Eske in the spring time, but do not know if it nests there or not, though from the time I saw it (April, I think) I imagined it did" (A. B.). Miss Hill, of Ballyare House, Ramelton, writes:—"I have both seen and heard Siskins here, and I have seen the nest of one in the wood near Rathmullan, between Ray bridge and that place; the young birds were reared in it. That was several years ago, and was the only nest I have seen, and too high for me to examine it. I am sure they must breed here, otherwise they would not come in spring and summer. Last summer I heard their note nearly every day, and in winter they were often seen in flocks." Dr. Patterson, of Ramelton, shot a Siskin in June this year (1891).

*SKY LARK, *Alauda arvensis*, Linn.—Common in summer; also met with in winter in my neighbourhood.

SNOW BUNTING, *Emberiza nivalis*, Linn.—Annual winter visitant about Killybegs, on the west coast of Donegal. Snow Buntings visit Aranmore, Rathlin O'Beirne, and Innistrathull islands in considerable numbers annually, varying with the severity of the season. They are to be met with from September to April (Report on Migr. of Birds on Irish Coast, 1883, &c.). They also come in small numbers to Fanet lighthouse.

*COMMON BUNTING, *E. miliaria*, Linn.—Not unfrequent in the roughly cultivated bare districts in Donegal. Several pairs breed annually in my neighbourhood, and some remain throughout the winter, if not all. I saw three or four in January, 1891, near Carrablagh.

*YELLOW BUNTING, *E. citrinella*, Linn.—Common in summer, but scatters far through the county in winter. It is one of our most characteristic species in the breeding season at Fanet, which is well suited to its habits.

*REED BUNTING, *E. schoeniclus*, Linn.—Breeds and resides in suitable places, as at Kindrum, Lough Fern, lakes near Rathmullan, &c. Common also about Killybegs; less common in winter, but often met with when snipe-shooting.

***CHAFFINCH**, *Fringilla cœlebs*, Linn.—Resident and common. Mr. Brooke writes:—"Where do the males go at this season (mid-winter) of the year? I often see flocks—up to a hundred or more—of hen birds during the winter and early spring, but no males." I have noticed the same thing, year after year, about Dublin; but, to my surprise, I observed in my sheltered valley on the Donegal coast, that cock Chaffinches were very common this winter; there were *no hens* about. The subject is discussed in Prof. Newton's 'Yarrell,' and there appears to be no conclusion arrived at, except that the sexes separate for the winter in most cases. This fact has been observed by many writers, including Linnæus.

***LESSER REDPOLL**, *Linota rufescens*, Vieillot.—Frequent in summer, and breeds in several districts. I have noted them in May settling themselves about Glenalla in small flocks, and scattering to breed. About Rathmullan and Carrablagh they are also frequent in summer. In winter these birds come to roost, with several other species, every night in the plantations round my house at Carrablagh, where there is the best shelter for several miles. "Very common about Killybegs in the breeding season. Have known four nests in the hedgerows along the first mile of the Donegal road from here, in the same season" (A. B.).

***HOUSE SPARROW**, *Passer domesticus*, Linn.—This bird has, I am thankful to say, scarcely penetrated into Fanet. I have never seen a Sparrow at Carrablagh, nor I think at Glenalla. There are, however, a few at Doaghbeg (north of Carrablagh), and one or two other places in Fanet. It is pleasant to reside in a place where, from year's end to year's end, the chatter of the Sparrow is never heard. About Rathmullan and other villages Sparrows abound, but not so numerous as elsewhere in Ireland. At Glen, west from Mulroy Water, I saw a white Sparrow in October, 1888.

TREE SPARROW, *P. montanus*, Linn.—"A pair were found, as if breeding, on Aranmore Island, County Donegal, by Mr. H. M. Wallis, in May, 1886 (Zool. 1886, p. 489)."

***GREENFINCH**, *Coccothraustes chloris*, Linn.—Abundant in summer. Not so common in winter in Fanet. "Gregarious in winter at Killybegs" (A. B.).

HAWFINCH, *C. vulgaris*, Stephens.—One was captured at Lough Eske many years ago in winter, and kept in confinement

for some time by Mr. J. Young. Mr. Stewart shot a pair at Ards early in this century, he believed the first obtained in Ireland.

*BULLFINCH, *Pyrrhula vulgaris*, Stephens.—Not rare in the early spring. Breeds at Glenalla, where I have seen them occasionally at all seasons. Several pairs visited Carrablagh during last winter, always in perfect plumage. "Breeds commonly at Lough Eske, where they are to be seen in glorious plumage at this season (winter) of the year" (A. B.).

CROSSBILL, *Loxia curvirostra*, Linn.—Very rare visitor. "Saw three of these birds for the first time in my life on the top of a larch tree in Drumgunne (?) wood, near Donegal, in February of last year (1890). I watched them for a long time, from a short distance, picking the cones. They have been seen this winter in the Co. Derry" (A. B.).

*STARLING, *Sturnus vulgaris*, Linn.—Resident, and rapidly increasing as a breeding species in the North of Ireland. At Killycarnon, near Aughnacloy, Co. Tyrone, Starlings have become a great pest in the breeding season, pulling straw out of thatch and stuffing gutters and pipes with it. At Glenalla, about eight or ten years ago, I noted that it was "not met with in Fanet or Glenalla during breeding season. Abundant in autumn and winter, and roosting in large flocks in the reeds at Lough Fern." They breed at Glenalla now, in the eaves of the Parsonage. I recollect being the first to take Starling's eggs, as a schoolboy at Portora, Enniskillen, about twenty-five years ago. They were regarded as great rarities, and one pair by judicious management were made to yield me about twenty eggs out of a hole in a tree. At that period they had not taken to breeding like Sparrows about the house. In Trinity College, Dublin, a large colony of breeding Starlings has established itself—not, I think, to the advantage of the Examination Hall entrance. At Carrablagh Starlings come in small flocks to roost in plantations behind the house throughout the winter, but as yet they have not bred there. "Though there is no commoner bird here in winter, I never knew of Starlings breeding anywhere in Donegal until last season, when a pair built in my yard in a hole in a gable, and another pair in a hole under the eave of the Murray School close by. I also saw at least two more pairs about the village at the same time, so it is certain that others remained to breed also. In the hard winter that we had ten or twelve years ago, some Starlings

used to fall dead down the chimneys of St. Katherine's Rectory here" (A. B.). In all probability the supply of Starlings will be much reduced after the severe winter of 1890-91 in England.

***CHOUGH**, *Pyrrhocorax graculus*, Linn.—Common in the Rosses, Aranmore, about Burton Port, at Bunbeg, and generally round the coast from Horn Head westwards. Choughs used to breed regularly in the mouth of a cave at Carrablagh below the house, but they were expelled by Grey Crows some fifteen years ago, and I have never seen them since in Fanet. I have seen Choughs, however, at Dunree and at the Gap of Mamore, in Innishowen, in 1880, at Horn Head in 1881, and at Malin Head in 1882. They breed also in many other places along the west coast of Donegal from Aranmore southwards. "Very common along the coast of S.W. Donegal, where they breed for the most part in inaccessible places in the sea-cliffs, though I have eggs taken from nests in inland cliffs. Some of these were taken from the same nest two years in succession, so that it is evident they are constant to their breeding-places. I have been told by Archdeacon Cox that they used to breed in numbers along the rocks by the Gweedore river [probably about Bunbeg]" (A. B.). The light-keeper at Fanet Point informs me that he sees a few Choughs every summer between the lighthouse and the Bin: he saw only one in 1890.

(To be continued.)

ON THE HERPETOLOGY OF THE GRAND DUCHY OF BADEN.

By G. NORMAN DOUGLASS.

(Continued from p. 260.)

II. Fam. COLUBRIDÆ.

1. *Tropidonotus natrix*, L.—In this species the tendency to uniformity of colouring is more marked than in many colubrine snakes. Some Baden specimens have scarcely any traces left of the original darker markings, and become, with increasing age, either dark grey or brownish; a process which is carried still further by some southern forms.

To produce this effect, the conspicuous collar-mark, which has played part in so many fables, must also be effaced, and this is brought about by an interesting method. The original white

or yellow colour gradually assumes a dirtier tint, resembling a thin coating of brown dust, and becomes less sharply defined in proportion as the darker patches encroach upon it from all sides. These in their turn melt imperceptibly into the brown or grey colour of the head and back, and it is noticeable that the black border itself is often less intensely coloured with adults than with the young. Sometimes one side of the collar remains almost white, while the other has already nearly faded away.

To judge by a considerable selection of heads showing these transitional stages, I gather that the process is in all cases identical. In some Italian specimens all traces of the collar have vanished; with others, from Baden, they are still to be recognised, though merged into the surrounding colouring (two or three which were kept alive in the Karlsruhe Zoological Gardens had entirely lost this mark, as well as the darker spots on the back); and I see that a *Tropidonotus natrix* caught on the island of Oesel, off the Baltic provinces, was also without the yellow patch on the neck.* The fact that this particular 'direction of variation' should be followed in localities so far separated obtains in significance when regarded as a means of producing that uniformity of tints above alluded to.

On the other hand, the symmetrical rows of spots characteristic of the young are by no means always disposed to become less conspicuous. On the contrary, they frequently, by fusing together, develop either into transverse or longitudinal lines, which give the animal a marked appearance, and have led to the formation of distinct varieties. Owing to their less stationary habits, the varieties of snakes are locally not so restricted as those of lizards often are, but, on the whole, it may be said that the former set of varieties of *natrix* are more common to the west of Europe, the latter to the east.

I have not been able to determine satisfactorily the existence of the melanic var. *minax*, Bonap., within the Grand Duchy. It is found in the Alps, though not very abundantly (I have only come across it three times), and in Bavaria, but not, I believe, elsewhere in Germany; and the many reports of "black" snakes in Baden are perhaps due to the number of dark grey or brownish specimens. Like the Blindworm, this species fluctuates in numbers from

* Loewis, 'Reptilien Kur-Liv und Esthlands.'

year to year, and I note the year 1888 as one in which it was exceptionally common. It is found in all parts of the country, and is not rare near the town of Karlsruhe (Wild-park, Durlacher-wald, Beiertheim, &c.) On March 30th, 1884—an early date—I observed one lying on the ground in the neighbouring Hardwald beside a large Hedgehog; both animals were torpid with the cold, and the Hedgehog had evidently not the strength to begin its meal. *T. natrix* seems to be more susceptible than the Smooth Snake to sudden changes of temperature, and when overtaken by violent thunderstorms in summer, during which the thermometer often falls several degrees a minute, it may be found lying drowsy and benumbed by the roadside. I have found this species common in the Rhine Woods (Maxau, Forchheim, Neureuth, Eggenstein), as well as on the hills round Karlsruhe (Durlach, Steinbach, &c.), on the Kaiserstuhl and the Black Forest. In Elsass and the Bavarian Palatinate I have met with it once or twice—at Dahn, and several times near Würth; but it is generally considered to be scarcer here now than formerly, notably in the northern parts. The same decrease has been reported from other parts of Germany, and has been attributed to its oviparous habits, which do not allow it the amount of independence required nowadays.

2. *Tropidonotus tessellatus*, Laur.—This species occurs in so many countries around Baden that I still cherish the hope it may turn up somewhere within the Grand Duchy. It was first discovered in Germany, near Ems, in 1819, by v. Heyden, who considered it to have been introduced by the Romans, like the Æsculap Snake.* Since then it has been obtained at several localities in the Middle Rhine district: St. Goar, Boppard, Loreley; and in 1871 was first mentioned from the neighbourhood of Kreuznach, where it appears to be sufficiently abundant, frequenting chiefly those parts of the river where hot springs issue from the ground, and living on fish. In the countries to the south and east of Baden it is found nowhere nearer than Southern Switzerland, Tirol, Lower Austria, and Bohemia.

Like *Tropidonotus natrix*, there are two varieties, distinguished by their respectively brown or grey predominating tints on the upper surfaces. They never occur in equal proportions,

* Fatio similarly thus accounts for the presence of this and the following species in certain portions of Switzerland.

one or the other being always preponderant. The grey form, at a distance, resembles deceptively *Tropidonotus natrix*, and these two species, besides presenting much analogous variation in colour—thus *tessellatus* is also liable to lose the collar-mark (*Elaphis flavescens* similarly) and to follow the same process as *natrix* in the gradual darkening of the fundamental tint—have much in common in their habits and mode of life.

The young of this species are coloured singularly like the Viper, and a specimen of the allied *viperinus* now before me is not to be distinguished from it, in its white and black pattern. The resemblance, however, is not mimetic, but purely accidental, as the adults do not possess it in so pronounced a degree.

3. *Zamenis viridiflavus*, Laur. — This is one of the most doubtful German species. Silesia on the east, and the Moselle Valley on the west, are the only localities in which its occurrence has been suspected.

4. *Elaphis flavescens*, Gmel. — I will briefly sum up the evidence* favouring the claims of this species to be considered indigenous to Baden:—(1). In 1782 Dr. Sander wrote to the 'Naturforscher' that two "tree-snakes" had been captured near St. Blasien, in the Southern Schwarzwald, and were preserved there. Leydig is disposed to regard this as conclusive; however, I have myself seen *T. natrix* climbing trees, and have heard other accounts to that effect. (2). v. Heyden observed this species near Baden-Baden (presumably about 1820). (3). Dr. Weber, a meritorious herpetologist, cites a letter from a certain Dr. Stocker (1855), according to whom *Elaphis flavescens* occurs on the Jura, towards the W. extremity of Lake Constance; and also a newspaper report (1871), stating that a large individual of this species was killed near Pforzheim, about 20 miles east of Karlsruhe. Is this evidence sufficient? It is uncertain whether Dr. Weber himself saw any specimens, and undoubtedly the strongest testimony is that of v. Heyden, who can hardly have been mistaken. The snake in the museum of Karlsruhe, labelled *E. flavescens* var. *nigra*, is only the melanic form of the preceding, (*Anguis Æsculapii niger*, Aldrov. = *Z. viridiflavus* var. *carbonarius*). Its origin is obscure.

(To be continued).

* As given in Leydig, 'Einheimische Schlangen,' p. 11.

NOTES AND QUERIES.

MAMMALIA.

The Polecat in Northamptonshire.—I am surprised to notice in your interesting article in 'The Zoologist' (pp. 240—253) that you only allude to one occurrence of the animal in our county, and therefore write to inform you that between the years 1840 and 1850 it might be fairly called "common" in this neighbourhood. Since the latter year I do not remember to have heard of the finding of a litter hereabouts, but the beast is still well known, and, "without book," I should say that for the last forty years about three occurrences have come to my knowledge in every four or five years on my own shootings and those of my own immediate neighbours. I regret that I have no accurate record of all these occurrences, but I have a very fine pair of Polecats stuffed that were killed near Lilford between 1875 and 1880. I was informed on excellent authority that two or more were seen near Tichmarsh in the early spring of 1882. A male weighing two pounds was trapped on Mr. Hunt's property at Wadenhoe, about two miles from this house, in the first week of March, 1890; another seen close to Wadenhoe House a few days subsequently; and a third was trapped on Wigsthorpe, my own property, about the 18th of the month just named. Mr. Matthews, the taxidermist, of Stamford, had a stuffed Polecat in his shop on February 11th ult., which, as he told my informant on that day, had been recently killed on the Northamptonshire side of the Welland. In this connection, it may interest some of your readers to know that, early in 1858, I was Woodcock-shooting with a friend from the garrison of Corfu, in the swampy woods near Butrinto, in Epirus, when our dogs—three spaniels and an old retriever—suddenly began to "mark" savagely at an old pollarded hollow ash-stump. On examining the holes at the foot of this stump, which was not more three feet high, we observed the tracks of some beast that I at first took to be those of a Marten-cat (an animal which we frequently met with in the country above mentioned); but on applying some lighted pages of H.M.'s Regulations to the principal hole, we were very soon aware, by the odour that overcame that of the smoke thus produced, that we had no "Sweet Mart" to deal with. The rotten wood soon took fire, and in a few minutes a huge Polecat crept out, and was speedily killed by one of the dogs. In the expectation of another, we waited for some minutes without any result; but on further search found the ground within the circumference of the stump was entirely strewn with the heads and fore-quarters of frogs, all neatly bitten off just behind the shoulders.—LILFORD (Lilford Hall, Oundle).

The Polecat in Wales and Cumberland.—I have been much interested in your article on the Polecat, and as I cannot see that you mention Wales, I may tell you that it is, or was, from a keeper in Wales

that Macleay, the birdstuffer, of Inverness, latterly obtained a supply of skins that he could not procure in Scotland. I am afraid that the Fomart is now quite rare in the Lake district. Even in 1883 it was virtually extinct in East Cumberland. The district that it held out in best was the Solway Plain, from Thrustonfield, near Carlisle, away to Wigton and Maryport, including its famous stronghold, Weddholm Flow. Even there, in 1883, I do not think it was as common as might be supposed from Mr. Farrall's letter, though I have seen a few, killed since, it is true, the last at Brayton by one of Sir Wilfrid Lawson's keepers. But people do not realise the fact of its becoming rare until it is nearly banished. I do not think there has been a Fomart hunt for the last five or six years even in the Weddholm district. For a long time the farmers did all the vermin killing on the flows and commons, and they did not trap much. But Weddholm has been overrun lately by Foxes, and has for several years been trapped. Hence I am afraid that even here the Fomart is nearly cleared out. My latest enquiries in North Lancashire show that the Fomart is virtually extinct in the south of the Lake district. To judge from the "Churchwardens' Accounts" that I have seen, it must have been very numerous once, and its skin was sought after for the market in 1803—perhaps earlier. I have not put my notes on this species into shape yet; but you may be satisfied that it is now unknown in most parts of the Lake district. It was exterminated in the Bewcastle district within the memory of Capt. Johnson, of Castlesteads; that was by hunting chiefly, judging by that old gentleman's account. One "Bill Little," an old postman here, is our great local authority on Polecats. Thirty years ago, he says, they were extremely common in the Thrustonfield district, and he had a great experience of them. There is, or was, another old man in the town who was a famous Fomart hunter, but chiefly in the Wigton district. I cannot say whether he is still alive; but if there is anything that Bill Little can tell about Fomarts, I shall be pleased to ask him. I saw several fine Polecats in the hands of birdstuffers during my stay at Oriel (1877 to 1881), and these, as you say, frequented the big coverts, which also held Badgers. The poor "Brock" has long been exterminated in the Lake district. Odd ones do turn up from time to time, of course, but these are escapes. The Pine Marten gets rarer every year, because visitors to the Lake district bribe the keepers to kill specimens for them. I have seen four, killed this year, all in Westmoreland; and I was lately shown another that was killed in 1889 near Tebay. Its owner remarked he thought it was "the last of the Westmoreland Sweet Marts." I am glad to say, however, that things are not quite so bad as that. Tebay is no district for the Marten—still it is going! I think the time has come when we should legislate for the preservation of our *feræ naturæ*, excepting the Stoat and Brown Rat. The Tebay Marten had lost its foot in a trap. The poor beast had found its way into a barn, and was worried by the

farmer's dog. We are fairly overrun with Foxes, which have destroyed Weddholm Flow: no birds breed there now; but nothing interesting is allowed to live. Two centuries ago the Lake district was a wilderness of Brocks and Wild Cats, Kites, Ospreys, and a few Eagles; but the churchwardens, and after them the keepers, persecuted these wild creatures almost to the death. Even the Hedgehog fared badly in some parishes.—H. A. MACPHERSON (Carlisle).

Habits of the Polecat.—The Editor's interesting article on the Polecat (pp. 281—294) suggests a few remarks and criticisms. We naturally begin by looking at the Plate, where a Polecat is shown in a position which, though perfectly possible, I never remember to have seen a Polecat assume, and it is, at any rate, not characteristic. If its little fore legs had been drawn upright, making the animal in a sitting position, with rather more of the hind leg showing, it would have been a very common attitude. The fore legs as drawn have an extremely gouty appearance. The artist has fallen into the error common to almost every taxidermist who stuffs a carnivorous animal, namely, of representing it with its mouth open. Hardly anything can look more unnatural. [We have seen a Stoat hunting with his mouth open and his tongue hanging out, like a dog.—ED.] The head is also rather too small. One other point I must venture to criticise. The sharply contrasted black and white on the muzzle, and the white tip to the ear, so characteristic of the animal, are here hardly hinted at. An extra Oxfordshire example may now, perhaps, be worth recording, a rather small male, said to have been obtained on, or close to, the Marston running-ground, near Oxford, in March, 1872. This I had alive in my rooms at Christ Church, and, amongst other adventures, it temporarily escaped, owing to an inquisitive friend looking at it when I was out, which produced a rather good story. I have also received examples from the Oxon and Bucks border. With regard to distinguishing between the wild Polecat and the domestic Ferret, I believe it is always possible to do so (except, of course, the direct cross between the two). The Polecat has much greater bone than the Ferret, as shown in the blunt, square muzzle, which in the Ferret is an isosceles triangle; the same in a lesser degree is true of the tail; the greater robustness of the body would not be so easily perceptible. A Ferret has never the clearly defined black and white muzzle and white tips to the ears before alluded to as so very conspicuous a characteristic of the Polecat, and also never has the glossy black tips to the fur, but looks yellower from the short under fur showing. Eels are very acceptable to Polecats, but no other kind of fish seems to be particularly cared for, though they will eat them *faute de mieux*. Frogs are readily eaten, but rabbits, any kind of bird, and even rats are preferred. Oddly enough, in captivity, mice are often refused. Cats can hardly be reckoned a "great delicacy" to them, but make a good useful supply of food. It is curious that the flesh of cats almost invariably

causes Martens (*Martes sylvatica*) to vomit, though they can digest a young kitten. If Polecats are "allowed to get too low" (as remarked by Mr. Cowley (p. 293), it is not surprising that they should go wrong, and get foot-rot or anything else. In answer to Mr. Cowley's query, "What does a wild Stoat or Polecat do when badly bitten by rats?" I fancy their unlimited access to damp earth must have a very healing tendency; it certainly has on human beings, and is the best ready remedy for wasp-stings that I know of. I should like to ask the Editor where he obtained his information about the period of gestation (p. 292). I am not aware that it has been published anywhere. [See 'The Zoologist,' 1880, p. 397. —ED.] I have bred several litters in captivity, and my experience seems to show that the young may be expected on the 40th day. In captivity, at any rate, they pair in the daytime, remaining together one hour and from ten to thirty minutes. One naturally has to restrain one's curiosity when a birth takes place, and so reliable data are not often to be had; but in one case the mother carried her cubs, within a few hours of their birth, from one bed-place to another. I saw three (out of the four) thus carried, and they appeared to be naked, and nearly $2\frac{1}{4}$ in. long in head and body, and tails nearly half an inch; total length (say) about $2\frac{3}{8}$ in. But in a subsequent case, where a litter came to grief, the mother, somewhere about 55 hours after the birth, brought a little corpse out of the bed while I was watching her, and carefully buried it in some grass with which the floor of the cage was strewn. The cub was still fresh, with a little of the umbilical cord still remaining, and I do not know how long it takes to disappear entirely. This cub measured: head $\frac{7}{8}$ in., neck and body $2\frac{1}{3}\frac{1}{2}$, tail $\frac{2}{3}\frac{1}{2}$; total length $3\frac{7}{8}$ in. It was covered with fine buffy-white hair. Unquestionably these embryos would develop very rapidly, and supposing the first lot mentioned were not more than 12 hours old, and this one nearly 48, my observations may not have been far wrong. The following is the summary of observations of the growth of a litter of cubs:—21st day. Rather over $6\frac{1}{2}$ in. in total length, light slate-blue colour, whitish on poll. 30th day. Came out of bed-box. The right eye of one or more just beginning to open. 31st day. Out and about; eyes opening. One Polecat, though not disturbed, ate all her offspring except one, and finding, on the 31st day,* that she had begun to devour the sole survivor, having made a terrible gash in his throat, I removed him, and hand-reared him in the house, where, though I had the opportunity of keeping him under close observation, the unnatural conditions would perhaps slightly alter his rate of development. This solitary cub (hereafter called "Snap" for shortness) then measured about $10\frac{1}{2}$ in. in total length, his right eyelid just showing an inclination to split. 32nd day. Snap's right eye gradually opening, the left just beginning. Of the other lot of cubs, one, if not all, could see with both

* These numbers of course mean the age of the respective cubs, not the same day of the year.

eyes. 33rd day. Snap's right eye perfectly open, the left increasing all day, almost perfectly open by night. 35th day. Snap's eyes both perfectly open. 38th day. Snap measured 13 in. 39th day. Cubs out, drinking milk, &c. 42nd day. Snap's four inner incisor teeth in the upper jaw were in place, those in the lower jaw just showing through the gums. 43rd day. One pair of the lower incisors (reckoned from one side, Nos. 2 and 5) well down. 44th day. That pair of the lower incisors further down; the central pair (Nos. 3 and 4) cut. The outer upper pair (Nos. 1 and 6) just beginning to show where they will come. 49th day. The outer pair of upper incisors level with the others. All six lower incisors well down. The molar teeth are not so easily observed, but I do not know why I did not note the canines. 50th day. Snap measured fully 15 in. I was absent from home from the 51st to 66th day, when I found him almost full-grown. Polecats probably begin to eat rather before they are three weeks old. It was a very easy job to rear the cub which I rescued on the 31st day. He very soon despised milk, and for some time before I left him on the 51st day, hardly drank a couple of teaspoonsful of milk in a day. However, when adult, they take to it again, and are very glad to get it. This hand-reared cub—now in his second year—remains tame, though, as was to be expected, his name has proved very appropriate; his keeper has vowed several times that Snap had had the last taste of him he ever should. However, with all his faults, Snap is a most engaging little "varmint," and we let him loose whenever the keeper or I can keep an eye on him, but cannot trust him long out of sight, or he would soon be lost. The popular belief that the number of young in a litter could be told by the number of teats in use in the mother is a fallacy, at any rate so far as Polecats are concerned. One of my tame-bred Polecats effected his escape, by an accident that could hardly have been foreseen, one night last April. I had seen him all safe after 11 p.m., and, though he had never been out of a cage in his life, he went through a portion of the town, crossed the Thames, presumably by the bridge, and kept down the road until he came to Bisham Abbey, where he must have turned off across "the Warren." As, however, there are no rabbits there, he went on until he reached the hen-house, a distance of about a mile and a half. There he was killed the following afternoon by the bailiff, assisted by a crowbar and a dog, after making, I understand, a game fight for his life, and having killed one or more hens, the evidence, however, not being very dependable. The usual length of males is from 20 to 24 in., females a good deal less. Males appear to preponderate over females at about the rate of two to one. The young are born probably, as a rule, early in June. Entries of payments for killing "Poulcatts," "pole Cats," &c., are very numerous in the churchwardens' accounts in this county (as is doubtless the case in every other county), chiefly during the 18th century. Probably a thorough search through these records would enable one to form a very tolerable idea of the former distribution of this animal

before its systematic extermination. — ALFRED HENEAGE COCKS (Great Marlow, Bucks).

Supposed Occurrence of the Barbastelle in Suffolk.—On August 1st my brother and I met with a Bat which I have little doubt was a Barbastelle. In a garden at Little Glemham is a large and very old cherry tree, whose trunk has been split and shattered by the storms of many years. When some of the larger arms have been torn or perhaps sawn off, large excrescences of bark have gradually formed, under which are various holes and crannies. Feeling in one of these I found and drew out a Bat which I believe to have been of the above species. It unfortunately escaped before a full examination could be made, or the various dimensions ascertained and noted. On visiting its retreat the next day for the purpose of doing this, and, if possible, making a drawing of the animal, we found it had changed its quarters, and was not to be found. At the first sight of this Bat I was sure it was of a species I had not before met with, and was struck with its resemblance to Bell's figure of the Barbastelle. The most striking peculiarities observable were its very dark colour (nearly black above), and the singular aspect of the face, the nostrils being deeply sunk between two swelling ridges or projections, situated one on each side of the face. The animal looked larger than the Pipistrelle, and the ears seemed short, and of peculiar form.—G. T. ROPE (Blaxhall, Suffolk).

The Noctule in Cornwall.—Having for some time suspected the existence of one of the larger species of Bats in this locality, I directed my keeper to search the holes in some of the oak trees in the park here. Having placed a bag over the mouth of one of these one evening this week, he succeeded in capturing twenty out of a colony of about fifty, which turned out to be Noctules of all sizes, the adults measuring over 14 in. across the wings. Having placed them in an empty champagne-case, covered with a sheet of window-glass, we could observe their actions easily, as they hopped about like toads on the floor, or clung to each other or to the sides of the case, uttering their strange jabbering cries with scarcely any intermission. The next morning they were all clustered in a ball in one corner of the case, apparently asleep, and, when stirred up, indulged in a free fight on the floor, biting and scratching each other, or the sticks with which they were touched, with the utmost impartiality, squeaking louder than ever, and emitting a strong musky smell when the glass was removed. Having killed two of the largest for my collection, I let the rest go under the shade of a large chestnut tree.—FRANCIS R. RODD (Trebeartha Hall, Launceston).

CETACEA.

Bottle-nosed Whales in the Thames.—Having heard of the capture of a Whale near Creeksmouth, Barking, I went down there on Aug. 3rd

to identify the species, and found it to be a male "Bottle-nose," *Hyperoodon rostratus*, 25 ft. in length. The spot where it was found and killed was about half a mile eastward of the entrance to Barking Creek, on the foreshore of Eastbury Level, and close to the Lower Powder Magazine. The Whale was partly floating on a high tide, secured to a barge, and lying on its right side. A portion of the skin was torn off, and it had evidently been roughly treated and chafed by the ropes. Later on I took train to Leigh, to see another Whale which had been towed there after capture near the Nore Lightship. This also is a male of the same species, and of exactly the same length, but in much better condition. This specimen was lying on the left side, high and dry in Tomlin's yard, and measurements and drawings of it have been made by my friend Dr. Murie, a well-known cetologist, who has published many valuable memoirs on the Cetacea, and who now resides at Leigh. The specimen at Tripcock, or Barking Reach, has been measured and sketched by myself, and a record of these two Whales, which probably travelled together from the Arctic Seas, will in due time be published in the 'Essex Naturalist.' These animals abound during the summer in the Northern Seas, between Labrador and Nova Zembla; and during the past ten years an extensive pursuit of them has been carried on near Jan Mayen and Iceland, from May to July. In the autumn and winter they come southward into the North Atlantic waters, and are occasionally stranded on the British coast, especially in Scotland. They usually occur either singly or in pairs. Two were taken (an old and a young female) near Hunstanton, Norfolk, on 28th August, 1888, and a few have been recorded on the Essex coast. One of these, taken at Maldon in 1717, is figured in Dale's 'History of Harwich' (1730). One, 21 ft. in length, was captured in the Thames in 1783, and another on the coast of Essex in 1817. This species belongs to the suborder Odontoceti, or toothed Whales, of which the Sperm Whale is the largest, and comes next to that in size, adults measuring from 25 to 30 ft. in length. Like the Sperm, they have a store of oil in the head, from which spermaceti is refined, and the blubber-oil is considered superior as a lubricant to that of the Sperm Whale. The latter has from 40 to 50 large teeth in the lower jaw, whereas the Bottle-nose has only two, and these are functionless, never rising above the gums. Their food principally consists of the soft-bodied cephalopods, such as squids and cuttles. The distinguishing features of this Whale are the bony maxillary crests, which, in the adult form, rise on each side from the upper jaw, causing to a large extent the great swelling up of the head, from which the common name of the animal is derived. In very aged specimens these crests become of great height and thickness, and the separate bones become ankylosed together.—WALTER CROUCH (Grafton House, Wanstead).

BIRDS.

The Wren of Iceland.—Skins of the Icelandic Wren are, I believe, rare in collections. Prof. Newton was good enough to allow me to examine one in his possession, and when in Copenhagen, last September, measurements of the two skins in the Museum there were taken. From a comparison of these three specimens with skins from Shetland and Faroe, I found no Shetland or Faroe Wren with so long a wing as the Icelandic bird, and the latter appears to me to have larger and stronger legs, although the difference between the measurements of tarsus and hallux is slight. The Icelandic Wren skins in Copenhagen were both dated Nov. 8th, 1834. The Faroe skins in Copenhagen were four in number, and dated May 3rd, 1845, Dec. 5th, 1861, Nov. 19th, 1863, and May 11th, 1865, and were all collected by Müller. *Troglodytes borealis* was described first by S. C. Fischer, of Copenhagen, in the 'Journal für Ornithologie' for 1861, from a specimen brought to him from the Faroes. Fischer's description is dated Jan. 1861, so that none of the above Faroe specimens, save the oldest, could have been seen by him. The Shetland Wren, if not identical with the Faroe Wren, comes much nearer to it than the Icelandic form.—RICHARD M. BARRINGTON (Fassaroe, Bray, Co. Wicklow).

The Wren of Shetland.—In an article on this subject in 'The Zoologist' for August (pp. 294—297), by Mr. Henry Seebohm, the conclusion is arrived at that the Shetland Wren ought to be classed along with the Faroe (and Iceland?) bird as belonging to a subspecies, which Mr. Seebohm calls *Troglodytes parvulus borealis*. Setting aside the question as to the desirability of subspecies at all, and whether "local race" would not answer all purposes fulfilled by the more cumbrous arrangement, many readers of 'The Zoologist' will probably agree with me in thinking the arguments brought forward in support of the contention somewhat weak. As regards size, length of tail, and wing, we find (taking Mr. Seebohm's own figures) that, while the Shetland Wren exceeds his typical form in wing by .06 in., it is exceeded by the Faroe bird by no less than .14 in.; while, as regards tail, the typical race actually exceeds the so-called Shetland variety by .04 in., while the Faroe race exceeds it by .25 in. It is only in the culmen and hallux that we find the Shetland Wren approximating to the Faroe. With regard to the Wrens from Iceland in the Copenhagen Museum, these are decidedly larger by measurement than the Shetland Wren as given in Mr. Seebohm's article, and approximate very closely indeed to those from Faroe in the same collection. The following measurements I have been able to obtain through the kindness of Herr Herluf Winge, of the Museum:—Iceland (2), average wing 2 in., tail 1.44 in., culmen .62 in., hallux .41 in.; Faroe (4), average wing 1.98 in., tail 1.46 in., culmen .57 in., hallux .425 in.; Denmark (2), average wing 1.9 in., tail 1.41 in., culmen .53 in., hallux .38 in.; Italy (1), wing 1.81 in., tail

1.25 in., culmen .5 in., hallux .34 in.; Shetland (4), Mr. Seebohm, average wing 1.91 in., tail 1.18 in., culmen .58 in., hallux .41 in.; Common Wren, Mr. H. Saunders, average wing 1.9 in. One noticeable point here is the extreme shortness of tail, apparently characteristic of the Shetland Wren. Another is the almost absolute identity of wing measurements with the Common Wren. As regards the amount of barring, this is, as Mr. Seebohm himself says, dependent to a certain degree upon season, and the Shetland Wrens were killed in June, when the plumage would be much abraded, as is clearly indicated by the shortness of the tail. In colour, and also in the amount of barring of the Copenhagen specimens, neither Herr Winge nor myself were able to detect any difference between the Iceland, Faroe, and Danish Wrens, but the Italian bird was decidedly paler. If we are going to draw fine distinctions, the beak and legs are the only safe guide, and even in these respects there is no absolute rule, as one of the Faroe birds had little or no superiority in size over the Danish with regard to its culmen and hallux. Looking at the Shetland group on the map, a long way east of Faroe, and less than 200 miles from the Norwegian coast islands—100 miles less than between Flamborough Head and Heligoland—and remembering the great stream of migration that pours through the islands every spring and autumn, it is difficult to believe in the possibility of even an insular race being developed; indeed, we might as well expect to find a race similar to that in the south-west of Norway, which has been separated by Dr. Stejneger as *T. bergensis*, though all Scandinavian ornithologists do not acknowledge the validity of the species. Mr. Seebohm states the average size of the eggs of the Faroe Wren to be greater than those of the typical form; this is probably the case, but the one example given is to me hardly conclusive, for I have weighed some hundreds of eggs of many different species, and have found great differences between the weights of sets of eggs laid by individuals belonging to the same species. — HAROLD RÆBURN (Romford, Essex).

Dispersal of Oak Trees by Wild Ducks.—Walking through Holkham Park on the 1st of June this year, my companions and I observed that hundreds of acres of grass-land were studded with seedling oaks, two to three inches high, and on areas where no oak trees are growing. I can only account for this abnormal dispersion of seedling oaks through the agency of Wild Ducks, *Anas boschas*. During the severe winter of 1890—91 the lake in Holkham Park was frozen over for six weeks, and the thousands of Mallard that make it their winter home were driven to the woods, where they spent the day, particularly under the oak trees, searching for food; immense flocks, so tame that a person might approach them within a few yards, were constantly engaged feeding on the fallen acorns, and I spent many hours last winter watching them. After feeding, the Ducks spread themselves over the park, and I presume the undigested acorns must have

been dropped broadcast over the grass-lands by the birds. Later in the year the herds of deer, sheep, and cattle will eat down the grass, including the seedling oaks; but, supposing the district was inhabited by only a sparse population of hunters, possessing few domestic animals, it is obvious how rapidly, by the influence of one species of bird alone, a large area might become afforested.—H. W. FEILDEN (West House, Wells, Norfolk).

[A similar dispersal of oaks by Rooks is mentioned in Robinson's 'Nat. Hist. Westmoreland and Cumberland,' 1709, p. 97.—ED.]

Breeding of Pallas's Sand Grouse in Captivity in Denmark.—The following account of the breeding of Pallas's Sand Grouse is translated from a paper by Herr Winge in 'Communications to the Copenhagen Natural History Society for 1889—90':—In 1890 there were still a considerable number of *Syrrhaptus paradoxus* in several parts of Denmark in a wild state, and it is very probable that they bred. "Herr B. Christensen, of Copenhagen, obtained in 1888 three living Sand Grouse, a male and two females, caught in Jutland. They were put into a large room, in which many other birds were allowed to fly about. In 1889 they showed no inclination to breed, and one hen died, but the other began to lay towards the end of May, 1890, and laid five eggs in the space of several days. One of the eggs was broken by a parrot, two were so thin-shelled that they broke immediately, the other two were set under a dove, which sat on them for eighteen days, and then deserted. Both contained well-developed young birds, which still showed signs of life after the eggs had been two days cold. After about a month's interval, the hen Sand Grouse again laid five eggs, of which two were destroyed by the parrots. The other three were set under a bantam hen, which at the same time was sitting upon ten eggs of the Quail and seven of the Francolin. One Sand Grouse was hatched, but was trodden to death by the bantam; in the other two eggs were fully-developed young birds, which had been unable to break the shell. Two of the young birds were presented to the Zoological Museum of Copenhagen by Herr Christensen." It is much to be regretted that, seeing the bird's disposition to lay, no steps were taken to secure freedom from molestation by other species in the same aviary. Had these been temporarily removed after the first failure to hatch, and the Sand Grouse allowed quiet possession of the aviary, success would probably have followed their efforts to rear their young, and an excellent opportunity would have been furnished for noting the stages of development of the chick after hatching. Such common birds as parrots and bantams might well have been sacrificed for the occasion.—J. E. HARTING.

Nesting of the Magpie and Carrion Crow.—Reading Mr. Whitaker's account of finding a Magpie's nest in a hedge in 'The Zoologist' for the present month (p. 309), reminds me that when a boy (nearly forty years ago unfortunately) I was under the impression, and the opinion was shared by

my companions, that there were two species of this bird, one making its nest in a tree, and the other in a hedge, and they were named accordingly. This would show that the nest was frequently found in a hedge, and I can distinctly remember the sorry plight I sometimes presented after climbing to the top of a high hawthorn hedge to discover the contents of a nest. The hedges are now kept much lower than they were at the time I speak of, with the exception of those around the hop-plantations. I have no recollection of finding the nest of a Crow in a hedge in my early days ; it was reserved for a much later period in life to do so. Walking one day in the middle of April, 1833, in some meadows near this city, I perceived in front of me a Crow perched on a tall hedge ; as I approached nearer, I then saw what appeared to be a nest, little dreaming, until I closely examined it, that it belonged to that species ; it contained five eggs, two of which I retained for my collection. I visited the same locality in the early part of May this year, and to my surprise, in the same hedge, there was a nest of this bird, apparently built this year. It appears strange to select a situation about nine feet high, in such a well-wooded district as this is.—J. B. PILLEY (Hereford).

Strange Roosting-place for Swallows.—It is a familiar habit that Swallows have of roosting amongst reeds in bogs, and by loch margins, in large flocks during the autumn months. In this district there are at least three such places where these birds congregate in very large flocks each evening, and pass the night thickly clustered along the bending reed-stems. At one of these localities, in some seasons, I have seen over a thousand birds roosting each evening for weeks, this large flock not being entirely composed of Swallows, but also including a large proportion of Sand Martins and many House Martins. The other evening, in passing a large break of young beech trees in one of our nursery fields, I startled a small flock of birds that had been roosting on the plants. In a few minutes the birds—about a dozen in number—returned and settled in a row on a little branch that bent down with their weight, till it rested on the general mass of foliage, and I saw with surprise that they were Swallows. I have seen them coming to the same spot each evening since. The average height of the plants is about three feet, and the closeness with which they stand together, as is usual in nursery lines, makes the strange place thus chosen almost inaccessible by cats or other enemies. This is surely a new habit the Swallows have acquired, for, although a reed-thicket and a break of young nursery trees have certain points of similarity, yet in their essential characteristics one situation represents nature in primitive wildness, while a highly cultivated nursery shows just the opposite extreme.—ROBERT SERVICE (Maxwelltown, Dumfries).

The Song of the Redwing.—In 'The Zoologist' for August (p. 313), Mr. J. Whitaker describes the song of the Redwing as heard in April. As

I have had a pair of these birds in a large aviary for two years, I am in a position to state positively that those he heard were "recording," not actually singing. The full song of the Redwing commences with a scale, and is not unlike the song of a Chaffinch; then come one or two Thrush-like notes, and the song finishes up with the chuckling sounds of a Starling's song. In the early spring the Chaffinch-like portion of the Redwing's song, which is the best part of it, is wholly omitted.—A. G. BUTLER (Beckenham),

Unusual Nesting-place for a Magpie.—The site described by Mr. Whitaker (p. 309) is not such an unusual one as he seems to think. I lived in the neighbouring county of Rutland for four years, and during that time found at least a dozen Magpies' nests in hedgerows, some of which were by the roadside; high trees were abundant.—W. J. HORN (Kingsthorpe, Northampton).

Cirl Bunting in Cardiganshire.—On July 23rd last, whilst trying for some Stonechats, which were wanted for a museum, I heard the song of the Cirl Bunting in two separate places within half a mile of Aberystwith. On the same day I shot one of these birds, an adult male Cirl Bunting in good plumage. Mr. Hutchings, taxidermist, of Aberystwith, to whom I took this bird to be preserved, told me that this is the first Cirl Bunting from Cardiganshire he has seen or heard of, though he has been an observer of birds in the county for twenty-eight years. This species, which has in the last two years become rather common in parts of the adjoining county of Brecon, where it was previously very rare, appears to be gradually extending its range westwards.—E. A. SWAINSON (Brecon).

Hybrid Finches at the Crystal Palace Bird Show.—I examined these finches, referred to by Mr. Weir (p. 274), on the first day of the show, and there seemed to be no reason for doubting the statement of the breeder as to their having been bred from mules paired with birds of the parent stocks. This did not surprise me, for I had frequently heard of the Greenfinch being crossed with a breed of Canaries, with the view of strengthening the stock. Two old ladies at Penge used at one time to rear a number of Canaries, and when I wanted an odd bird for breeding purposes I used to purchase one from them. On one of these occasions I saw a cock Greenfinch in one of their breeding-cages paired with a hen Canary, and upon my remarking that the resulting mules would be ugly and of little value, they explained that they were only breeding them to strengthen their stock, which had begun to deteriorate in vigour.—A. G. BUTLER (Beckenham).

Measurements of a Golden Eagle's Nest.—A friend in Invernesshire has sent me the following measurements of a Golden Eagle's nest he has found:—Height, 9 ft.; by breadth across the top, 5 ft.; breadth across the bottom, 20 ft.; a sort of rim ran round the bottom 4 ft. high,

Round the nest were the bones of between forty and fifty Grouse, and also lots of bones, chiefly lambs, rabbits, and hares.—RANDOLPH MACRADISH (Edinburgh).

Icterine Warbler nesting at Heligoland.—In connection with the recent occurrence of this species at Easington, in Holderness (p. 308), it is worth putting on record that a pair have this summer again nested in Heligoland. Under date of July 21st, 1891, Mr. Gätke writes:—"Fancy a pair of the Icterine Warbler, *Sylvia hypolaïs*, have been breeding this year in the garden next mine,—in my book a similar occurrence is noted,—the male having been singing from morning to night, in mine and neighbour's garden, during the last four weeks. Having now, as I suppose, young, the song is changed for quite a different kind, with which it anxiously follows all the garden round."—JOHN CORDEAUX (Great Cotes, Ulceby).

Lesser Whitethroat in Somersetshire.—I was somewhat surprised to learn from the Rev. Murray A. Mathew's note (p. 273) that the Lesser Whitethroat is considered such a rare bird in Somersetshire. Owing to my residence in Scotland for the last three or four years, I have had no opportunities of late of visiting the county during the breeding season; but whilst on a visit there in the autumn of 1888 a friend brought me a nest and five eggs of the Lesser Whitethroat, which he had taken near Yeovil in May of that year. The same year I found an empty nest myself near Glastonbury in such an excellent state of preservation that I kept it until leaving Scotland, a few months ago. This year I ran down from London for Whit Sunday and Monday, and again found a nest of the Lesser Whitethroat a few miles from Yeovil. The nest and eggs had unfortunately been overturned by some marauder, but I picked up three sound eggs from the ditch below, and found two others there broken. I have never particularly looked for the nest of this bird, but have no doubt a careful search would reveal the fact that it is commoner than appears to be generally believed. The nesting site is quite different from that of the Common Whitethroat, being higher from the ground and much less carefully concealed. Both nests which I found in Somersetshire were in a few thin dead brambles hanging from a high hedge. They were about four feet from the ground, and without any attempt at concealment.—ROBERT H. READ (9, Grosvenor Gardens, Ealing).

[The Common Whitethroat occasionally nests at some height from the ground. A nest twelve feet from the ground was found by Mr. C. B. Wharton. See 'Zoologist,' 1875, p. 4298.—ED.]

Dimensions and Weight of Glaucous Gull.—A male specimen of *Larus glaucus* was shot on the beach at Dovercourt on the 28th November last. Appended are its dimensions and weight:—Weight, 3 lb. 11½ oz.;

length, $28\frac{3}{8}$ in.; expanse of wings, $64\frac{1}{2}$ in.; length of wing from carpal joint, $18\frac{1}{2}$ in.; of tail, $7\frac{1}{2}$ in.; of head, $5\frac{7}{8}$ in.; of bill, base to point, $2\frac{5}{8}$ in.; of gape, 4 in.; of tarsus, $3\frac{1}{4}$ in.; of toes—middle $3\frac{1}{8}$ in., inner $2\frac{3}{8}$ in., outer 3 in., hind $\frac{1}{2}$ in.—F. KERRY (Harwich).

Breeding of the Syrian and White-eared Bulbuls in Confinement.—I read in a well-known book on birds, that no Bulbuls have probably been bred in Europe, save once in Germany. I am able to mention a second exception to this statement. Some six years ago I brought a Syrian Bulbul from Beyrout, and a short time after I purchased one of the white-eared kind. They paired last year (1890) in a large cage, but built no nest, and the Syrian bird, which is a hen, laid two eggs at the bottom of the cage, which were broken. This summer I set them free in my conservatory, and they built a nest high up in a corner formed by the ledge of the window in the roof; but this was evidently not to their mind, for only one egg was laid in it, and the other was found broken on the ground. Two eggs seem to be the normal number laid. In a few days they built a nest in a hanging basket containing a fern, and here two eggs were deposited, on which the hen sat constantly for fourteen days, when one young bird was hatched. If I or any one else ventured near the nest we were greeted with shrill screams; and not only so, but were savagely attacked, the hen flapping our heads with her wings, and wishing seemingly to make an assault on our eyes. I had to hold up my hands in self-defence. It was the prettiest thing possible to hear the sweet tones which both she and the male bird used when they perched upon the basket, and invited the nestling to eat the food which they had brought. The young Bulbul flourished for ten days, when on entering the aviary on July 18th I found it dead upon the floor, near the door, a long way from the nest, and the male bird sitting close by. How it came there, in its unfledged state, I cannot think. Whether it fell from the nest or was turned out by its parents, I know not; but its death was a great disappointment, as I hoped it would have turned out that *rara avis*, a young Bulbul hatched and reared in England. The other egg, I grieve to say, was unfruitful.—CHARLES D. BELL (The Rectory, Cheltenham).—From 'The Spectator,' July 25th.

Garden Warbler, Lesser Whitethroat, and Lesser Redpoll in South Wales.—Most of the books on birds describe the Garden Warbler, *Sylvia hortensis*, as being absent from, or very local in, Wales. This is, however, by no means the case as far as Breconshire is concerned. Having closely observed this species for a good many years here, including the last six nesting seasons, I find it is not uncommon in all suitable localities in a great portion of this county; and I am sure any observer who is acquainted with its rapid, deep, mellow warble, and looks for it here, will come to the same conclusion. I could name at least twenty different places in this

neighbourhood where it occurs every season. It is not as common as the Blackcap, *Sylvia atricapilla*, and is found in the same kind of places as this bird—namely, small woods and bramble-thickets, and to a less extent in large woods. I have found the Garden Warbler to be one of the shyest of birds. It appears to have the greatest objection to being seen, and were it not for its beautiful, loud warble, it would be very difficult to find. I have, however, often obtained a good view of it by means of a binocular glass and careful stalking; and the three or four specimens I have wanted for myself and friends I have obtained without difficulty. Its song is to be heard here from the last week in April to the first week in July. I have found a good many of its nests near Brecon, and, knowing the likeness of its eggs to those of the Blackcap, have always used great care in identifying the species. The eggs I have found here have been much of one type, lighter in colour than those of the Blackcap, and not, as a rule, likely to be mistaken for them. The chief difference is, however, in the nest, which in the case of the Garden Warbler I have found to be a plain grass-stalk structure, with very little hair-lining, and not ornamented with moss, cobwebs, and roots, as the nest of the Blackcap generally is. In 1887 I found a Garden Warbler's nest in an unusual situation—namely, in a little beech tree, about five feet from the ground. This nest, with one of the four eggs it contained, is now in the Natural History Museum, South Kensington. A pair or two of this species nest yearly in a wood and large shrubbery within a hundred and fifty yards of this house, and I hear them singing almost daily from my garden in the season. This year one of their nests was placed in a blackthorn-bush in the above-mentioned wood, and contained four eggs, the first of which was only laid on the 19th June. I have also observed the Garden Warbler in several parts of Radnorshire. Mr. Harting, in 'Our Summer Migrants,' expresses the hope that naturalists will examine into the truth of the alleged absence from Wales of this bird, and publish the result of their investigations. I trust they will do so, and that this fine songster will be found to visit other Welsh districts besides those above mentioned. Another summer migrant, the Lesser Whitethroat, *Sylvia curruca*, is generally described as being very rare in Wales. I became well acquainted with this little bird and its song in South Shropshire, where it is rather common, and find it pretty evenly distributed in suitable places in the neighbourhood of Brecon. The usual date of its arrival here is in the third week of April. It can hardly be called common, but I could point to at least a dozen different localities where it can be heard and perhaps seen near Brecon. I have obtained here two specimens which I wished for without difficulty. Like most of the summer songsters, it is far oftener heard than seen, but the quivering trill which forms the end of its song is so loud that its presence is betrayed at a long distance. I have now and then, when within three or four yards of this bird, heard

the low, sweet warbling notes of its song for half a minute without a break. The Lesser Whitethroat may occur here wherever there are trees, tall hedges or bushes, except in the depth of large woods. Its chief haunts are, however, in country lanes, the double line of tall hedges forming a great attraction to it, and here it generally nests. It seems sometimes to forsake its nest without apparent cause; of three nests I have found, all of which were in lane hedges, I only obtained eggs from one. I have known the eggs taken on several occasions by other collectors. Three nests which I have are much like the vignette in Yarrell's 'British Birds,' small and shallow. I do not find Wales mentioned in the books on birds as a district in which the Lesser Redpoll, *Linota rufescens*, breeds, but it no doubt does so every year near Brecon. I have noticed it every summer here for some years, but this season it has been unusually common, and I have often heard its musical little trill and triple flight-note about the alder swamps and adjacent hedges. In June last I found two nests of this bird, placed in honeysuckle growing in tall hedges, each containing fresh eggs. Both nests had the usual lining of white down, but one was peculiar in having a quantity of honeysuckle bark-strips interwoven among the grass round the outside of the nest. This beautiful little nest contained four eggs, of a bright blue-green, blotched, two of them very boldly, with reddish brown.—E. A. SWAINSON (Brecon).

Zygodactylism in Non-zygodactyle Birds.—Although it has been frequently observed that some birds with so-called "scansorial" feet do not use them in climbing, I am not aware that the converse of this fact—namely, the occasional assumption of the zygodactyle position by birds with the normal disposition of the toes—has been recorded. My friend Mr. E. B. Titchener and myself have, however, observed this in the case of several species, notably the Collared Turtle Dove and the Common Heron. My attention was first drawn to it in the case of the common fowl, the position being naturally assumed when a bird with spreading toes, such as those mentioned, walks or stands upon a narrow perch, though the turning partly back of the outer toe is not confined to such occasions, as we noticed it even in a Common Mynah, when nesting upon a stout perch. In view of the fact that the zygodactyle structure occurs in widely separated groups, these observations may prove of interest.—FRANK FINN (33, Charlotte Street, Portland Place).

[We have remarked the same thing in some of the Owls, and in the Osprey.—ED.]

Tufted Duck nesting in Hants.—Mr. Whitaker mentions the nesting of the Tufted Duck, *Fuligula cristata*, in Nottinghamshire, in an old duck's nest. A pair which nested here last year took possession of an empty Coot's nest, built out on the water amongst the branches of a dogwood bush. Two pairs have bred here this summer. The first nest contained

twelve eggs, all of which hatched, and I still see the old duck about continually with her brood, which consists of nine. The second nest I was never able to find, but I see the old bird about with her brood of four.—ALEX. H. BARING (The Grange, Alresford, Hants).

Teal breeding in Bedfordshire.—On August 4th, while staying at Stagsden, near Bedford, a young Teal (*Querquedula crecca*) was shot on a small pond close by. This being only the second occurrence of the kind I have heard of in that neighbourhood, I thought the fact might be worth recording.—D. H. STUART STEWART (Royal College of Science, South Kensington).

The Colour of the Iris in Albino Birds.—In the August number of 'The Zoologist' (p. 317), there is a note by Mr. Edgar R. Waite on albino Twites, in which it is stated that "in the living bird the eyes were pink, *as in all albinos*" (the italics are mine). It does not appear that the writer had himself seen the birds alive; the statement is therefore probably an assumption. There are few persons who have had greater opportunities of seeing living albino birds than myself during the nearly a quarter of a century that I have acted as judge at the cage-bird shows at the Crystal Palace, and I have never seen a single instance of an albino bird having pink eyes. I have conferred to-day (August 3rd) with one of the largest dealers in birds, and he also has never seen such a specimen. I do not recollect to have ever seen an albino Twite, but I have seen several albinos of its close ally the Linnet; these latter certainly had black eyes; white Jackdaws and Jays have very blue eyes; white Blackbirds and Thrushes, of which I have seen many, have not pink eyes; white Pheasants and Peacocks have not pink eyes; and I could easily make out a long list of albino birds which I have seen that have not pink eyes. It is scarcely necessary to go beyond the poultry-yard in proof of what I state; white fowls, guinea fowls, turkeys, ducks, geese, and pigeons never have pink eyes. I admit it is very common to see white stuffed birds furnished with pink eyes by the taxidermist, and quite recently a white Curlew was so decorated, but in life this was not so.—J. JENNER WEIR (Chirbury, Beckenham, Kent).

[Our experience does not coincide with that of Mr. Weir. We have seen many white birds with pink irides, *e.g.*, Starling, Sparrow, Robin, Swallow, Jay, Lark, and others that we do not now remember. In the late Mr. Bond's collection were numerous albino birds which he had procured in the flesh, and to which, when preserved, he gave pink eyes, a course which, we feel sure, he would not have adopted if he had not been quite certain that they were pink in life. We do not regard the white fowls, ducks, and pigeons referred to by Mr. Weir as albinos, but as permanent white varieties—a very different thing.—ED.]

INSECTS.

The Diamond-back Moth.—According to a Yorkshire entomologist, Mr. J. E. Robson, the recent visitation of the Turnip Diamond-back Moth, *Plutella cruciferarum*, was of continental origin. The moths, the caterpillars from the eggs of which have done so much mischief, reached our shores, he maintains, on June 24th last. The data on which this conclusion is based are that for long previously to Midsummer Day easterly winds prevailed, and these would assist in bringing the moths across the sea; that it is hardly possible the moths would have hatched out in such prodigious numbers without farmers, gardeners, or entomologists having observed them in the larval stage; that they could not otherwise have appeared in swarms in such coast towns as Hartlepool, where there is no food for the larvæ; that the ravages have been chiefly along the east coast, or near thereto; and that on June 24th the moths appeared simultaneously in large numbers at many places along the coast. These points add considerable force to Lord Cathcart's suggestion at the recent council meeting of the Royal Agricultural Society, that inquiry should be made into the recent history of this moth in Holland and Belgium. Starlings, it appears, have proved invaluable in devouring the grubs in the turnip fields. There is, however, a possibility that the moths which have proceeded from the earliest-laid eggs will themselves soon commence oviposition, and thereby place the late turnips in jeopardy. Turnip-growers would be well-advised, therefore, to familiarise themselves with the methods of remedy that have been so extensively published, for they would then be prepared to check any future attack in its incipient stages. In 'The Field' of August 8th Mr. J. T. Carrington has an article on this insect, and the nature of its depredations, with illustrations of its various stages.

Insects injurious to Farm Crops.—A series of thirty coloured diagrams of insects injurious to farm crops has been prepared by Miss Ormerod for the Royal Agricultural Society of England. The diagrams are arranged in five sets of half a dozen each. Common insect attacks are illustrated by the Ox Warble Fly, Horse Bot Fly, Large White Butterfly, Cockchafer, Turnip Fly, and Onion Fly. Insects affecting various kinds of crops comprise Surface Caterpillars, Daddy Longlegs, Plant Bugs, Hessian Fly, Wireworm, and Eelworms (not insects). Insects affecting particular crops include Mangold Fly, Hop Aphis, Bean Beetle, Corn Thrips, Gout Fly, and Corn Sawfly. Insects attacking fruit crops embrace the American Blight, Gooseberry and Currant Sawfly, Apple-blossom Weevil, and the Codlin, Magpie, and Winter Moths. Insects injuriously affecting trees are illustrated by the Spruce-gall Aphis, the Goat Moth, the Leopard Moth, Pine Beetle, Pine Weevil, and Pine Sawfly. The diagrams are excellently adapted for the walls of village school-rooms, country museums, and farmers' clubs. Each series may be obtained separately through

Messrs. W. and A. K. Johnston, as can also the Royal Agricultural Society's coloured diagram of the potato disease. The technical education committees of County Councils and other bodies interested in agricultural instruction will render useful service by circulating these diagrams in rural districts.

ENTOMOLOGICAL SOCIETY OF LONDON.

August 5, 1891.—MR. FREDERICK DU CANE GODMAN, M.A., F.R.S., President, in the chair.

Mr. Arthur J. Chitty, of 33, Queen's Gate Gardens, S.W., and Captain E. G. Watson, of 5, Lypialt Terrace, Cheltenham, were elected Fellows.

The President announced the death of Mr. Ferdinand Grut, the Hon. Librarian of the Society, and commented on the valuable services which the deceased gentleman had rendered the Society for many years past.

Dr. D. Sharp exhibited *Japyx solifugus*, from the Eastern Pyrenees, and stated that in his opinion it was a connecting link between the *Thysanura* and *Dermaptera*. He also exhibited pupæ of *Dytiscus marginalis*; one of these was perfectly developed, with the exception that it retained the larval head: this was owing to the larva having received a slight injury to the head. Dr. Sharp also exhibited specimens of *Ophonus puncticollis* and allied species, and said that Thomson's characters of the three Swedish species, *O. puncticollis*, *O. brevicollis*, and *O. rectangulus*, applied well to our British examples, and separated them in a satisfactory manner. Thomson's nomenclature, however, would he thought prove untenable, as the distinguished Swede described our common *puncticollis* as a new species under the name of *rectangulus*.

Mr. F. W. Frohawk exhibited a bleached specimen of *Epinephele janira*, having the right fore wing of a creamy white, blending into pale smoky brown at the base; also a long and varied series of *Epinephele hyperanthus*, from the New Forest and Dorking. The specimens from the former locality were considerably darker and more strongly marked than those from the chalk. Amongst the specimens was a variety of the female with large lanceolate markings on the under side, taken in the New Forest in July, 1890, and a female from Dorking with large, clearly defined white-pupilled spots on the upper side. Mr. Frohawk further exhibited drawings of varieties of the pupæ of *E. hyperanthus*, and also a large specimen of a variety of the female of *Euchlœa cardamines*, bred from ova obtained in South Cork, with the hind wings of an ochreous-yellow colour. Coloured drawings illustrating the life-history of the specimen in all its stages were also exhibited.

Mons. Sergé Alphéraky communicated a paper entitled "On some cases of Dimorphism and Polymorphism among Palæarctic Lepidoptera."—H. Goss, *Hon. Sec.*

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THIRD SERIES.

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[No. 178.

RARE BRITISH BIRDS IN THE HUMBER DISTRICT.

BY JOHN CORDEAUX.

MOST of the species enumerated in the following list as having occurred in this district during the last ten years have already been recorded in print in 'The Ibis,' 'The Zoologist,' 'The Naturalist,' 'Migration Reports, 1879—88,' 'The Field,' and other journals, and some few so far only in manuscript. These are now collected and brought together for the first time, with the dates of occurrences, locality, references to published records, and, where possible, the name of the present owner, or the museum or private collection where the specimen is deposited.

WHITE'S THRUSH, *Turdus varius*, Pallas.—One, now in a small private collection of birds belonging to Mr. R. T. Burnham, of Rimswell, near Withernsea, was shot in that neighbourhood in November, 1881 (Zool. 1882, p. 174). A second was shot at Waplinton Manor, Pocklington, January, 1882 (Zool. 1882, p. 74; 'The Field,' 1882, p. 201). This last was in the possession of Mr. J. J. Leman, late M.P. for York, at the time of his death.

DESERT WHEATEAR, *Saxicola deserti*, Rüppell.—One, a female, shot between Easington and Kilnsea on Oct. 17th, 1885 (Zool. 1885, p. 479; Nat. 1884-5, p. 387). Is now in the collection of Mr. J. H. Gurney, of Keswick Hall, Norwich.

BLACK REDSTART, *Ruticilla titys* (Scop.).—The occurrences are numerous. It is a casual spring and autumn migrant; in the former season arriving, as a rule, earlier than the Common Redstart, and in the autumn about four weeks after the passage of the

ZOOLOGIST.—OCT. 1891.

same species. Considerable numbers are recorded as occurring at Flamborough on May 10th and 11th, 1891, with the Common Redstart (Nat. 1891, p. 182).

BLUETHROAT, *Cyanecula suecica* (Linn.).—Several occurrences. Spurn, Sept. 11th, 1882, two immature birds, one obtained (Mig. Rep. 1882, p. 31; Zool. 1884, p. 174). Spurn, 1883, one late in September, not obtained (Mig. Rep. 1883, p. 38). Spurn, 1884, Sept. 15th, two, adult and immature, one shot; 18th, three shot, adult and young; many seen (Mig. Rep. 1884, p. 44; Zool. 1884, p. 430). Spurn, Oct. 7th, 1885, two (Mig. Rep. 1885, p. 41). Spurn, 1886, Sept. 14th, one immature (Mig. Rep. 1886, p. 31). Examples probably occur every year in some part or other of the coast on migration in September with an east wind.

BARRED WARBLER, *Sylvia nisoria* (Bechst.).—An immature female in the collection of the Rev. H. H. Slater, of Irchester Vicarage, was obtained by himself at Spurn on Aug. 28th, 1884 (Zool. 1884, p. 489; Nat. 1884-5, p. 91).

FIRE-CRESTED WREN, *Regulus ignicapillus* (C. L. Brehm).—1889, on Nov. 4th, an adult male was killed by a boy with a stone at Easington, and is now in my possession (Nat. 1890, p. 11).

YELLOW-BROWED WARBLER, *Phylloscopus superciliosus* (J. F. Gmelin).—One was seen and watched for some time at early morning in October, 1889, in his garden at Mount Pleasant, Easington, by Mr. H. B. Hewetson, of Leeds; not obtained (Nat. 1890, p. 38).

ICTERINE WARBLER, *Hypolais icterina* (Vieill.).—May 28th, 1891, an adult male obtained at Easington (Zool. 1891, p. 308; Nat. 1891, p. 241). In the Science and Art Museum, Edinburgh.

BLACK-BELLIED DIPPER, *Cinclus melanogaster* (C. L. Brehm.).—One shot in the autumn, about 1884, in the marsh district below Louth, is in the collection of Mr. H. T. Wintringham, The Abbey, Grimsby (Nat. 1890, p. 8). Another shot on Oct. 24th, 1885, on the Humber embankment in Stallinborough parish (Mig. Rep. 1885, p. 40), is in the collection of Mr. R. W. Chase, Edgbaston Road, Birmingham.

RICHARD'S PIPIT, *Anthus richardi*, Vieill. — One seen by me near the Lincolnshire coast at Tetney, Oct. 12th, 1887, was not obtained (Mig. Rep. 1887, p. 40; Zool. 1888, p. 62).

RED-BREASTED FLYCATCHER, *Muscicapa parva*, Bechst.—1889, Oct. 23rd, an immature bird shot at Scarborough (Nat. 1890,

p. 14), is in the collection of Mr. J. H. Gurney, Keswick Hall, Norwich.

TWO-BARRED CROSSBILL, *Loxia bifasciata* (C. L. Brehm).—1889, Aug. 12th, one, an immature bird, shot near Easington. This was not preserved, but was subsequently identified from a wing by the Rev. H. H. Slater (Nat. 1889, p. 314). A very handsome adult male in my possession was shot at South Cockerington, near Louth, in the autumn of the same year (Nat. 1890, pp. 2—5). This is illustrated in Lord Lilford's 'Coloured Figures of the Birds of the British Islands,' part xix.

CIRL BUNTING, *Emberiza cirrus*, Linn.—1887, Jan. 5th, an adult male was seen by me in this parish, the black throat broken with grey; not obtained (Cordeaux MS.). 1889, Dec. 10th, Mr. G. H. Caton Haigh, when driving from Grainsby to Grimsby, saw one on a hedge-top (Haigh, *in litt.*). Both these are mid-winter occurrences.

ORTOLAN, *Emberiza hortulana*, Linn.—1883, May 3rd, one, an adult female, at Great Cotes (Zool. 1883, pp. 253-4; Mig. Rep. 1883, p. 44). 1889, Oct. 11th, an immature female shot by Mr. H. B. Hewetson in a stubble near Easington, and is in his collection (Nat. 1890, p. 8).

BRANDT'S SIBERIAN BUNTING, *Emberiza cioides*, Brandt.—One was caught alive in an easterly gale by a fisherman under the cliffs at Flamborough Head in November, 1886, and subsequently purchased from Mr. Matthew Bailey of that place in June, 1888, by Mr. R. W. Chase, of Birmingham, in whose collection it now is (Nat. 1889, pp. 79, 113, 334, 356). It is figured and described in 'The Ibis' for 1889, pp. 293—295.

RUSTIC BUNTING, *Emberiza rustica*, Pallas.—1881, Sept. 17th, one, a female, shot on the coast near Easington. This bird is now in the York Museum (Zool. 1881, p. 465; Mig. Rep. 1881, p. 25).

LAPLAND BUNTING, *Calcarius lapponicus* (Linn.).—1881, Dec. 27th, one shot at Tetney Lock (Mig. Rep. 1881, p. 25). 1884, Nov. 8th, an adult male near Grimsby; also a probable female in October of the same year (Zool. 1884, p. 484). 1890, Nov. 18th, a female in winter plumage, shot on the North Cotes sea-bank, and now in the collection of G. H. Caton Haigh, of Grainsby Hall (Zool. 1891, p. 217; Nat. 1891, p. 26).

EUROPEAN SHORE LARK, *Otocorys alpestris* (Linn.).—Must now be considered a fairly regular visitor to the east coast, and

often in very considerable numbers, arriving about the same time as the Snow Buntings.

SARDINIAN STARLING, *Sturnus unicolor*, de la Marmora.—In 1886, Mr. J. Backhouse recognised an apparently immature male of this species in a case of stuffed Starlings belonging to the collection of the York Blue Coat Boys' School, and his diagnosis of the species was subsequently verified by Mr. Dresser, who also saw the bird. A label found in the case stated, "Presd. by G. Wright, 31, Fossgate, 1840; Blk. Starling, shot nr. Howden" (Nat. 1886, p. 307).

ROSE-COLOURED STARLING, *Pastor roseus* (Linn.).—1884, Aug. 30th, an adult female shot near Spurn, and another reported to have been seen (Mig. Rep. 1884, p. 53).

NUTCRACKER, *Nucifraga caryocatactes* (Linn.).—1888, Nov. 6th, one shot at Marsh Chapel, a parish on the Lincolnshire coast, now in the collection of Mr. G. H. Caton Haigh, of Grainsby Hall (Zool. 1889, p. 153; Nat. 1889, p. 44).

INDIAN ROLLER, *Coracias indicus*, Linn.—1883, Oct. 27th, one shot at Muckton, near Louth, and erroneously recorded at the time as *Coracias garrulus*, Linn. (Zool. 1884, p. 185); subsequently, in September, 1890, when the bird was purchased by me, as *C. indicus* ('The Ibis,' 1891, pp. 147-8). Museum of Zoology, Cambridge.

EUROPEAN BEE-EATER, *Merops apiaster*, Linn.—1880, August 16th, one shot at Tetney Haven, now in collection of Mr. T. Marshall, High Wycombe, Bucks ('The Field,' Sept. 11th, 1880; Zool. 1880, p. 511).

TENGMALM'S OWL, *Nyctala tengmalmi* (Gmel.).—1880, Oct. 22nd, a fine adult bird killed on the sand-hills near Saltfleet Haven by Captain Pretzman, then resident with his father at Carlton, near Louth (Zool. 1880, p. 512). 1884, Oct. 18th, a fine adult at Holmpton in Holderness, formerly in Mr. Philip Loten's collection at Easington (Nat. 1884, p. 112). Between 1883 to 1885 three near Scarborough; dates unrecorded (Zool. 1886, p. 214).

LITTLE OWL, *Athene noctua* (Scop.).—1884, November, one, now in Mr. J. Whitaker's collection at Rainworth Lodge, taken on board a fishing-smack off Scarborough; and about six months later another was trapped near Seamer, four miles from Scarborough (Nat. 1885, p. 336).

EAGLE OWL, *Bubo ignavus*, Forst.—In the winter of 1879–80 one was seen at Easington, in Holderness, and remained all night in a tree in a cottage garden (Cordeaux MS.). Another, presumably of the same species, was observed on the sand-hills on several occasions in October, 1888 (Nat. 1889, p. 2).

GOLDEN EAGLE, *Aquila chrysaëtus* (Linn.).—One was shot by Mr. J. Coulthurst, then keeper to Sir R. Sheffield, in Normanby Park, on Nov. 1st, 1881, and is now in his possession at his farm, West Halton, near Doncaster (Cordeaux MS.).

WHITE-TAILED EAGLE, *Haliaëtus albicilla* (Linn.).—An immature female, now in the possession of Mr. J. C. Chubley, of Kilnsea, was shot by him at Spurn on Oct. 28th, 1889, and another seen at the same time (Nat. 1890, p. 10). A remarkably fine *adult* with a white tail was seen by Mr. Clubley, who attempted to stalk it, while it rested on a block of ice on the coast near Kilnsea, on Jan. 23rd, 1891 ('The Field,' Feb. 14th, 1891).

NIGHT HERON, *Nycticorax griseus* (Linn.).—One, an immature bird, shot near the entrance to Tetney Haven, on Nov. 26th, 1888 (Zool. 1889, p. 33; Nat. 1889, p. 3). In collection of Mr. G. H. Caton Haigh, of Grainsby Hall.

LITTLE BITTERN, *Ardetta minuta* (Linn.).—1881, Sept. 23rd, a young male shot at Goole, in collection of Mr. W. Eagle Clarke (Zool. 1884, p. 177; Nat. 1881, p. 66; Mig. Rep. 1881, p. 29).

WHITE STORK, *Ciconia alba*, Bechst.—One, a mature bird in good condition of plumage, was found, on April 8th, 1888, floating dead at sea off Scarborough (Zool. 1888, p. 269; Nat. 1888, p. 169). On Aug. 2nd, 1890, a Stork was basely shot from a chimney-top at Mappleton, near Hornsea ('The Field,' Aug. 9th, 1890).

GLOSSY IBIS, *Plegadis falcinellus* (Linn.).—1881, an immature bird shot at Skegness on Sept. 9th, and another on the 27th (Mig. Rep. 1881, p. 29; Zool. 1882, p. 22).

SNOW GOOSE, *Chen hyperboreus* (Pallas).—Three undoubted examples were seen in flight near Beverley in January, 1891 ('The Field,' Jan. 24th, and Feb. 7th, 1891).

EASTERN TURTLE DOVE, *Turtur orientalis*.—1890, Oct. 23rd, one, in first year's plumage, captured near Scarborough by a local gunner (Nat. 1890, p. 258). Presented by Mr. J. Backhouse to the York Museum.

BAILLON'S CRAKE, *Porzana bailloni* (Vieillot). — One, a male, in the collection of the Rev. H. H. Slater, was shot at Holmpton, in Holderness, in September, 1880 (Zool. 1884, p. 179), (Slater MS.).

KENTISH PLOVER, *Ægialitis cantiana* (Lath.).—1881, Oct. 8th, one, in immature plumage, shot on Lincolnshire coast (Zool. 1882, p. 74).

RED-BREASTED SNIBE, *Macrorhamphus griseus* (J. F. Gmelin). —An adult in an advanced state of moult, changing from the Knot-like plumage of summer to the grey of winter, was shot near Tetney Haven on Aug. 15th, 1882 (Zool. 1882, p. 392). It was sent by me at the time to the Museum of Zoology, Cambridge, but was found to be too far gone for preservation.

PECTORAL SANDPIPER, *Tringa maculata*, Vieillot. — An adult male, shot on the Holderness coast, near Kilnsea, on Oct. 2nd, 1888, by Mr. T. W. Pool, of 3, Park Street, Hull (Nat. 1888, p. 354; 1889, p. 1), is illustrated in Lord Lilford's 'Coloured Figures of the Birds of the British Islands,' part xiv.

TEMMINCK'S STINT, *Tringa temminckii*, Leislar. — One killed against telegraph-wire near Lincoln, spring of 1884 (Nat. 1884-5, p. 32). Three seen, one shot, Spurn, Sept. 15th, 1887 (Mig. Rep. 1887, p. 32). Is probably of more frequent occurrence on the east coast in the autumn than is generally supposed, and is overlooked. May be readily recognised by its peculiar call-note when once learnt.

SPOTTED REDSHANK, *Totanus fuscus* (Linn.). — Many occurrences; it is not unfrequently met with on the coast in September, October, and early in November. Must be considered a regular immigrant in the autumn, in limited numbers.

SABINE'S GULL, *Xema sabinii* (Joseph Sabine). — September, 1889, one shot off Flamborough Head (Nat. 1889, p. 333). 1890, Sept. 9th, two shot off Flamborough; Sept. 15th, two (Nat. 1890, p. 318). One also Oct. 7th, and another Oct. 13th (Nat. 1890, p. 354). Of the 1890 birds, one adult and one in first plumage are in the museum, York.

IVORY GULL, *Pagophila eburnea* (Phipps).—1883, March 29th, 30th, 31st, an adult seen on the coast between Grimsby Fish Dock and Cleethorpes on each of these days by Mr. T. Fisher, of Greenwich (Zool. 1883, p. 258).

EARED GREBE, *Podiceps nigricollis*, C. L. Brehm. — 1882, autumn, three near Lincoln (W. Barber), ('Stamford Mercury,')

Jan. 26th, 1883). 1887, Sept. 3rd, an immature male shot at Spurn by Mr. W. Eagle Clarke (Mig. Rep. 1887, p. 30). 1889, Dec. 16th, one, a female, at sea off Scarborough (Zool. 1890, p. 77).

AN IMMIGRATION OF HAWFINCHES.

BY O. V. APLIN, M.B.O.U.

DURING the moderately open winter of 1889—90, Hawfinches were unusually abundant in Oxfordshire, and attracted the attention of many people. There can indeed be little doubt that a considerable immigration of Hawfinches to this district took place some time at the end of 1889; and, although I have seen little or no notice taken of a similar abundance in other counties, it seems highly probable that the movement was not merely a local and internal one, but that the birds came from abroad.

Although we do not often hear much about visitations of this species (at all events since the Hawfinch has become so much more abundant as a resident than it used to be), the fact is mentioned in Professor Newton's 'Yarrell,' thus, "for it would seem that it occasionally migrates to this country in considerable flocks" (vol. ii. p. 101). The Hawfinch figures in the East Coast of England Migration Reports for three successive years, at the Inner Dowsing light-vessel. The dates were:—1882, October 20th, two; 1883, November 2nd,* one (at Heligoland, October 31st and November 1st, many); 1884, October 22nd, one, came on board and then flew west. At Heligoland, according to Mr. Gätke, the Hawfinch is a well-known visitor in spring and autumn; "always some, but no numbers" (Migration Report, 1882).

Hawfinches have visited Oxfordshire in exceptional numbers in other winters. In that of 1878—9, when this bird was still considered very rare as a resident, a few specimens were procured, and others were observed. In 1880—81 they were much more numerous, and about twenty were taken to the Banbury bird-stuffers, most of them having been picked up in a starved condition. One peculiarity is, in my experience, common to almost all, if not all, the males killed here in those winters in

* The birds procured in 1882 and 1883 proved to be Bramblings. Migr. Rep. 1885, p. 45, note.—Ed.

which this species has been more abundant than usual, *viz.*, they are very brightly coloured in comparison with those individuals which breed with us. And I think this fact can only point to their foreign origin. It is worth while considering where these immigrants may come from.

The range of the Hawfinch, according to Prof. Newton's edition of 'Yarrell,' is shortly as follows:— Found occasionally in the extreme south of Norway; in Sweden it extends further north (Mr. Howard Saunders says that it is only a winter visitor even to South Scandinavia). Still rarer in Finland. In Russia, not generally north of 60° (but Mr. Harvie Brown informed Prof. Newton that an example had been obtained at Archangel); more common in the south. Throughout Middle and South Siberia. In Mongolia rather numerous, and said to be of double passage. In China it ranges from Peking to Shanghai, and occurs in Japan; examples from this locality have been described as a variety *C. vulgaris japonicus*, but are said by Mr. Dresser to be matched by those from Spain and Italy. Not yet in India (in the north-west of which country Mr. H. Saunders says the paler *C. humii* occurs), but found, though rarely, in Persia. Resident in Asia Minor. Met with once in Palestine and occasionally strays to Egypt, where a single example is said to have been procured. More frequent in Algeria. Scarce in Morocco. Throughout Europe, the northern parts excepted as above mentioned, but local. It is generally a resident as to the adults, but the young of the year wander in autumn.

There is a note in the 4th edition of 'Yarrell' to the effect that Mr. Dresser states that the Hawfinches from Northern Europe are duller than those from more southern countries, but that natives of our islands are perhaps the dullest of all, though sometimes a British example may be found as richly coloured as any from Southern Europe. I take it that these exceptional birds were migrants. As our winter birds are brighter than the breeding resident examples, the former *may* of course come from Northern Europe, or from more southern countries. That might perhaps be decided by actual comparison. We should not, however, expect an immigration of birds either from Spain or Italy in winter, and, granting that the birds procured with us in some seasons are too bright to have emanated from Northern Europe, we must look eastward for their home.

Looking at the range of the Hawfinch as here sketched out, some part of Eastern Europe indeed at once suggests itself as the probable starting-point of these uncertain and irregular migratory flocks. From the existence (according to Mr. H. Saunders) in East Siberia, North China and Japan, of the brilliantly-coloured *C. vulgaris japonicus* (said by Mr. Dresser to be matched by specimens from Spain and Italy), we should naturally expect the Hawfinch of Eastern Europe to be tolerably brightly coloured, and we should in this way account for the presence in England, during the winter months, of Hawfinches more brilliantly-coloured than we might reasonably expect migratory individuals from Northern Europe to be.

The immigrants now under consideration apparently reached Oxfordshire at the end of November, although more birds were seen at the end of winter and in early spring than in autumn. On December 1st I had news of a pair seen in a garden at Kingham, and on the 5th a pair were seen at Bodicote pecking about under yew trees; the latter pair were seen on several subsequent occasions, once twisting about the outside of the yew branches and probably picking off the shrivelled berries. I examined two bright males and a female, which were shot at Shenington on the 12th; another was shot and others seen about the same time. About the 15th a party of five (two of which were much brighter in plumage than the others) were observed at Sarsden; these roosted at night in high laurels. A male was shot at Surrford on January 2nd, and on the 16th I received a female from Shenington. The crop and stomach of this bird were full of what I have not the least doubt were grains of wheat bitten in pieces. On the 23rd I had news from an Oxford bird-stuffer that he had recently had several; two of them were from Garsington, and he had heard of others in different parts. A pair were also seen on two occasions in January in a garden at Drayton. On the 11th of February a Banbury stuffer told me that he had received thirteen up to that date. These included three from Shenington mentioned above; the others came from Hook Norton, Wardington, Williamsote and Broughton. I saw several of these in his shop. About this date I heard that a Newbury (Berks) bird-stuffer had had several recently. I saw another bright male which had been shot at Hook Norton that month, and on the 10th had examined in the flesh the best male bird I ever saw; the

bay on the head and tail coverts so brilliant, the grey of the nape so pure, and the steel blue or purple and white of the wings so intense and pure; a lovely "blossom pink," as Mëyer call it, on the breast. Two were shot at Sibford that month, on the 8th and 12th respectively. On the 21st a hen bird was seen feeding on haws in a bush at Milcombe. On the 28th I heard that many frequented the grounds at Williamsote. A pair were seen on the 25th, apparently feeding on the berries of an Irish juniper, but generally they were seen in holly trees, on which there were still plenty of berries. A male was picked up dead on the 25th, having evidently flown against a greenhouse. At the end of the month one was shot at Handborough, and three others were reported as daily visiting a garden there about the third week in March ('Oxford Times'). The same newspaper (March 31st) contained a note to the effect that about a dozen had been observed feeding on holly berries in the grounds of the County Asylum at Littlemore. The observer had seen none there before, and stated that only two were males. Some of them were easily trapped, and were tame in a cage. They fought a good deal among themselves when at liberty, and a caged female killed a male Chaffinch. Two shot at Witney, and three seen at the Mount, Oxford, were also reported in the 'Oxford Times' about this date; also one seen in the "Parks," Oxford, in March. A male and two females were observed at Williamsote on the 1st of March; and on the 28th a pair were seen at Bodicote.

About the 2nd of April a Hawfinch was shot at Adderbury. They still frequented the grounds at Williamsote in the middle of that month; five were seen on the 14th; and the next day two males were fighting in the garden. About this time, or rather earlier, a number came every morning to feed in and under a remarkably prolific holly tree (still bearing a quantity of berries) in Bloxham. Eight were counted on the 15th, and a few were seen the next day. They were observed to fight very much among themselves. Where they passed the day was not discovered, for they always departed about nine o'clock, when the men came about the garden again from breakfast.

After this date I heard no more of the Hawfinch, and I believe that the greater part of them at all events left the district.

So far from the birds being found breeding with us in larger numbers than usual during the summer of 1890, the only nest I

heard of in the county was taken at Sarsden in June. A Hawfinch, seen between Woodstock and Glympton on the 1st of June, was also doubtless breeding.

Hawfinches seem to have been as scarce with us during the past winter (1890—91) as they were numerous the season before. I did not see a single specimen at the bird-stuffers, and did not hear of any being seen in the county until March 11th, when I was asked to name a bird which had flown against a window in Banbury, and had been picked up in a half-stunned condition. This was a fine male, which had fully assumed the blue bill of spring.

The Hawfinch seems rather given to flying against glass; another instance has been already noted above; and I examined a male which had flown against a window at Broughton on the 7th of May, 1889.

The males which I examined in the flesh during the immigration had the legs and feet pale flesh colour, with a shade of brown; the legs of a female bird I noted as very pale brown with a strong pink tinge, *i. e.*, a little browner than those of the males.

It is worth recording that in 1889 there was a very small crop of fruit on the hawthorns, although the hollies were tolerably well furnished. On the other hand 1890 was a great berry year, and the oaks, beech, and alders, carried a good crop, although apples and stone fruits were scarce.

WINTER NOTES FROM CORSICA.

BY JAMES BACKHOUSE.

DURING a few weeks spent last winter in the island of Corsica, it was my endeavour, as far as possible, to give to the birds of that charming little country special attention, both in the field and by the daily examination of the Ajaccio market.

The severity of the past winter on the Continent will long be remembered with a shudder in the south as well as in the more northerly countries: such intense cold in the Italian Riviera that the oranges fell off the trees by scores and hundreds, and the palm trees and eucalyptus drooped their leaves as though

scorched; while many a fair Italian town was subjected to a heavy fall of snow. While so severe a winter might naturally have been expected to drive into such a (comparatively) warm country as Corsica many a rare bird unknown there before, yet in the neighbourhood of Ajaccio nothing of very special interest appeared to our knowledge, nor yet on the eastern coast. A careful study nevertheless of the true winter avifauna of the regions visited gave some interesting and useful results.

It was not a little instructive to watch the Ajaccio market week after week, the daily round becoming more and more fascinating, according to one's familiarity with the stock-in-trade of each stall-holder. In all some eighty species were clearly identified by us, either in the markets, by the aid of the gun, or telescope; while several others are better left without comment, because, not being perfectly identified, they can in no way add to the value of this paper. In the low country bordering the sea on the western coast, it was almost impossible to walk a mile without being struck by the extraordinary abundance of small birds, and some wonderful figures were reported to us respecting the quantity of Blackbirds and Thrushes exported from the island, principally to France, during a single season.

Owing to lack of opportunity, no Gulls could be clearly identified, either on the east or west coasts, except the Black-headed Gull, *L. ridibundus*, though some Herring Gulls about the harbour of Ajaccio were presumably referable to the yellow-legged form (*L. cachinnans*, Pall.).

In the high pine-forests, the snow was too deep to admit of much good work. The majority of our field observations therefore were confined to such birds as could be observed in the proximity of the towns or villages, or on the lower hills bordering the Mediterranean.

Turdus viscivorus, Linn., *T. musicus*, Linn. — Exceedingly common. Numbers sold in the markets for food.

T. iliacus, Linn.—Not so common, but often noted.

T. merula, Linn.—Everywhere in the low country in vast numbers, and also common in the more mountainous districts.

Monticola cyanus (Linn.).—Difficult to obtain a sight of alive, but commonly brought into the markets.

Pratincola rubicola (Linn.).—Everywhere abundant.

Ruticilla titys (Scop.).—A few pairs observed near Ajaccio.

Erithacus rubecula (Linn.).—Very abundant.

Sylvia melanocephala (Gmel.).—One of the commonest warblers from sea-level up to 4000 ft. elevation.

S. atricapilla (Linn.).—Decidedly the most abundant Warbler met with. The numbers in some places very great.

Melizophilus undatus (Bodd.).—A few pairs only met with. Of *M. sardus* we saw nothing, but may have overlooked it.

Regulus cristatus, Koch., *R. ignicapillus* (C. L. Brehm).—Although *R. ignicapillus* abounded, the Goldcrest was decidedly a scarce bird in the district visited by us.

Phylloscopus collybita (Vieill.).—On nearly every manure-heap in the vicinity of Ajaccio one or two of these small Warblers might any day be observed, sometimes three or four together.

? *Acrocephalus streperus* (Vieill.).—A bird shot at, but unfortunately not found in a thick reed-bed at the head of the Gulf of Ajaccio, was apparently of this species. Two or three other marsh-loving species were also evidently near by the notes, but so dense were the reeds that a passing glimpse even was denied us.

Cettia cetti (Marm.).—Both in the Campo dell Oro, and also in a marsh not far from Alata, this bird was met with: very abundant in the former locality. Mr. Whitehead records the Fan-tailed Warbler ('Ibis,' January, 1885, p. 35) as "common and resident in all swamps." Somehow we missed it altogether, or possibly heard the note once or twice in the Campo dell Oro. (In a salt-marsh near to Hyères this bird was apparently abundant, and one was shot by me).

Accentor modularis (Linn.).—Often heard singing round Ajaccio.

Acredula irbii (S. & D.).—Out of a large party of Long-tails in the neighbourhood of Alata, two or three shot were referable to this species; the grey scapulars being very conspicuous.

Parus major, Linn.—This species was often to be seen on newly-ploughed land, feeding along with Wagtails and Pipits. One shot for identification being considerably under the usual size, I here give the exact measurement:—Length, 5·3 in.; culmen, 0·5 in.; wing, 2·75 in.; tail, 2·4 in.; tarsus, 0·7 in. Legs and feet lavender when killed.

P. ater, Linn.—Met with once only on Monte d'Oro.

P. cæruleus, Linn.—Not uncommon.

Certhia familiaris, Linn.—Common in the chestnut woods.

Troglodytes parvulus, Koch.—Quite abundant; observed even up to about 4000 ft. elevation. Also in the marshes.

Motacilla alba, Linn., *M. melanope*, Pall. — Both exceedingly common, but the former perhaps the more so of the two.

Anthus pratensis (Linn.).—In company with the two last-named species, seen on the ploughed land. One shot for identification was undoubtedly of this species, though rather brightly coloured.

? *A. spipoletta* (Linn.).—Mr. Crosfield, my companion in Corsica, a most careful observer, noticed a bird probably referable to this species. The bird was quite close to him in the forest of Vizzavona; elevation above sea-level about 5000 ft.

Cotile rupestris (Scop.).—In the neighbourhood of Ajaccio, more especially towards “les Iles Sanguinaires,” they might be observed in considerable numbers. Seen and shot in the Campo dell Oro.

Carduelis elegans, Steph., *Chrysomitris citrinella* (Linn.), *Serinus hortulanus*, Koch.—All fairly abundant, the Serin, however, less so than the rest. A large flock, mainly composed of Citrils was seen near to Bocognano, by the Gravona river, at some 4000 ft. elevation, on December 30th.

Ligurinus chloris (Linn.).—Not uncommon in the low country.

Coccothraustes vulgaris, Pall. — Often brought into Ajaccio market, but never noted alive by us.

Passer italiae (Vieill.).—Exceedingly common in the towns, but apparently scarce elsewhere.

Fringilla cælebs, Linn.—Ubiquitous.

Linota cannabina (Linn.). — Often seen near Ajaccio, but apparently not specially common.

Emberiza cirrus, Linn.—By no means uncommon; we looked in vain, however, for *E. citrinella*.

Alauda arvensis, Linn., *A. arborea*, Linn. — Both very abundant. The latter might be seen in small parties on waste ground on the lower hills. The *calandra* we never met with, even in the markets. As Mr. Whitehead makes no mention of it in his paper, it is perhaps fair to assume that the bird is not a Corsican species.

Sturnus vulgaris, Linn.—Once only met with in Ajaccio market.

Garrulus glandarius (Linn.). — Apparently not specially common. Occasionally brought to Ajaccio market. One example brought there on January 11th, a male, proved to be a peculiar variety. The general tint of the plumage is much greyer than in the ordinary form of the Jay, and the black streaks upon the head bolder. Examined for me by Mr. Seebohm, it appears to be very like certain specimens in Lord Lilford's collection, collected near Archangel, and resembles one from Turkey in Mr. Dresser's collection, and another from Greece still more so. Although possibly quite as worthy of even specific rank as some other birds which are allowed it, more specimens must be obtained, if possible, from Corsica to prove this Jay as a constant race.

Corvus corone, Linn., *C. cornix*, Linn. — Met with in the vicinity of Ajaccio. [The Magpie apparently does not frequent the island at all, though it is found both in Italy and in Spain commonly. We enquired of local chasseurs, but it was unknown to them.]

C. corax, Linn.—A few pairs observed among the mountains.

Picus major, Linn. — One seen by Mr. Crosfield in the forest of Vizzavona.

Jynx torquilla, Linn.—Very often brought into Ajaccio market. We never saw it alive.

Alcedo ispida, Linn. — One only met with; in the Campo dell Oro on Jan. 2nd.

Circus ?.—One or two large hawks were seen, which were apparently Harriers, but the species was not identified.

Buteo vulgaris, Leach.—Decidedly a common bird in Corsica.

Accipiter nisus (Linn.).—By no means common.

Milvus iclinus, Savigny.—Often seen near the Gulf of Ajaccio, sometimes quite near Ajaccio itself.

Falco tinnunculus, Linn. — Exceedingly common bird in the low country. Once a bird was sighted at Bocognano, which was apparently a Merlin, and some small Falcons seen in the neighbourhood of Ajaccio two or three times over appeared from the description given of them most like *F. vespertinus*.

Pandion haliaetus (Linn.). — One pair at least of Ospreys frequented the Gulf of Ajaccio, their resting-place (and doubtless, later on, their nesting-place) being an isolated rock protruding from the gulf some 200 or 300 yards from the shore.

Phalacrocorax. — Cormorants were not unfrequently noticed by us in the distance flying over the Gulf of Ajaccio, which, to judge from size, were probably *P. carbo* (Linn.).

Ardea cinerea, Linn. — Once noted, but apparently not common.

Anas boscas, Linn., *A. crecca*, Linn. — Both common in the marshes. Teal were often brought into the markets.

A. penelope, Linn. — Noted occasionally in Ajaccio market.

Fuligula cristata (Leach). — Several in Bastia market (January 18th).

Mergus serrator, Linn. — Once seen near the shore between Ajaccio and les Iles Sanguinaires.

Columba palumbus, Linn., *C. livia*, Bonnat. — Both brought into Ajaccio market.

Caccabis rufa (Linn.), *Coturnix communis*, Bonnat. — Fair numbers brought into the markets, especially of the latter, of which we noticed some exceedingly fine specimens. The oldest birds seemed decidedly darker in plumage than immature examples.

Rallus aquaticus, Linn. — Very frequent in the markets, and one or two specimens seen were exceedingly large. A female which we bought, however, proved, if anything, below the average size.

Gallinula chloropus (Linn.), *Fulica atra*, Linn. — Observed in the markets. The latter only at Bastia.

Vanellus vulgaris, Bechst. — Seen in flocks near the mouth of the Gravona river.

Scolopax rusticola, Linn. — Ajaccio market. Not abundant.

Gallinago caelestis, Frenz. — Very numerous in the marshes.

G. gallinula (Linn.). — Once brought into the market at Ajaccio.

Sterna fluviatilis, Naum. — Noted in the Gulf of Ajaccio, and shot there.

Larus ridibundus, Linn. — Common.

Puffinus anglorum (Temm.). — This bird was quite numerous in the Gulf of Ajaccio, and was sometimes brought into the market, presumably to be eaten!

Alca torda, Linn. — Abundant in the gulf.

Podiceps fluviatilis (Tunst.). — Once noted in the Campo dell Oro.

NOTES ON THE BIRDS OF DONEGAL.

BY HENRY CHICHESTER HART, B.A., F.L.S.

(Continued from p. 338.)

*RAVEN, *Corvus corax*, Linn.—Breeds and resides in two places in Fanet. Not uncommon in Donegal, and to be met with in the wilder districts, as at Muckish, Slieve Snacht, Lough Salt, &c., inland; and Horn Head, Aranmore, Burton Port, Dunaff Head, &c., along the coast. The Raven is strongly dominant, and by no means decreasing in Donegal. It is commoner in the north than in the south-west. Ravens breed on Aranmore Island, and on Rathlin O'Beirne Island (Reports on Migration 1883, 1887).

*HOODED CROW, *C. cornix*, Linn.—Common, and breeding in many places along the sea-cliffs, as on Tory Island, Knockalla, Carrablagh, Erris, &c. Abundant along the Fanet shore district in autumn, more scattered in winter. The Grey Crow beats away the Kestrel and the Chough from the cliffs it frequents. Both the last-named have been banished from breeding-places at Carrablagh by this bird.

*ROOK, *C. frugilegus*, Linn.—Abundant at every season in Donegal, where there are numerous rookeries of all sizes; sometimes, in the wild districts, occurring in the most trifling and exposed plantations. "During the hard winter I have alluded to (1880-81), I on several occasions saw Rooks eating dead birds, which was a revelation to me. Mr. Murray Stewart's gamekeeper assures me that they suck the grouse-eggs on the mountain adjoining Wood Hill, Ardara, where there is a rookery" (A. B.). Can it be possible that there are any Carrion Crows (*Corvus corone*) about Killybegs?

*MAGPIE, *Pica caudata*, Fleming.—Common and resident in Fanet and elsewhere, usually breeding, if permitted to do so, near dwelling-places. A buff-coloured variety frequented Kilma-crennan in the year 1878.

*JACKDAW, *Corvus monedula*, Linn.—Resident, but not very numerous, in Fanet, except about its breeding haunts. These are situated in holes in grassy or ivy-clad cliffs above the sea, excepting in a few instances where ruins occur. The sea-cliffs are preferred always, if they are to be had, and several of these are inhabited by Jackdaws along the shores of Lough Swilly, as well as elsewhere on the Donegal seaboard.

HOOPOE, *Upupa epops*, Linn.—About the year 1867, as I hear from Mr. Arthur Brooke, Mr. Hamilton, of Fintra, obtained a Hoopoe near Killybegs, and had it preserved.

*CUCKOO, *Cuculus canorus*, Linn.—Arrives in Fanet very numerous about the third week of April, remaining at first about the low-lying moors and hill-side pastures frequented by Titlarks. The country people regard them here as vermin, egg-suckers, and destroyers of young birds. Mr. Brooke saw one on April 11th, 1890, at Killybegs. They are very numerous in his neighbourhood.

KINGFISHER, *Alcedo ispida*, Linn.—Very rare. A Kingfisher frequented Ray Bridge, near Rathmullan, on the shores of Lough Swilly, in the winter and spring of 1881. "A rare bird in West Donegal. I have seen one on the river Finn at Stranorlar, and have been told that a pair frequent the river at Bruckless" (A. B.). Kingfishers are occasionally seen on the Erne near Ballyshannon. One was seen in 1885.

*SWALLOW, *Hirundo rustica*, Linn.—Common in summer. Arrives about the third week of April at Glenalla. Some Swallows nest in caves at Carrablagh.

*MARTIN, *H. urbica*, Linn.—Common along the cliffs of Lough Swilly in summer, and elsewhere in the county. At the seaside Martins seem to prefer cliffs to dwelling-houses. They invariably breed in caves below Carrablagh, but never elsewhere. "Builds under eaves of houses at Killybegs. Saw the first on June 7th, 1890" (A. B.).

SAND MARTIN, *Cotile riparia*, Linn.—I cannot at present recollect a breeding-haunt of the Sand Martin anywhere in this district. But I have met with these birds in the Finn Valley along the banks of the river near Stranorlar. Mr. Brooke also notes their rarity in West Donegal. In July, 1891, I saw a pair of Sand Martins near Killybegs.

*SWIFT, *Cypselus apus*, Linn.—Locally common. I have observed Swifts hawking flies from one summit to the other of Lough Salt mountain in some numbers. But this is probably not a breeding station. Swifts are common about the larger towns, and visit Milford, Ramelton, and other villages. Mr. Brooke reports them plentiful at Killybegs in the breeding season, the first one arrived May 19th, 1890. The Swift has been noticed on Innistrathull from May to June by the light-keeper (Report on

Migration of Irish Birds, 1887). In July, 1891, I noticed Swifts about the summits of the Bluestack Mountains and Slieve League. I also saw them in similar situations on Innishowen on the east side of the county. A pair visited a cave this year below my house on Lough Swilly as if to look for a breeding place. Possibly next year they may nest therein company with the Martins.

*NIGHTJAR, *Caprimulgus europæus*, Linn.—Very rare in Donegal. Mr. Leake, formerly of Greencastle, in Innishowen, heard one at that place about ten years ago. The Nightjar breeds at Lough Eske, near the town of Donegal, and its eggs have been taken (A. Brooke). On Aug. 17th, 1888, I heard a Nightjar at Fahan on the east (Innishowen) side of Lough Swilly. Mr. Brooke has known Nightjars to breed for three years at Lough Eske.

*WOOD PIGEON, *Columba palumbus*, Linn.—Common and resident.

*ROCK PIGEON, *C. livia*, Temminck.—Resident and abundant. They consort with domesticated pigeons occasionally, the latter having become feral. In winter I have seen the two feeding and flying together, and one or two irregularly marked birds frequent caves at Carrablagh in company with the Rock Pigeon.

*PHEASANT, *Phasianus colchicus*, Linn.—Resident where protected.

*RED GROUSE, *Tetrao scoticus*, Latham.—Resident, and would doubtless be numerous, if generally preserved. Mr. Brooke shot one, weighing 29 oz., near Killybegs.

[PTARMIGAN, *T. lagopus*.—These birds have been turned out more than once in Donegal, in the hope of acclimatizing them. Some ten or fifteen birds were tried not many years ago in Innishowen, but they soon disappeared. The mountains are not stony enough. Similarly the Black Cock has been tried, it is said in Antrim, but never with any success.]

*PARTRIDGE, *Perdix cinerea*, Latham.—Resident, but nowhere abundant. In Fanet Partridges were much more plentiful twenty years ago than they are now. The same remark applies to many other parts of the county. Partridges prefer potato-fields to turnips in this county: a favourite food of theirs is the Persicary (*Polygonum persicaria*), which is here usually met with in the potato crops.

QUAIL, *Coturnix vulgaris*, Fleming.—I have never met with

a Quail in Donegal. Mr. Brooke shot one at St. John's Point in 1873, the only one he ever heard of in Donegal. (But see Thompson, 'Birds of Ireland.')

PALLAS'S SAND GROUSE, *Syrrhaptes paradoxus*, Pallas.—A number of these birds visited Donegal in June, 1863. About Dawross and Naran, and at Glenties, several were shot. Two years later, Lord Francis Cunningham showed me stuffed specimens which had been shot out of this flock. Another specimen is in the National Museum. A still larger flight occurred in the spring of 1888 from north to south of Ireland. An account of this was given by Dr. Scharff in the 'Proceedings of the Royal Dublin Society,' vol. vi. p. 278.

(To be continued.)

ON THE HERPETOLOGY OF THE GRAND DUCHY OF BADEN.

By G. NORMAN DOUGLASS.

(Continued from p. 341.)

II. Fam. COLUBRIDÆ (*continued*).

As regards the wider distribution of *Elaphis flavescens*, Schlangenbad (whence the name) is the classical locality in Germany. It was discovered here in 1817 by v. Heyden, and is very numerous, a considerable trade being carried on by the country people in supplying this snake to visitors. In the valley of the Moselle its occurrence is well-nigh proved; it also follows the Danube as far north as Passau, though there is no notice of its existence there since 1865. Reports of its capture in other parts of Germany have proved to refer to escaped specimens, or are due to errors of identification.

It was the opinion of v. Heyden that the Æsculap Snake had been imported by the Romans to their thermal stations; at the same time, on this assumption, its absence in similar localities remains unexplained. There is further a note* to the effect that some semi-fossilised vertebræ of a snake, found in Franconia, have been attributed by Prof. Nehring to this species, which would imply its former more extensive range.

* Leydig, 'Thiere des Rhön,' &c., p. 114.

This snake varies individually in temperament, some being unusually pacific, while others are unruly and boisterous. The same might be said of *Coronella austriaca*, *Zamenis viridiflavus*, and many others, including *Pelias berus*, which, according to several writers, is occasionally of very complacent disposition. Amongst lizards a similar diversity prevails: Bell "could not induce" *L. viridis* to bite his hand, whereas other individuals of this lizard are most violent and irritable without any apparent cause; *L. muralis* also often refuses to give vent to those outbursts of passion to which it is so prone. Such traits are all exemplifications of the common phenomenon of individual variation in characters other than purely external, a symptom of peculiar interest from an evolutionist's point of view. All observers, studying one particular species, lay stress on the distinct natures and idiosyncrasies of separate individuals, pointing out differences which would remain unnoticed by the uninitiated. Instances might be multiplied to show that even with reptiles and amphibians, within their less complex sphere of action and passion, these are so considerable that "*quot homines, tot sententiæ*" might almost with equal justice be applied to them. The many records of strange fancies,* of curious sympathies and antipathies, of individual differences in intelligence, demeanour, choice of food, &c., are noteworthy as demonstrating the plasticity of the mental nature which is often, no doubt, severely put to the test.

Similarly, the nervous susceptibility appears subject to an equal variability. This is admirably illustrated in the case of *Hyla arborea*, some individuals of which are more liable to sudden changes of colouring than others. A singular and somewhat analogous instance with *Rana arvalis* is given by Leydig.† Every one who has kept numbers of a species under confinement has observed that the single individuals differ in their powers of enduring cold, heat, &c.

It deserves notice, too, that the locality seems in some degree, as with many higher animals, to influence the psychological constitution. Thus, according to Selys-Longchamps, the

* I will only quote the enormity of *Rana esculenta*, which was observed by a writer in the 'Vienna Ornith. Journal' (Jan., 1887) to seize a swallow resting near the water's edge, and to disappear with its victim into the deep.

† 'Zool. Anzeiger,' 1885, p. 756.

northern *Lacerta muralis* is less susceptible to the sound of music than the Italian race—a statement which I can bear out; the Sardinian Tree-frog is credited by another writer with a more “angry, passionate disposition” than the ordinary form, &c.

All such observations would be comparatively valueless were it not for the fact that definite tendencies, or directions of variation in habits and temperament, are characteristic of certain species. For the effects would otherwise, as with variability in size, or structure, or colour, be “swamped” or neutralised. As it is, we can understand how, under circumstances perpetually changing from an economical and physical point of view, a differentiation in habits may often prove beneficial, if not essential, to the welfare of some members of a community; and this, in its turn, may entail a modification of parts sufficient to warrant the creation of a ‘Nova species.’

5. *Coronella austriaca*, Laur.—The Smooth Snake is not found, I believe, in the actual Rhine-valley, but is sufficiently common on the hills, chiefly in old disused sandstone quarries. Five or six can be obtained in an afternoon without much trouble.

The extreme length of 80 centimètres, often cited, seems a trifle exaggerated, as the Baden specimens, which are by far the largest I have seen, seldom exceed 65 cm. The parallel rows of spots on the back are preserved intact only by the young; whereas with increasing age they tend to coalesce into longitudinal bars, or to form a cross-striped figure, though neither of these patterns are very marked. At other times they become indistinct, in which case the two lateral lines are the first to fade, leaving often only the dark streak through the eye as vestiges. The markings always remain most pronounced in the anterior portions, and the head generally retains to the last the three characteristic transverse stripes. The lower surfaces are reddish with the young, as with English specimens, and darken gradually to a uniform brown with opalescent lustre. The throat remains throughout of a lighter tint. Along the edge of the ventral plates two scarcely perceptible lines of lighter colouring may sometimes, as with *Elaphis flavescens*, be seen.

According to Prof. Nüsslin, a bicephalous individual of this species was caught in 1881 not far from Karlsruhe, and kept alive for some time. This peculiarity does not seem to be as

rare as might be supposed. De Betta records other instances with lizards, *Vipera aspis*, *Tropidonotus natrix*, and one with *Anguis fragilis*. They were all young specimens, and lived but a short time; in the last-named case one head survived the other by about two hours. More recently an interesting account has appeared in an American journal of a double-headed Tortoise, whose two heads performed independently the functions of eating, sleeping, breathing, &c., and appeared also to possess different temperaments.

This snake can sometimes be seen nodding its head, as lizards often do, with a sort of contemplative expression. It was perhaps from noticing this attitude that the observing ancients first called it *drakon*, the animal which looks or regards, rather than solely on account of the brilliancy of its eyes.

And while I am digressing, I may call attention to another point, *viz.*, the signs of attachment to the young or the eggs evinced by this class of animals, instances of which have been given at various times. It appears certainly remarkable that an animal so comparatively low down in the scale should show any care for its offspring; yet we have the frequently quoted testimony of Dr. Settari, who watched a *Coronella* feeding its young with small lizards, which it had previously swallowed. The evidence as to Adders and other snakes allowing their young ones to retreat into their mouth ("swallowing their young") when alarmed by sudden danger, has now become too overwhelming to admit of doubt. Referring to the care of eggs, there are accounts of large storages of eggs discovered in cavities of the ground, which appear to have been simultaneously and purposely laid there by a number of individuals; and we have further the occasional congregating of snakes in masses—notably *Vipera berus*—during the breeding season, which is important as leading possibly to these large deposits of eggs. Gené observed a similar gathering of more than two hundred *Coronella austriaca*, as well as, not far distant, four assemblies of other snakes, which met at the same time and place for eight consecutive years:—"E rivedendo per varii anni de seguito quei luoghi, rividi gli stessi amori e gli stessi innamorati."*

As regards the further distribution of this *Coluber* in Germany,

* Cited by Leydig, 'Einheimische Schlangen.'

it occurs, apparently, in all districts sufficiently dry, but has a decided preference for the hills. In the Alps it rises to a considerable altitude (1900 mètres, according to Fatio); and the few I have caught there, in the eastern portions, are not so brightly coloured, even when young, as those from Baden. In the Palatinate I only obtained one young specimen near the Madenburg, with the light red inferior surfaces; but it is considered fairly abundant throughout the country.

AMPHIBIA.

Order I. ANURA.—1. Fam. RANINA.

1. *Rana esculenta*, L.—Plentiful throughout the Grand Duchy, save perhaps in some of the more barren and exposed parts of the Schwarzwald. It is most abundant in the large forest belt bordering on the Rhine, whose numerous inlets and connecting streams resound with its melodious concerts. Common enough near Carlsruhe:—in the River Alb, already mentioned; in the small lake of the Stadtgarten; in the fountain of the Schlossgarten, and the ponds of the Wildpark. There was formerly also a small colony in some ditches on the Exercierplatz, of which there are now no traces. I have not missed it anywhere in my excursions through the Bavarian Palatinate and Elsass.

R. esculenta is visible in favourable localities up to the middle of October, but is far behind the Common Frog in its spring appearance, being seldom in full numbers till the end of April. Single individuals can be met with by the 20th March. Even before this they are roughly awakened by the professional frog-catchers who invade their muddy retreats and carry on a successful business for those who appreciate this delicacy. I have several times caught specimens swimming awkwardly *minus* one limb, who doubtless owed the preservation of their lives to a vigorous and unexpected jerk of the remaining member; but never altogether deprived of their legs, so that I imagine the frog-catchers are fairly merciful, hereabouts at least.

Being pre-eminently aquatic, this species is seldom found far from its element, and if by chance this does occur (for batrachians are often found in the most incomprehensible situations) the skin becomes warty and discoloured. In turbid water and shaded ponds of which the bottom is covered with an accumulation of

dead leaves, &c., it assumes a variable protective resemblance to the surroundings. The chromatopheres are also very susceptible to atmospheric changes.

Several writers have observed a tendency to blue coloration in this species. I obtained an interesting variety of this nature near the village of Forchheim, in a pond in the Rhine woods: the darker markings on the back were perfectly normal, but the green, instead of displaying the yellow fundamental hue, was of a verdigris tint, imparting to the frogs a most curious appearance. I forwarded some of these to Prof. Leydig, who said that the blue colour had not been affected by the journey, but that the day after (having in the mean time assumed a "dark-blue" tint) they were transported in a sack for a short distance, and on being suddenly exposed to the full sunlight the colour rapidly changed to a "light-bluish white." This was due to the contraction of the colour-cells; at the same time he considered that there must have been some permanent modification to produce the original blue colour. I observed this singular variety for three consecutive years at the same locality. The peculiarity, though commoner to the female sex, was exhibited equally strongly by some males, and as other specimens of both sexes showed no traces of it, I should be disinclined to attribute it to the influence of purely external circumstances.

The other variations in colour are produced by the various shades of the fundamental tint, or by the accentuation of the three light-coloured bands on the back. As a rule, the dorsal one is the most pronounced; at other times this is nearly effaced, and the lateral row of pores becomes prominent. A male variety, not rare in the Rhine district, has the head of a nearly pure gamboge colour, as well as a small patch of the same colour on the throat. The yellow pigment on the flanks and hind legs varies considerably in degree.

As naturalists experience some difficulty in catching sufficient numbers of this frog, owing to its extreme wariness and swift movements, I will describe a method of capture which far supercedes the unsatisfactory one usually employed. The intending angler, having attached a small piece of red cloth by way of bait to his line, must hold this touching the surface of the water. He will be astonished to see the frogs (especially in the spring months) wildly endeavouring to seize it, and literally struggling

with each other for the possession of a mouthful. Two or three can be landed simultaneously till a sufficient quantity has been obtained. This may sound improbable: *fiat experimentum*.

As regards the distribution of *R. ridibunda*, Pallas, in Baden, I regret very much being unable at present to include it in this list. Since the publication of the papers* describing this form, a number of successful observers have recorded it from various districts in Germany, chiefly Central and Northern. Unfortunately my free time for observation was very limited during the last years of my residence there, and since the spring of 1889 an entire lack of correspondents has prevented my hearing of its capture. A doubtful specimen has been identified through the kindness of Mr. Boulenger as "*R. esculenta typica*."

2. *R. fusca*, Roesel.—This species has greater capacities for accommodation than the others, and is accordingly well-nigh ubiquitous in Baden. This flexibility further shows itself in the production of a large number of varieties, some of them distinct enough to have perplexed systematic naturalists, while others are only slight modifications of colouring.

Of these latter the form so common in England and Scotland, with the yellowish back indiscriminately blotched with deep black markings, is comparatively rare in the Grand Duchy (it seems to be more common on the Lower Rhine), as also the female form, conspicuous by the bright red colour of the under surfaces, which is abundant in Alpine districts. I have never observed green coloration in any part of the body. The shape of the snout is much less constant than with the following species. The true *platyrrhinus*, Steenstr., of more substantial size and generally rougher skin, is frequent in the hilly parts of the country; while in the Rhine woods I have come across a smaller variety, which I should be disposed to class as the *acutirostris* of Fatio. I have also captured several of the barred var. *striata*, which seems to be sporadically distributed. Their resemblance to *R. arvalis*, though very striking, betokens no relationship, and is only another instance of the curious parallel variability previously noticed. The throat of the male usually assumes the seasonal bluish tinge; in some cases the back is similarly of a pale violet-grey of a very ephemeral nature.

* G. A. Boulenger, 'The Zoologist,' 1884, p. 220; 'Proc. Zool. Soc.' 1885, p. 666. (See also 'Proc. Zool. Soc.' October, 1891.)

I observed a well-marked local variety in the marshy tract where the following species occurs. It is the var. *cinerea* of Koch,* described as:—"A smaller form, resembling a hybrid from the slim character of its build. The protuberance at the base of the fifth toe is normally developed, but the snout is more pointed than with the typical form, thus recalling *R. arvalis*, from which, however, it again differs decidedly by the normally webbed feet, and by the shape of the protuberance. The individuals before me measure 40 to 45 millimètres from the snout to the root of the hind legs. The colour varies between dark ash-grey and brownish-grey, the lighter bars along the sides are completely absent, and the entire upper surfaces (including head) are covered with large and small deep-black spots. These are not, as with the var. *typica*, continued along the hind legs in the form of stripes, or in any case only appear indistinctly as such; the ear-mark is black, with grey spots. This form is rare, and occurs on the peaty ground of the Schwanheimer wood, and elsewhere in the plain. . . ." It is a very constant form, the young resembling the adults of both sexes in their speckled markings, and appears to be restricted to this locality.

In consequence of its hardy constitution, this batrachian may still be found at the approach of winter, when the others have already retired. I have seen it up to October 21st and November 1st, and again as early as February 9th and 2nd. But these dates are exceptional for the climate of Baden. The deposit of the spawn is regulated by the state of the weather, and seldom takes place before the first week in March.

The proportion of the sexes seems to fluctuate according to locality. On the whole, the males preponderate considerably, though never to so large an extent as, for instance, with *Bufo vulgaris*.

3. *R. arvalis*, Nilsson. — The distribution of this interesting batrachian is becoming defined with more certainty day by day, in proportion as observers convince themselves of its "specific" distinctness from the foregoing. Without enumerating the many isolated localities, chiefly moorland and peaty districts, where *arvalis* has survived, "a relic of the Glacial Period," up to the

* Koch, 'Formen, &c., der Ecaudaten Batrachier,' p. 140.

present, it is evident that these colonies become fewer and further between as we descend from the north. I presume Transylvania marks, so far as is yet known,* the limit of its southern extension.

In Baden it has been cited from various points of the Rhine Valley,—Manhheim, Freiburg,—and I was fortunate in coming across a new settlement near the village of Eggenstein (about four miles north of Karlsruhe), where this species occurs in great abundance, together with *R. esculenta* and *fusca*. The locality is a swampy depression in the otherwise well-cultivated fields between the village and the Rhine woods, more or less flooded in spring by a small stream running through the centre, while in summer the ground is usually dried up. Though I have never found *arvalis* far beyond the precincts of this, I have no hesitation in predicting that it will turn up duly in many of the similar tracts along the upper Rhine Valley.

The coloration has been so often and admirably described, that I will only note a few points with reference to these individuals from Eggenstein. As I have elsewhere observed,† the striking appearance of the four light-coloured longitudinal fasciæ is more common with the females and young, while the males incline to uniformity of tints. Still, one may also see young and females plainly-coloured, as well as distinctly-striped males; and these dimorphic types, though most pronounced in their extremes, are connected by an unbroken series of gradations. The delicate blue or purple complexion of the males is subject to some variation in degree, being naturally most intense with those individuals which possess that flaccid and loose appearance due to the distention of the lymphatic vessels. As may be expected, it is most pronounced on the throat, though visible also along the sides and back. It gradually vanishes towards the beginning of May, when the other peculiarities of the nuptial costume are in retrogression. The fore legs of the male, whose functions are analogous to those of the hinder legs in lizards, are, like these, disproportionately thickened, and the animals appear at this season even more swollen than *R. fusca*, on account of their slighter build and more pointed snout. The yellow of the sides and hind legs is often very brilliant even with the young, princi-

* V. Mchely, 'Zool. Anzeiger,' 1890, p. 445.

† 'Zoologischer Garten,' 1889, p. 221.

pally with the striated variety. I have detected no traces of green colour. It is worthy of note that the throat, generally pure white or of a bluish tinge, is, with some females, spotted like the lateral portions, and in the corresponding male form of a uniform dark iron-grey; in both cases with a white streak down the centre. This detail becomes more significant when we encounter an identical sexual difference with individuals of *R. fusca*.

Turning to some points of biological interest, it has struck me that the proportion of the sexes is more evenly balanced here than with most batrachians. It seems remarkable that this boreal species, which we should imagine to be less susceptible to cold than *R. fusca*, should nevertheless spawn three or four weeks later: it is as though this habit, necessitated formerly by a more rigorous climate, had been permanently inculcated into the constitution, and we are led to speculate in how far the advantages conferred by such peculiarities—*cf. R. ridibunda* and *Bombinator bombinus*—may have played a part in the gradual differentiation of specific forms. But in the vast majority of cases it is vain to decide the priority between change of habits and modification of structure.

R. arvalis emerges from its winter quarters at Eggenstein towards the end of March. The spawn is not deposited till the beginning of the following month, and then by no means always in the water, but on comparatively dry land (hence distinguishable by its small size from that of *R. fusca*); with the result that, if there is a spell of three or four hot days during the season, great quantities become dried up and wasted. The frogs themselves suffer much from these temporary droughts: the males especially, in their redundant condition, may be found in numbers lying dead or dying on the ground. Whenever possible, they bury themselves under tufts of grass so effectually that, before I was aware of this habit, I imagined the entire colony had emigrated to new pastures, leaving only the unburied dead behind them.

Their aversion to remaining long in the water was also not explained till, after capturing several injured specimens,* I

* Mostly deficient in digits or entire limbs. The same applies to *R. fusca* and *Bufo vulgaris*, which often exhibit curious malformations. The injured part is but seldom renewed in its entirety, as with newts, but only replaced by an indurated growth covering the exposed surface, or forming, in some

noticed that the small stream referred to was full of young pike. They have evidently not that confidence in the element displayed by the edible frog, for, though they jump momentarily into the water on being pursued, they immediately proceed to climb up the bank again, and seek refuge on dry land. This behaviour is singularly analogous to that of the marine *Amblyrhynchus*,* and seems, like it, to be induced by a "fixed and hereditary instinct" of which we may recognise the probable origin in the imperfectly developed web of the posterior feet.

4. *Rana agilis*, Thomas.—This is another of the species whose existence in Baden has not yet been verified. I recollect, about 1884, finding a frog in the "Wildpark" of Karlsruhe, which struck me by its prodigious leaps and the peculiar long-drawn cry which it emitted on being captured; but otherwise I took no further notice of it. Without attaching any importance to this, I cannot help thinking that, in a country so favourably situated as Baden, the presence of this batrachian has as yet merely been overlooked through the paucity or absence of sufficiently eager observers.

It was first signalled as a German species by Dr. Boettger from the neighbourhood of Strasburg,† later on by Leydig‡ from near Würzburg, two points between which a great part of the Grand Duchy lies. It has already been recorded from Switzerland (Fatio, 1861), Hungary (Méhely, 1890), Bohemia (Woltersdorff, 1890), besides a large part of France, so that it will presumably turn up in more localities of the intervening part of Germany.

rarer cases, an incomplete physiological substitute for the lost member. Owing to the position of the eyes, frogs have some difficulty in seeing what is directly before them, and may sometimes be seen, when swimming rapidly, to strike with the snout against the leaves or stalks of aquatic plants. But for many injuries to batrachians it appears we must hold the mollusca responsible. One observer relates how a *R. esculenta*, in its precipitate haste, was received head foremost into the opened valves of a mussel, to the surprise, doubtless, of both parties. I observed a case of multiple digits with a *Triton marmoratus*, from near Paris, which possessed no less than eight toes on one front foot (otherwise normal). This may have been congenital.

* Darwin, 'Voyage of a Naturalist,' p. 387.

† 'Zoologischer Anzeiger,' 1880.

‡ 'Triton helveticus und *R. agilis*,' 1888; and 'Über unsere braunen Frösche,' 1889.

In some works on the subject this frog is described as of a uniform white colour on the lower surfaces. This is misleading, inasmuch as a distinct network of yellow or reddish colouring between the fore legs can be often detected, and such a statement might cause more hasty collectors to reject this species as a variety of *R. fusca*. The darker streak from eye to eye, perceptible with many batrachians, reptiles, and, curiously enough, among the higher classes of vertebrates, is here rarely absent. Still, this is by no means an infallible mark, as some specimens show no traces of it.

I am not aware whether this species has been mentioned from Meran, in the Tyrol. I obtained there, in 1887, some specimens of the normal type.

NOTES AND QUERIES.

Death of Mr. Charles Jamrach.—With the death of Mr. Chas. Jamrach, at the age of 76, on Sept. 6th, a notable character has disappeared. He was a London merchant, and the commodities in which he dealt were wild beasts. For many a year Mr. Jamrach had traded in this curious kind of stock, as his father had done before him, and his place of business in Ratcliff Highway had long been a sort of Mecca to pilgrims interested in his peculiar wares. Here a tiger might be purchased with no more words than need be expended over the sale of a horse, and an elephant bought as readily as a pair of pigeons in the Seven Dials. A lively crocodile or rattlesnake was always on hand for any one with a weakness for that kind of pet. Here a cockatoo chattered on a perch, hard by a cage in which a dozen or so monkeys hatched plots against its crest and feathers. An anteater lay beside the stove, while an ugly baboon muttered and grumbled over its captivity. Anything or everything could be bought here or obtained within a reasonable time, provided the purchaser was willing to pay the price. Mr. Jamrach had "relations" with the wild-beast men all over Europe; and there was, perhaps, not a Zoological Garden from Stockholm to Naples where he was not well known. His establishment was no doubt one of the sights of London. But after seeing his beasts and birds, his creeping things and his crawling things, and after listening to his professional talk, the visitor left in doubt whether there was any curiosity in his place to equal Mr. Jamrach himself. Certainly to those who like to study their species, the men who came to sell and the customers who came to buy were quite as entertaining as the articles in which they dealt. If a foreign ship had come into port, the chances were that before long he would be visited by some of the crew.

Here was Abdul Ben Ibrim with a Moorish porcupine from Mogador, and a few minutes later Juan de Valdés, who, in broken Spanish, offered a choice cobra for sale. A Cape captain would announce that he had a lion consigned to him from Port Elizabeth, or a whaling skipper from Dundee might inquire what market there was for a first-class Polar bear. Almost any living thing, from a tortoise to eat slugs in the garden, to an elephant to form the central attraction in a show, might either be had or heard of here. These were the palmy days of "the Highway," when the business was so large that the losses by death alone amounted to two or three thousand pounds a year. Latterly, the wild beast merchant had fallen on duller times. The demand for his wares had lessened, and the prices they fetched were poor compared with a period when showmen were more numerous and public taste less sophisticated. The canary trade is no longer in British hands; the Germans have cut into it. Monkeys are not so saleable as they were, snakes have ceased to be profitable, and voyages are too short for sailors to be able to teach parrots the marketable amount of highly spiced language. A hippopotamus or a giraffe has become too common to be costly, when Thibetan bears began to be knocked down at seven pounds apiece, huge elephants at two hundred, hyænas at four pounds eight, vampires at thirty shillings, and boa-constrictors at sixty shillings, Mr. Jamrach must have felt that his occupation was gone.—'The Standard.'

MAMMALIA.

The Polecat in Cambridgeshire.—In your article on the Polecat (p. 281) no mention is made of its occurrence in Cambridgeshire. Is the animal now extinct there? In the churchwardens' accounts from Easter, 1781, to Easter, 1782, of my late Cambridgeshire parish, Dry Drayton, the following item occurs: "Dec. 22nd, paid for two Polecats, 8d." Again, in the churchwardens' account for 1776, among other particulars, the following item occurs: "Oct. 23rd, paid for one Polecat, 7d." There are also records of disbursements for Hedgehogs, Moles, and Sparrows; especially the last, dozens and dozens of them, chiefly between 1770 and 1790. During my incumbency (1873—1880) payment was still made to the village schoolmaster for Sparrows, and to Wilmot, the Mole-catcher, for Moles; but I conclude this was done at the cost of the farmers, as nothing was heard of it at our periodical vestry meetings. While rector of Dry Drayton I never recollect hearing of the Polecat there, but will write, if you wish, to one of my late parishioners, and ask if the animal still occurs there, or has been noted within living memory.—F. A. WALKER (Cricklewood).

The Polecat in Merionethshire.—In the autumn of 1878 a friend, who had been staying at Bala, told me that he had heard from a keeper near there that the Polecat was not at all uncommon in that neighbourhood, and that the keeper was to get him a specimen. A short time afterwards

he received a very fine one, which I saw; so that the keeper's information was probably correct.—O. V. APLIN (Bloxham, Banbury, Oxon).

The Australian Mole-like Marsupial, *Notoryctes typhlops*.—Prof. E. C. Stirling, of the University of Adelaide, has most kindly sent to the Zoological Society an original water-coloured drawing of the newly-discovered Australian marsupial, prepared from a pencil sketch taken from life. The animal is represented upon the surface of one of the red sand-hills in which it passes the greater part of its life, among some tussocks of *Triodia irritans*, the "porcupine grass" of the interior of Australia, and is figured of the natural size. The drawing will be exhibited at the first meeting of the Zoological Society in November next, but in the meanwhile can be inspected in the library by any naturalist who may wish to see it. Prof. Stirling has also sent a copy of his paper in the 'Transactions' of the Royal Society of South Australia (read Feb. 3rd of the present year), in which this extraordinary animal is fully described. The subjoined particulars as to its habits, extracted from Dr. Stirling's article, will be interesting to readers:— "It appears that the first specimen was captured by Mr. Wm. Coulthard, manager of the Frew River Station and other northern runs belonging to the Willowie Pastoral Company. Attracted by some peculiar tracks, on reaching his camp one evening on the Finke River, whilst traversing the Idracoura Station with cattle, he followed them up, and found the animal lying under a tussock of spinifex or porcupine grass. Though he is an old bush hand, with all the watchful alertness and powers of observation usually acquired by those who spend lives of difficulty and danger, this was the first and only specimen of the animal he ever saw. As previously stated, this found its way to the Museum through the agency of Messrs. Benham and Molineux. The three subsequently received shortly afterwards, as well as the last lot recently secured by Mr. Bishop during our journey through the country, were also found on the Idracoura Station. This is a large cattle-run comprising several hundred square miles of country in the southern part of the Northern Territory of South Australia, which lies immediately to the west of the telegraph line between the Charlotte Waters and Alice Springs Stations. The great dry water-course of the Finke River, which runs from north-west to south-east, bounds the run for some eighty miles on the north and north-east. Its distance from Adelaide is, roughly speaking, a thousand miles. Flats and sand-hills of red sand, more or less well covered with spinifex and acacias, constitute a large portion of the country, and the rainfall is inconsiderable. Curiously enough, all the specimens of *Notoryctes* hitherto received by me have been found within a circumscribed area, four miles from the Idracoura Head Station, which is situated on the Finke water-course itself, and almost invariably amongst the sand-hills. I have it, however, on very fair authority, that the animal has been seen on the

Undoolya Station, which lies immediately south of the McDonnell Ranges, and that one also was found drowned after heavy rain at Tempe Downs, a station situated about 120 miles west-south-west of Alice Springs. These points will sufficiently define its range, so far as is known at present. They do not appear to be very numerous. Very few of the white men in the district had ever seen it, even though constantly travelling; and not many of the natives whom I came across recognised the well-executed drawing I carried with me. It must be remembered, however, that I did not pass through the exact spot which so far appears to be its focus of distribution. Nor did a very considerable reward, which I offered, cause any specimens to be forthcoming between the first lot received, over two years ago, and that recently secured during my trans-continental trip. With a few exceptions, the animals have been captured by the aboriginals, who, with their phenomenal powers of tracking, follow up their traces until they are caught. For this reason they can only be found with certainty after rain, which sets the surface of the sand, and enables it to retain tracks that would immediately be obliterated when it is dry and loose. Nor are they found except during warm weather, so that the short period of semi-tropical summer rains appears to be the favourable period for their capture. For this suitable combination of wet and warmth, Mr. Bishop had to wait three months before he was able to get them, and in all cases they were found during the day-time. Perpetual burrowing seems to be the characteristic feature of its life. Both Mr. Bishop and Mr. Benham, who have seen the animal in its native state, report that, emerging from the sand, it travels on the surface for a few feet at a slowish pace, with a peculiar sinuous motion, the belly much flattened against the ground, while it rests on the outsides of its fore-paws, which are thus doubled under it. It leaves behind it a peculiar sinuous triple track, the outer impressions, more or less interrupted, being caused by the feet, and the central continuous line by the tail, which seems to be pressed down in the rear. Constantly on the look-out for its tracks, I was often deceived by those of numerous lizards, which are somewhat similar in these respects. It enters the sand obliquely, and travels underground either for a few feet or for many yards, not apparently reaching a depth of more than two or three inches, for whilst underground its progress can often be detected by a slight cracking or moving of the surface over its position. In penetrating the soil, free use as a borer is made of the conical snout with its horny protecting shield, and the powerful scoop-like claws (fore) are also early brought into play. As it disappears from sight, the hind limbs, as well, are used to throw the sand backwards, which falls in again behind it as it goes, so that no permanent tunnel is left to mark its course. Again emerging, at some distance, it travels for a few feet upon the surface, and then descends as before. I could hear nothing of its making, or occupying at any time, permanent burrows. Both my

informants laid great stress on the phenomenal rapidity with which it can burrow, as observed in both a state of nature and captivity." To these notes of Prof. Stirling I may add the remark that this is certainly one of the most extraordinary discoveries in Zoology made of late years. *Notoryctes typhlops*, as shown by Prof. Stirling's full and elaborate description and figures, is unquestionably a new and perfectly isolated form of marsupial life, and must be referred to a new section of the order Marsupialia. We must all congratulate Prof. Stirling on his success in bringing before the world such an important novelty.—P. L. SCLATER (*From 'Nature,' Sept. 10th*).

Daubenton's Bat in Yorkshire.—It is somewhat surprising that this local but widely distributed species has hitherto escaped detection in the broad and diversified acres of Yorkshire. Mr. Basil Carter, to whom belongs the credit of obtaining the first Yorkshire specimen, forwarded to me, for identification, a male which he had shot on the evening of the 19th August last, as it flitted over the river Yore at Masham. It appeared to be accompanied by several others of the same species, and these flew closely round the captor as he lifted his squeaking victim from the water. Mr. James Carter tells me he has often seen similar bats flying over the surface of the Yore, but always failed in his attempts to secure a specimen of what he shrewdly guessed was *Vespertilio daubentonii*. Is Dr. Dobson's description of the tragus, as given in his 'Catalogue of the Cheiroptera' (p. 297)—wherein it is said to terminate in "an acute point"—quite correct? I have this year examined a number of specimens in a perfectly fresh condition, and found that though this organ tapers considerably, yet it is decidedly rounded at its distal extremity; and such is shown to be the case in the enlarged figure of the ear of this species given by Blasius in his 'Fauna der Wirbelthiere Deutschlands' (p. 99).—WM. EAGLE CLARKE (Museum of Science and Art, Edinburgh).

Serotine Bat in Hampshire and Cornwall.—This species certainly occurs on the Hampshire mainland. Mr. F. Bond wrote to me, under date February 5th, 1886, that "he was quite sure he had seen the Serotine and Whiskered Bats between Lymington and Brockenhurst when entomologising there years ago." Lord Lilford also wrote in 'The Zoologist,' 1887 (p. 65), that he had received specimens from Hampshire. Mr. Dobson's Catalogue of the Cheiroptera in the British Museum includes a specimen there which was obtained at Tintagel, in Cornwall.—J. E. KELSALL (Wavertree, Liverpool).

CETACEA.

White-beaked Dolphin.—This species may almost be considered a regular spring visitor to the east coast. Mr. Patterson found one lying dead on the beach near Yarmouth on the 19th April last, and on the 27th August he saw another which was being exhibited on the drive at the same

place. The first measured four feet eight inches, and the second seven feet four inches in length.—T. SOUTHWELL (Norwich).

BIRDS.

Occurrence of the Broad-billed Sandpiper in Norfolk.—A specimen of the Broad-billed Sandpiper (*Tringa platyrhyncha*) was killed on Sept. 5th, in a marsh to the north of Breydon, by a man named Smith (who obtained the two Pectoral Sandpipers already recorded, p. 136), and, after being skinned, was purchased by Mr. Connop, for whose collection it is now being set up by Mr. Cole, of Norwich. I did not see the bird until Sept. 10th, at Yarmouth, after it had been skinned; but, in addition to the appearance of the skin, I had independent evidence as to the fact of the occurrence from two persons who had seen the bird in the flesh. The three previous examples of this species met with in Norfolk were all procured in the spring (see 'Birds of Norfolk,' ii. p. 359); it is therefore of interest to note its occurrence in the autumn on its passage south. So far as I am aware, the sex was not noted, but the dimensions of the bird (namely, beak along the culmen 34 mm., tarsus 23 mm., and wing from flexure 110 mm.) are quite equal to those of the larger bird in the Norwich Museum, procured in Lapland by Mr. Wolley, and exceed those of the male from the Stevenson collection (also in the Norwich Museum), killed in April, 1868, which measures as follows: beak 29 mm., tarsus 20 mm., and wing 110 mm.—T. SOUTHWELL (Norwich).

Manx Shearwater near Malton.—I had a female specimen of the Manx Shearwater, *Puffinus anglorum*, recently brought to me to be stuffed. It was shot on August 26th at Appleton-le-Street, near Malton, as it was rising out of a ditch. I thought this worth recording, as I have not heard of a bird of this species being seen before so far from the sea, namely, twenty-five miles. A severe gale was blowing from the west when it was shot, so it could not possibly have got there from our eastern coast, unless it had been there previously to the gale. It was a mass of fat, but had nothing in the stomach but a greenish fluid.—JOHN MORLEY (King Street, Scarborough).

Wild Duck removing her Eggs.—A mowing-machine was set to work round the outside of a field of lucerne bordering our marsh, diminishing the circle each time round the field, leaving about two acres in the centre. A Wild Duck was seen by the shepherd to fly from the piece of lucerne that was left with something in her beak, and, happening to fly near him, she dropped a three parts incubated egg. She was again observed by the shepherd, and also by the sheep-shearer, carrying another egg in her beak, this time over the marsh-wall towards the saltings; and again she was seen for the third time carrying an egg in her beak in the same direction. On the mowing-machine going to work next day, and finishing the field by

removing the last piece of lucerne, the Wild Duck's nest was discovered, from which the eggs had been removed.—W. PRENTIS (Rainham, Kent).

Little Auk inland.—I have lately seen a Little Auk, *Mergulus alle*, which was taken on a pond in the village of Godstone, Surrey, on the 2nd of December last. The local birdstuffer, in whose possession the bird now is, Mr. Reeves, of Reigate, tells me that when taken it was in a state of extreme exhaustion, which is scarcely to be wondered at, as Godstone must be at least twenty miles as the crow flies from the nearest sea. The weight was $3\frac{1}{2}$ ozs.; sex unnoted. There is this peculiarity in the bird: the breast, instead of being white, as one would expect to find it in mid-winter, is distinctly mottled with black.—E. P. LARKEN (Gatton Tower, Reigate).

Supposed Occurrence of the Kentish Plover at Scarborough.—On Saturday, Sept. 12th, I had two birds brought to me as the Kentish Plover (*Ægialitis cantiana*), which had been shot during the afternoon at Cayton Bay, about three miles to the south of Scarborough. They were both immature, but were readily to be distinguished from *Æ. hiaticula* by the smaller size, and the interrupted pectoral band. Unfortunately both birds were very heavily shot, and no care having been taken of them at the time, they were unfit for preservation. These are the first specimens of this species which I have observed at Scarborough, and I am not aware that it has been before recorded for the district.—W. J. CLARKE (Scarborough).

[The "smaller size and interrupted pectoral band" do not distinguish this species from the young of the common Ringed Plover. Our correspondent would have done well to have noted the appearance of the primaries and the colour of the legs.—ED.]

The House Martin as a Cage Bird.—In the first week of July last my friend Mr. W. R. O. Grant obtained for me a nest of four House Martins about a week old. I fed them upon minced raw rump-steak, ants' eggs carefully cleaned, and preserved yolk of egg ground up with maizina wafers in a mortar, and then slightly damped. On this food they attained their full size, and then began to show a decided dislike to the raw meat. Several times a day the young birds were taken out of their basket of hay and allowed to fly about the room. As the Martins now began to show an objection to the confinement of the basket, I purchased for them a large cage, in which I hung up a cocoa-nut nest, in which I placed a piece of flannel. After a very short time they learned to retire to this snuggerly every evening to pass the night, or whenever they felt chilly. At the end of about a month we persuaded the young birds to feed themselves, and then the dangerous time began, since (like all the Swallow tribe when brought up on soft food) they would eat more than was good for them. I now altered their diet, giving "Abraham's food for Nightingales, &c.," moistened ants' eggs, flies and mealworms cut up; nevertheless, three of

the birds quickly succumbed to over-eating. The fourth bird lived on happily until the morning of Sept. 18th, when I found him also dead at the bottom of the cage, after being the pet of the family for about two months and a half. Of all the birds I ever kept, and I must have had at various times something like sixty different species, none have proved so confiding, intelligent, or entertaining as these little Martins. Nothing pleased them better than to lie in the hollow of one's hand, and go to sleep there; they would come at once when called, fluttering up one's arms and settling on the shoulder. One of them, if held up by my son, would spring up and peck the tip of his nose. In spite of their short legs, if placed at a distance on the ground and then called, they would scramble towards us with surprising swiftness. Only two days before the death of my last bird I ran upstairs as soon as I got home to see how he was; but he had retired early to roost. I called out, "Well, little chap, how are you?" He popped his head out, and, seeing me, sprang down to the door of the cage; I opened it at once, stepped back to the end of the room, and then called him; he immediately flew to me, and nestled down in my hand. Martins are the first birds which I have ever known to evince genuine affection, since they would at once leave their food in order to come to us to be petted. There is only one drawback to keeping them as cage-birds; their wings are so long and their legs so short that they get very dirty, both tail and wings being dragged constantly through the dirt; and then they have to be washed, which tends to give them cold. It is also difficult to provide them with a uniformly warm temperature.—A. G. BUTLER (Beckenham).

The Song of the Redwing.—Mr. Butler, if founding his statement (p. 352) on observation of the habits of a pair of Redwings confined "in a large aviary for two years," is hardly in a position to "state positively" the characteristics of the song of the species. My authority for this remark may be found in the extraordinary extent to which the voices of the great majority of our song-birds are affected, in captivity, by the influences incidental to residence in or near human habitations. One has only to turn over a few pages of ornithological works to meet with recorded instances of cage-birds such as Whinchats, Linnets, and Redstarts, to say nothing of more apt natural mimics, having uttered the perfect strain of some wild bird. Three of such instances have come under my personal observation: A Sky Lark imitated the song of the Wren so exactly and repeatedly that I was deceived—this bird was caged closed to a country garden; a Linnet, in a country signal-box near trees, similarly deceived me with a splendid song of the Blackcap; and a tame cock Blackbird—an excellent singer—in my possession, reproduced in every detail a wonderful association of sounds caused by the daily opening of a window thirty yards distant from his cage. In studying bird-song, I have acquired some proficiency in detecting whether singers, such as Blackbirds and Thrushes,

heard at a distance are free or caged ; and I may say that it is generally possible to be absolutely certain upon this point. Under the distracting influences of life in a cage, the Sky Lark soon changes its notes, or perhaps, if reared from the nest, never acquires them in their native accurate reproduction of field-sounds, prominent among which (in Gloucestershire) are the voices of the Buntings, Swallow, and Peewit. It is probable that in the songs of Mr. Butler's Redwing there are hardly any notes of the free birds, whose songs can only be recorded on the evidence of persons who have heard them in a state of nature. May I add that I shall be glad to receive notes relative to bird-song, on which I hope soon to publish some interesting observations.—CHARLES A. WITCHELL (Stroud, Gloucestershire).

Egyptian Goose in Devon.—An adult male of this species was shot on the River Exe on May 9th. It was in good plumage, and not the slightest trace was visible of its ever having been in captivity. The probable cause of its appearance at that time of the year is, that possibly during the past severe winter a pair of these birds strayed from their home, wherever that might be ; one no doubt fell to the gun of a wildfowler, whilst the survivor wandered about in search of its companion up to the time of its destruction in May last. From inquiries made, I find that no Egyptian Geese are kept within several miles of the place where this bird was shot ; in fact, I think I am right in saying that none are kept in this county. Like the Canada Goose, it is an introduced species, and has never been known to cross the Mediterranean in a wild state ; hence my reason for not including it in my 'Birds of Devonshire.' The bird in question is now being preserved for my collection.—W. E. H. PIDSLEY (Blue Hayes House, Broadclyst, Devon).

MOLLUSCA.

A Sinistral Variety of *Helix hortensis*.—Mr. H. E. Quilter has been kind enough to forward to me a number of very fine specimens of *H. arbutorum*, Linné, collected at Boulogne-sur-Mer in August, 1890, by Mr. J. Palmer, of Leicester, amongst which I find there are two specimens of *H. hortensis*, Müller, one a sinistral form of the variety *unicolor*, Pascal, and the other the variety *lutea*, Moq.—W. E. COLLINGE (Leeds).

SCIENTIFIC SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

September 2, 1891.—Mr. FREDERICK DUCANE GODMAN, M.A., F.R.S., President, in the chair.

Mr. W. H. Blaber, of Groombridge, Sussex ; Mr. T. D. A. Cockerell, F.Z.S., of Kingston, Jamaica ; Mr. R. E. V. Hanson, B.A., of Tunbridge

Wells, Kent; and Mr. R. C. Wroughton, of Poona, India, were elected Fellows of the Society.

Mr. G. F. Scott-Elliot exhibited a series of various species of Diptera collected on *Ranunculaceæ*, *Papaveraceæ*, and *Cruciferæ*. He said that during the past summer he had studied about forty species of plants belonging to the orders named, and that they had all been visited by insects which were probably necessary for nectariferous flowers. The majority of the Diptera caught were not confined to one species or even genus, but in view of the unmodified character of the flower in the orders named this was only to be expected. Mr. Verrall observed that certain insects affected certain plants, but that the *Geraniaceæ* were seldom visited. The discussion was continued by Mr. M'Lachlan, Mr. Kirby, and others.

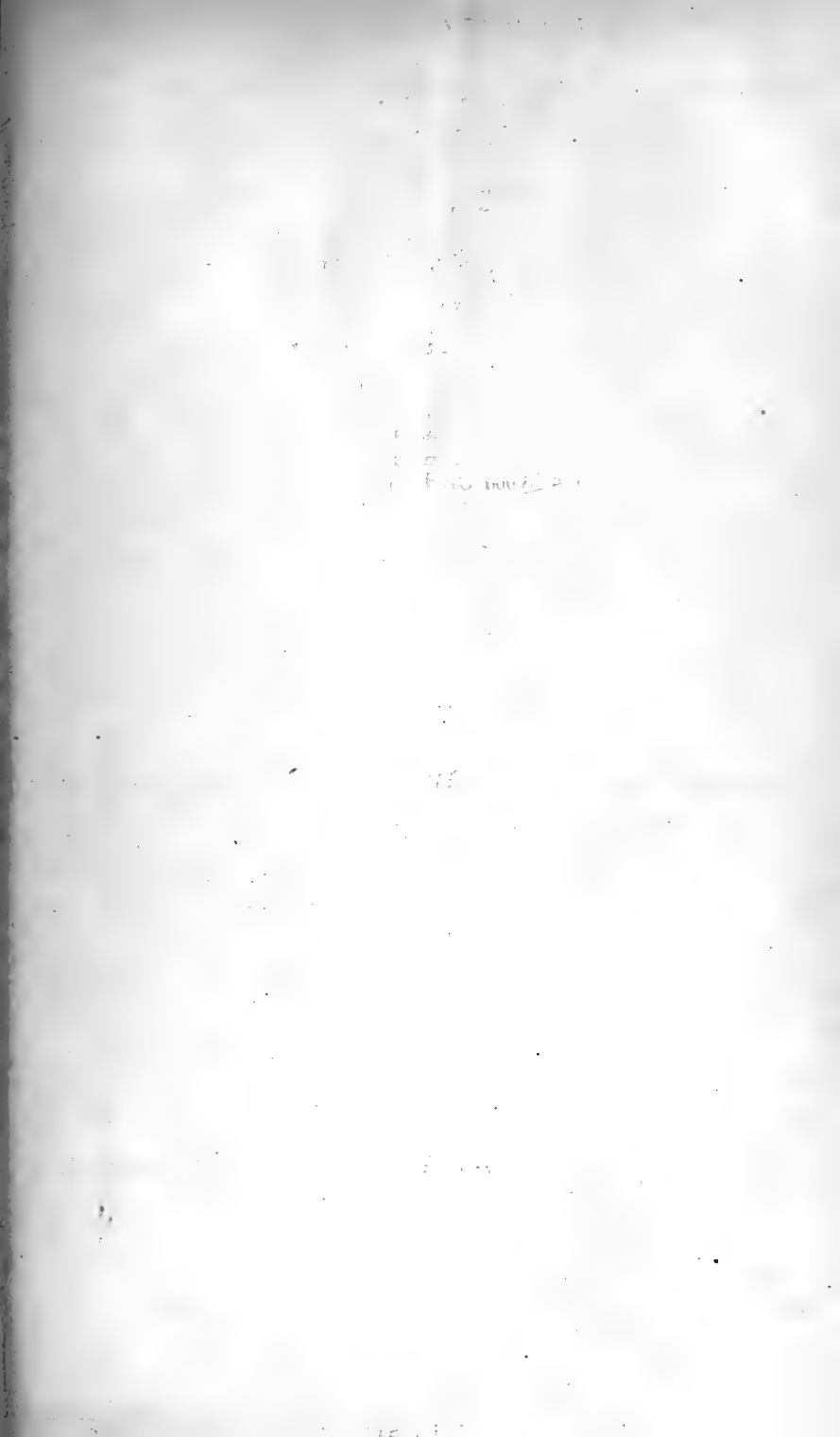
Mr. W. L. Distant exhibited a specimen of the orthopterous insect *Hemisaga hastata*, de Sauss., which, in the Transvaal, he observed to attack and feed on *Danais chrysippus*, a butterfly well known from its protective character and distasteful qualities to have a complete immunity from the usual lepidopteral enemies. The *Hemisaga* lurked amongst the tops of tall flowering grasses, being consequently disguised by its protective resemblance to the same, and seized the *Danais* as it settled on the bloom. From close watching and observation Mr. Distant could discover no other danger to the life of this well-known and highly protected butterfly.

Mr. T. R. Billups exhibited four species of Diptera, which he believed to be respectively *Oxycera terminata*, Meg., *Pipizella annulata*, Meg., *Clidogastra punctipes*, Meg., and *Oxyphora arnicæ*, L., taken at Oxshott, Surrey, on the 11th July last. He mentioned that all of them were recorded in Mr. Verrall's list only as "reputed British." He also exhibited a specimen of *Hypoderma bovis*, Deg., taken at Plumstead on the 29th July last.

Dr. D. Sharp exhibited several species of *Forficulidæ*, and called attention to the diverse conditions of the parts representing the wings in the apterous forms.

Mr. H. Goss exhibited living larvæ of *Scoria dealbata*, reared from ova. They were feeding on *Polygonum aviculare*, but not very freely; *Brachypodium sylvaticum* had been named as a food-plant for this species, but he did not find that the larvæ would eat this or any other grass.

The Rev. Dr. Walker exhibited, and read notes on, a collection of Lepidoptera, Hymenoptera, Coleoptera, Neuroptera, and Diptera, which he had recently made in Norway. Mr. Champion, Mr. Billups, and Mr. M'Lachlan took part in the discussion which ensued.—H. Goss, *Hon. Sec.*





L. Hutchinson lith.

West, Newman imp.

The Pine Marten
Martes sylvatica, Nilsson

THE ZOOLOGIST.

THIRD SERIES.

VOL. XV.]

NOVEMBER, 1891.

[No. 179.

THE BRITISH MARTEN.

MARTES SYLVATICA, Nilsson.

BY THE EDITOR.

PLATE IV.

IF the views of the late Edward Alston respecting British Martens (Proc. Zool. Soc., 1879, pp. 468—474) are to be accepted, as appears likely to be the case, for, so far as I am aware, no one has attempted to controvert them, a good deal of difficulty is at once removed. To attempt to sift the records of the occurrence of Martens in the British Islands on the assumption, hitherto held, that there are two indigenous species, the Pine Marten (*Martes sylvatica*), and the Beech Marten (*M. foinea*), would be an extremely troublesome if not impossible task, for the reason that so many of the records would leave it doubtful which of the two were referred to, and the specimens in question would probably not now be forthcoming for examination. If, however, we are to adopt Mr. Alston's view, that the Pine Marten is the only species of the genus *Martes* which has ever occurred in the British Islands, the matter is considerably simplified.

He tells us (*l. c.*) that he examined a great number of skulls, and compared them with descriptions, and that he found no difficulty in distinguishing the two species. The following are the external and internal characters on which he relies:—

Martes sylvatica.—Outer fur rich dark brown, under fur reddish grey, with clear reddish yellow tips; breast-spot, usually yellow,

varying from bright orange to pale cream colour or yellowish white. Breadth of the skull (see fig. 2, p. 471) across the zygomatic arches, rather more than half the length; the arches highest posteriorly, whence they slope rather suddenly downwards and forwards. Sides of muzzle nearly parallel; anterior opening of nares oval; post-orbital process about equidistant between the frontal constriction and the anterior root of the zygoma. Palate comparatively narrow, with a distinct azygos process on its posterior margin. Upper premolars placed regularly in the line of the series; the fourth as long as the upper molar is broad; its inner cusp large and placed nearly at right angles to the axis of the tooth. Upper molar broader than long, its flattened inner portion considerably longer and larger than the outer part; in the latter the external tubercle fills the space between the anterior and posterior tubercles, so that the external outline of the tooth is slightly convex, *not* emarginated. First lower molar with a slightly developed inner tubercle at the base of the main cusp.

Martes foina.—Outer fur dull greyish brown, under fur greyish white; breast-spot, smaller than in *M. sylvatica*, pure white. Breadth of the skull across the zygomatic arches, much more than half the length; the arches regularly curved, broadest and highest near their middle. Sides of muzzle slightly converging; anterior opening of nares broader than in *M. sylvatica*, heart-shaped; post-orbital process nearer to the frontal constriction, than to the anterior root of the zygoma. Palate comparatively broad, truncated posteriorly. Upper premolars crowded, and often placed diagonally, their anterior extremities being directed inwards; the fourth considerably longer than the upper molar is broad; its inner cusp smaller, and placed more diagonally than in *M. sylvatica*. Upper molar subquadrate, its flattened inner portion hardly longer or larger than the outer part, in which the external and anterior tubercles are placed close together, the external outline of the tooth being distinctly emarginated between them and the posterior tubercle. First lower molar with a well-developed inner tubercle at the base of the main cusp.

On the question whether both these species inhabit the British Islands, Mr. Alston had to get over the fact that every previous writer on the British fauna had either stated or assumed that both are natives, and that (according to the majority) the white-breasted *Martes foina* (the common Marten of the Continent) was the commoner of the two. Again he had to deal with the view, expressed by several good naturalists, that the forms, so far from being distinct, were varieties of but one species, the variation in

the colour of the dorsal pelage, and the whiteness or yellowness of the throat patch depending upon age or sex, or both.

The elder Macgillivray, who had good opportunities for examining specimens in Scotland, came to the conclusion that the young animals have yellow throats, and are the "Pine Martens" of authors; while in old individuals the fore part of the neck and breast are white, or greyish white, or pale grey mottled with brownish. The yellow colour on the throat fades in museum specimens so as at length to be scarcely perceptible.

The Irish naturalist, Thompson, arrived at similar conclusions, remarking that all the native specimens which had come under his own notice were yellow-breasted, with the exception of one which had the breast white, and was killed in the Co. Antrim. He had, moreover, observed that the yellow colour gave place to white with advancing age, and explained the greater number of yellow-breasted specimens obtained by their comparative immaturity.

As the views of these two authorities are substantially endorsed by Alston, it is to be inferred that his share in the revision of the last edition of Bell's 'British Quadrupeds' did not commence until after the pages on the Marten had been printed off, or he would have dissented from Bell's view that both species have been met with in the British Islands. The fact is, he says, that *Martes foina*, the Beech Marten, is not and never was a member of the British fauna. "During the last ten years" (1869-79), he adds, "I have missed no opportunity of examining native Martens, and have endeavoured to trace out every supposed Beech Marten that I could hear of. I have thus seen a very large number of specimens from various parts of England, Wales, Scotland, and Ireland, and every one has proved to be *Martes sylvatica*, the Pine Marten."

Blyth, who had paid some attention to the question, arrived at a similar conclusion, and until some evidence to the contrary can be produced, we must necessarily accept this view as the correct one.

We have then only to consider what was the past and what is now the present distribution of one species, the Pine Marten, in the British Islands.

It was probably never very abundant, for had it been, so much store would not have been placed on its fur, which has always

been regarded as valuable. It was formerly used for the borders of the king's robes. See the 'Laws of Howel Dha,' A.D. 940, wherein the value of a Marten's skin was fixed at 24 pence, a large sum in those days, the skin of a Wolf, Fox, and Otter being valued only at 8 pence, while the rarer Beaver was 120 pence. This was not overlooked by Sir Walter Scott, who, when describing the royal garb of a Scottish king, thus alludes to the ancient mode of bordering it with fur :—

" His cloak of crimson velvet piled,
Trimmed with the fur of Marten wild."

Marmion, canto v.

Before the Union of Scotland with England, *i. e.* prior to 1707, the fur of the Marten formed a lucrative article of export from Scotland. For some remarks on Irish Marten skins and their value in former times, see 'Zoologist,' 1881, p. 442.

Under the name Martern, Martron, or Matron, it is to be found mentioned in mediæval wills, inventories, household accounts, and other records.* For example, in an Inventory of Serjeant Keble's goods, taken in July, 1500, we find amongst other entries, "a jacket of black velvet furred with Marten's skins, £1 6s. 8d."† So also do we find this fur noticed under the name *foine* or *foyne*, evidently of French origin. Thus in an account of a Lord Mayor's show in 1566, when Sir William Draper was Lord Mayor, forty-six members of the Ironmongers' Company are described as being clothed in satin cassocks, gowns furred with *foynes*, and crimson satin hoods. ‡

It would hardly be supposed that Martens were formerly to be found included in a "bill of fare," but it would seem that in Henry the Eighth's time they were considered good enough for soup. In 1526, on the occasion of the marriage of Roger Rockley, the eldest son and heir of Sir Thomas Rockley, to Elizabeth Nevile, the daughter of Sir John Nevile, of Chete, in the county of York, there was served up at the banquet, amongst other delicacies, "Martens to pottage." For fish they had jowls of

* See 'Testamenta Vetusta,' p. 658; 'Book of Rates,' 1545, and an old Inventory printed in the 'Archæologia,' vol. xxx, p. 17, where mention is made of "an olde cassock of satten edged with *Matrons*."

† 'Gentleman's Magazine,' vol. xxxviii, p. 257.

‡ 'Percy Society,' vol. ix, p. 14.

salmon, pike, eels, and sturgeon. These were followed by a "young lamb whole roasted," a whole roe, and "venison baken, red and fallow." These in turn were succeeded by a great variety of game and wildfowl, such as "pheasants, 4 of a dish," "partridges, 8 of a dish," "cranes, 2 of a dish," "heronsues and bitterns, 3 of a dish," besides plovers, stints, and curlews. For sweets they had "stoke fritters," "baken orange," tarts, marchpain, and gingerbread.* So that if Marten pottage proved unpalatable to any guest, there was plenty of other cheer to fall back upon.

But in Elizabeth's time the Marten was considered by the chroniclers to be getting scarce, presumably because its fur was so much sought after, or because it was killed as vermin.† Harrison in his 'Description of England,' prefixed to Holinshed's 'Chronicle' in 1577, referring to this animal as a beast of chace, remarks that "for number I worthilie doubt whether that of our Bevers or Marterns may be thought to be the lesse."

"Hunting the Mart" was a recognised field sport, and was formerly much in vogue in parts of the country where this animal was then sufficiently common. It was also regarded by masters of hounds as a good animal to enter young hounds to, for, having a good scent, it taught them to hunt well and draw together. Beckford, in his 'Thoughts on Hunting,' says: "If you have Marten-cats within your reach, as all hounds are fond of their scent, you will do well to enter your young hounds in coverts which they frequent." "The Marten when hunted," says Scott in his 'Field Sports,' "will sometimes run miles in large coverts, and will engage the hounds a considerable time, showing great sport, and taking many opportunities to climb trees and recover his wind, the hounds baying him, until frightened or cudgelled down, when he shows an almost miraculous agility; for although he frequently alights in the midst of the pack and each hound is mad to catch him, he is very seldom so caught, and his escape is greeted with a loud general halloo." Here is an extract, from the diary of an old sportsman, furnished by Mr. Cordeaux:—

* Pegge, 'Forme of Cury, a roll of ancient English Cookery,' &c., pp. 174, 177. Printed in 1780.

† As at Pitchley, in Northamptonshire, temp., Edw. III., cf. Blount's 'Ancient Tenures,' 4to, 1815, p. 231.

“March 23, 1825. Met Sir Richard Sutton’s hounds (the Burton) at Newbold Common, near Wragby. Found and ran into a Marten-cat.”

Mr. Cordeaux heard of a similar case some years later, when the hounds ran down a Marten in Tumby Wood, near Horncastle. I have seen five stuffed specimens of the Marten in the collection of Mr. Borrer, of Cowfold, Sussex, one of which was killed five-and-twenty years ago by the Crawley and Horsham Foxhounds.

At the present day, however, the Marten, in England and Wales, is seldom met with in a good hunting country. It has been gradually driven further and further away from the centres of civilization, until it is now only to be looked for (with any chance of success) in the great woodlands, such as those of mid-Lincolnshire, in the wild and secluded valleys amidst the wolds, distant from any railroad, or amongst the lone mountain crags of Wales and Cumberland. Cumberland, probably, is the only county in England where the Mart is still hunted. Mr. W. A. Durnford has thus described how it is carried out:—

“The meet,” he says, “was at Wastdale, one of the grandest and most secluded valleys in the lake district. Long before daybreak we were awakened, at the little inn, by the voice of the huntsman who had arrived with six couple of hounds, varying in size from a beagle to a foxhound, together with three wire-haired terriers. As the mist still hung like a wet blanket on the hills, and the day had not yet broken, it was decided that we should begin by trying our luck on the low ground at the head of the valley, and thither we accordingly bent our steps. We proceeded thus for nearly an hour, and though an occasional whimper from one of the hounds led us to think that something had passed that way during the night, if it had done so we were quite unable to hit off its line. Being particularly anxious to show some sport, the huntsman now resolved to take to the hills, notwithstanding the mist; and, having received instructions to keep well together, we commenced the ascent of Yewbarrow, a mountain rather over 2000 feet in height. It soon became evident that something was on foot; the hounds showed evident signs of excitement, eagerly examining every nook and crevice, and stopping now and again to drink in, as it were, the scent from all the rocks. Still they seemed at a loss, until an old dog, which had been steadily hunting at a little distance from the rest, suddenly commenced to give tongue. The others made a rush towards him, and the whole pack was quickly off full cry up the face of the mountain, raising a chorus which resounded from crag to crag across

the valley below, and was re-echoed again and again from the rugged sides of Scawfell and the adjoining heights. The object of our early start now became manifest; the knowing ones proclaimed that it was a Mart which we were in pursuit of, and that we were probably close upon it, having no doubt taken it unawares before it had returned home from its nocturnal rambles. The hunting now commenced in earnest—no easy galloping over well-kept pastures, no awaiting one's turn to pass through a crowded gate or well-worn gap, no convenient check at a pleasant covert side, but downright hard work, not unaccompanied with the spice of danger—at one time clambering on hands and feet up a perpendicular precipice, at another crawling through a narrow crevice between two high boulders; now running across a sea of stones, which give way at every step and render it impossible even to think of standing still; now stepping from ledge to ledge, and trusting one's life to the sturdy alpenstock with which each one has armed himself before setting out. The hounds meantime are clambering up with an agility which would astonish their relations further south, resembling a party of squirrels rather than members of the canine race, as they vie with one another in their anxiety to be to the fore.

“About an hour of this sort of work brought us to what was, comparatively speaking, level ground, and here we for the first time met with a check. The Mart had considered discretion the better part of valour, and had taken refuge in a deep crevice in the face of a rock. As the efforts of the terriers were of no avail, artificial means were now brought into requisition in order to dislodge the varmint. We all set to work to collect as much grass as the locality afforded; the huntsman produced from his capacious pockets a box of matches, a little gunpowder, and an old newspaper, and in a few minutes a fire which consisted of smoke rather than flame was burning as far down the crevice as the fuel could be thrust. We had not long to wait. All stood back, and in less than three minutes a long dark object was seen scampering over the rocks above our heads, having escaped out of a hole a little distance off. Away we went again, both hounds and men more excited than ever, leaping from crag to crag, and performing acrobatic feats from which anyone would have shrunk in cold blood. The ground now became of a rather less difficult nature, and we were able, without imminent danger of destruction, to take a glance at the surrounding scenery. The rising sun had dispelled the mist, and the atmosphere had by this time become quite clear, though a few clouds hung on the summit of the higher peaks. From our elevated station we looked across to the rugged face of the Screes, one of the grandest hills in the district. Beneath us Wastwater lay like a duck pond, the cultivated

fields at the head of the lake contrasting well with the dark sides of the surrounding heights. Towering above, Lingmell, Great Gable, and Scawfell Pikes seemed to watch over the scene, while away to the west the waves of the Irish Sea sparkled under the rays of the morning sun. Close to us a pair of Ravens and a Buzzard, attracted by our presence, were doubtless wondering who it was that had ventured to invade their domain. But it would not do to linger; already the hounds were out of sight, and nothing but their baying would enable us to follow in their track.

“Another check, this time amongst a quantity of loose boulders, extending for some hundreds of yards in each direction. Again the terriers were set to work, and again the Mart continued on his way unharmed. It was, however, the beginning of the end. We were now on the summit of the mountain, and before us extended a grassy plateau, only here and there broken by fragments of rocks. The quarry was evidently making for the Pillar Mountain, which stood out in the distance, a notable stronghold for birds and beasts of prey, and which, if once reached, would afford a certain protection. Bravely the little creature raced on, no longer stopping to take refuge in the rocks, which it knew could not give it shelter, but staking all on its swiftness of foot. On the level ground, however, it had no chance, though it managed to head its pursuers for about a mile after leaving the rocks. The actual circumstances of its death need no description; in fact, the hounds alone were present at the critical moment. The huntsman, however, arrived in time, and we were able to carry off the skin as a memento of our day's hunting amongst the Cumberland mountains.”*

It is in this sort of country that, so far as England and Wales are concerned, one has the best chance of viewing a Marten; for in the great woods of the midlands and south-western counties, where a few of these animals still linger, their arboreal habits render them, amidst the dense foliage and old hollow trees, extremely difficult to discover, except by accident.

For some years past, in fact ever since the appearance of the second edition of Bell's 'British Quadrupeds,' in 1874, I have lost no opportunity of collecting information concerning the occurrence of the rarer species, and the result is an accumulation of notes that by this time would fill another volume of the same size. Those on the Marten would probably fill an entire number of 'The Zoologist.'

* 'The Field,' 6th Dec., 1879.

As Mr. Harvie Brown has, since the date mentioned, dealt very fully with the present distribution of this species in Scotland (Zool. 1881, pp. 81—90), it will be unnecessary to repeat, and it would be difficult to summarise, what he has already printed. It will suffice for our present purpose to consider its distribution in England, Wales, and Ireland.

(To be continued.)

SPRING MIGRATION IN THE HUMBER DISTRICT.

BY JOHN CORDEAUX.

IF there is any truth, which may be doubted, in the old adage that "a cold April, the barn will fill," this should be a most fruitful and abundant year, for seldom have we had, even on this bleak north-eastern shore, a colder and more inclement period than between the 1st and 10th of April: each day persistently damp, raw, and sunless, with strong northerly and north-easterly winds, and occasional showers of cold rain and hail. On the 8th, 9th, and 10th the cold was so intense that no ordinary clothing would keep it out. From the 10th to the 20th the weather was cold, damp, and generally overcast.

All this abnormal low temperature delayed the arrival of the ordinary spring visitors. Wheatears were not seen before April 10th at Spurn, and previous to these a few Redstarts near the same coast on the 4th and 5th. Golden Plover stayed later than usual, and on the 10th I saw about one hundred and twenty on some fallows, every bird of which, as viewed through a telescope, was in summer plumage,—cheeks, neck, and a band down the breast and the belly, black. On April 11th there were several flocks about, and one of 300 to 400 birds, all with black under parts; they were very restless and unquiet, repeatedly rising on the wing and careering to and fro above the marshes, their spring note, an oft-repeated mellow "klee-ar-ee," most pleasant to hear.

I found the mud-flats at low water lined with waders, chiefly grey Dunlins; an almost continuous dark belt for half a mile along the tide-edge, besides very large flocks on the wing, practising rapid and graceful evolutions, hundreds of silver-lined

wings flashing into sight, and as quickly vanishing. Numerous Grey Plover in their winter plumage, and also some Godwits, a few very fine red birds amongst them. Here and there restless Curlews flying off on the slightest intimation of being observed, with that long-drawn bubbling or quivering cry which is undoubtedly one of alarm and disapprobation. But by far the most interesting to watch were those little arctic wanderers, the Knots, all intently feeding and very closely grouped together; these were chiefly grey birds in winter dress, some in transition, more or less mottled with dull red underneath, and a few—perhaps one in thirty—most handsome birds in full plumage, with bright chestnut under parts, as deep in colour as figured in the excellent plate of this species given in Lord Lilford's 'Illustrations,' part xii. It was easy to picture them, in a few weeks from this date, haunting the margin of some inland pool, with surroundings of grey rock and shingle, and the low-growing arctic vegetation of lands as yet untrodden by man within the mystic circle of the Polar Seas.

Considering the countless thousands of Knots to be seen in the autumn and winter on the immense expanses of the Lincolnshire coast, comparatively few are obtained, the open, and often quite unapproachable, character of their haunts on low sand-banks fringing the coast affording almost complete immunity from disturbance. I have seen a yellow ridge of sand so crowded as rather to resemble in colour a mud-bank. Men speak of closely-packed Knots as covering *acres* on the ooze. A coast-gunner described a flock he had seen on the wing beyond Tetney Haven as one hundred and fifty yards long, thirty in width, and four yards deep, and so dense that he could nowhere see through them.

But to return once more to the Humber flats. Here and there along the coast for two miles were many small parties of Grey Crows, as if collected for departure. On the 13th I passed over the same ground, and, with the exception of a very few Dunlin, the whole of the vast concourse seen on the 11th, including the Crows, had gone; not a solitary bird was left. The only fresh arrival observed was a noisy flock of Fieldfares. On the 11th, also, I was pleased to see several Goldcrests, and others had been seen near Spurn on the 10th, no doubt on their spring migration. The first Swallow was seen on the 12th, several

on the 17th; and Yellow Wagtails (*M. raii*) on the same day. Many Fieldfares up to the last week in April, almost daily, moving from the interior towards the coast.

On the night of the 27th the wind backed to the south-west, and on the next morning, before the sun had melted the hoar-frost from the grass, Cuckoos were shouting all over the country. On the foreshore of the Humber I found one to two hundred Knots, chiefly grey birds, some flushed underneath with pale chestnut, but only one really red amongst them. On the other hand, a large flock of large-sized Dunlins were all in complete summer plumage.

Although almost daily on the look-out, I did not see a Wheatear on the Lincolnshire side of the Humber before the early morning of May 2nd, and this was one of the large race which visits us in the late spring, perhaps then on passage to Greenland, where they arrive early in the month. It flew into the thickest part of a rough old thorn growing on a drain-bank. There are ornithologists to whom this little wanderer of the early spring is but *Saxicola œnanthe*, male or female, as the case may be, duly labelled and put away in the drawer of a cabinet for comparison with skins of its fellows from other lands; but to those who are annually in the habit of watching for the bird, on its arrival it is something more than this,—a charming vision of contrasting black and whites, with delicate shadings of pearl-grey and warm buff; its presence invariably suggestive of nature wild and uncultivated, open warrens and moorlands, silent glens or stone-strewed mountain slopes, and surf-beaten skerries and islands in the northern seas. Its summer range is extraordinary, extending over Central and Northern Europe and Northern Asia, on the one hand, crossing Behring's Straits into Alaska, and on the other, a summer visitor to Spitzbergen, Iceland, and Greenland. On May 5th there was a great inrush of small migrants, Wheatears, Whinchats, Willow Wrens, and Whitethroats; of the two former very considerable numbers. On the Humber muds, Grey Plovers, Godwits, and Knots; but none of these in very advanced plumage. On the grass-lands a few Whimbrel, the first of the season. On May 8th, with an unusually low ebb, I could only find one Curlew and a solitary black-breasted Golden Plover on the foreshore.

On the 10th, wind N., heavy cold rain, one of the marsh

shepherds brought word that the Dotterel had come, and that he had seen at early morning upwards of 200 in their favourite marsh, that they were very tame, and he had ridden his horse amongst them. Dotterel appear regularly every year early in May in the same locality, but this year the number, seen at one time, greatly exceeds anything I have known in this marsh district, and more resembles the "big trips" recorded as occurring in the olden days at the beginning of the century.

In his recently published work ('Die Vogelwarte Helgoland'), Mr. Gätke says the early arrivals of Dotterel in the spring are males. Their present comparative scarcity as visitors to Heligoland is probably attributable to a change in the seasons. Thirty years ago, when the weather was, as a rule, warm and fine in May, light south-easterly winds prevailing, and often some rain in the early morning, Dotterel on passage used to alight on the island; now that May is almost always cold, with strong dry north winds, these pretty harmless visitors do not appear so abundantly, doubtless passing the island without alighting.

Dotterel are very rarely seen or obtained on the east coast of England during the autumn migration, and are then also comparatively strangers at Heligoland. 1882 was an exception: on August 22nd a remarkable number passed the island, in spite of westerly winds with rain; and on Sept. 4th, with fine weather and a very light north-easterly wind, and almost calm, so many from east to west that one flock alone took five minutes in passing. I have only once seen a Dotterel obtained in Lincolnshire early in May in the plain winter plumage, without any appearance of a seasonal change; but this is quite an exceptional case, the May visitors to our marshes being generally in full plumage or much advanced.

On May 12th I visited the large colony of Brown-headed Gulls at the Twigmoor Ponds, near Brigg, in this county. The number which collect there is enormous, and cannot be well reckoned. When the birds are disturbed and on the wing, the noise for the time is deafening, and the almost solid-looking masses of hovering and wheeling Gulls sufficient to obscure the sky, and to entirely shut out the pale green surroundings of larch and birch, which trees chiefly supply a dense background to their haunt. It is curious to see numbers alighting on the tree-tops, and on comparatively very slender branches for so big a bird. After the

canard about the French savant and the locusts, we can speculate as to our fate if they elect to settle down upon us. The closely packed nests, on the boggy land around the ponds, contained three eggs, and in a few cases four. Several were placed in some low-growing Scotch firs, in one case fully twenty feet from the ground; also on the planks and cross-pieces of a long foot-bridge connecting the ponds. None of the birds showed the slightest trace of immaturity. Their greatest enemies are pilfering Daws which take the eggs, and Rats which destroy both eggs, young, and the sitting birds. At this date some young were already hatched. Eight, presumably male, Sheldrakes were present on the ponds, and probably represented the same number of females sitting on eggs, in holes and old rabbit-burrows on the neighbouring common.

On the 20th there were a few Grey Plovers—on passage to the northern tundras—on the Humber muds. Most of these were remarkably fine birds in full nuptial attire. The standing figure given of this species in the breeding dress in Yarrell's 'British Birds,' vol. iii. p. 278, gives but a very imperfect idea of the real beauty of the Grey Plover at this season, for the engraving quite fails to show the strongly contrasting white border to the sides of the black throat and breast, which serves to set off the black, and makes the bird so very conspicuous an object on the coast, and readily distinguishable at great distances. Lord Lilford's plate, in the last issued part of the 'Coloured Figures of British Birds,' is excellent, although the dark parts might very well be represented even darker.

The result of a day's ramble on the Lincolnshire sea-coast on the 23rd was rather disappointing, for comparatively few waders were seen. There was a good sprinkling of Dunlin in summer plumage, and also Ringed Plover. On the "fitties" noisy Lapwings and several pair of Redshanks, the latter drifting to and fro with pendulous wings, above what was probably their nesting quarters, all this time giving utterance to a quickly repeated querulous note which resembled the word "che-ic." On the skirts of the "fitties," where the bright green patches of *Zostera* grow, were a few Grey Plovers in summer plumage, and, very conspicuous on a higher patch of sand and mud, eight or nine red Godwits, beyond these again two blue Herons fishing in a tidal pool—all these Plovers, Godwits, and Herons almost

within the field of my telescope at the same time. There were a few Terns here and there along the coast, and some large Gulls, probably immature Great Black-backed Gulls, on a distant sand. On some parts of the Lincolnshire coast this fine Gull is distinguished by the local name of the "man-eater," for it is said to be the only Gull which will attack a corpse floating, or stranded.

Donna Nook is one of the salient angles of the Lincolnshire coast-line, and on that lovely day in May the view from the sand-hills was almost unlimited to the south across a level fertile country—league after league—till it melted into the blue haze of the sleeping wold. To the north a desert—the lonesome shore, with scarcely any sign of life upon it—a weary monotone of shifting sand, with a grey-blue line of sea on the horizon. Yonder, far out on the right, where we can just discern the flying manes of the "white horses" hastening towards the land, is the great sand called the Haile, the scene of countless disasters and some notable wrecks, from that of the ship 'Betsy' on Jan. 3rd, 1767, in which perished, when on a voyage from Leith to London, Brigadier-General Hamilton, a "commander of his most faithful Portuguese Majesty's armies," his wife and child, servants, and all the crew, to the last of the Hull whalers, the old 'Diana,' lost in a terrific north-east gale on October 18th, 1869, which covered the coast with wrecks.

Often enough, on the eastern slope of the sand, through many a fearful night of storm, men in sore agony have clung in the humming shrouds hour by hour, with eyes straining for any sign of rescue towards the invisible shore, till, all hope abandoned, they have dropped off one by one into the ravenous sea.

Out there beyond the creek, where the white Terns flicker above the summer sea, a small foreign vessel once came on shore. At daybreak men went out to the rescue, and as the tide was ebbing they had little difficulty in working their boat alongside. The crew were clustered in the rigging, and the captain's wife—a fair young Swede—highest of all, her hair, in the fiery dawn, all loose, streamed out like a pennant in the course of the north-east wind. The men, half-dead, were taken off, and then one of the rescuers, going aloft, cut the lashings, and lowered the girl's body, for she had been long dead under the cold and horror of that cruel night of exposure. All this I heard long ago from the

mouth of one who was present. It was on this shore, too, that the brave Hoodless, during his lifetime, saved so many lives by swimming out his grey cart-mare to stranded vessels—a noble creature, which would face almost any sea when called on to do so, being possessed with the same high courage and metal as her own fearless rider.

By the end of May all the migratory birds which for a few weeks in the spring made pleasant our eastern shores, had passed to their breeding quarters in distant northern lands, and such as were left were representatives of species which nest in the district, like the Ringed Plover and the Redshank. Occasionally a few old barren birds of various species, or such as from wounds or other causes were incapable of migration, might be seen on the coast during the summer; and others, often in considerable flocks, as immature Knots, Dunlin, and Turnstones, having only partially acquired the nuptial plumage of adults, which, so far as we know, do not leave the district or go northward after their fellows.

BIRDS AT KISSINGEN.

BY THE REV. CHARLES W. BENSON, M.A., LL.D.

THE town of Kissingen is the most frequented "Bad" in Bavaria. It is picturesquely situated in the valley of the Franconian Saale, a tributary of the Main, and is sheltered from harsh winds by the Rhôn Mountains and by the Thuringian Mountains behind them. Its latitude is $50^{\circ} 12' 7''$, its longitude $27^{\circ} 54' 27''$ E., German measurement, and it lies 628·8 ft. above the level of the North Sea.

On 4th July I arrived at Kissingen, or, as it is called there, "Bad Kissingen," in order to take up the duties of the English Chaplaincy for the month, and devoted most of the spare time at my disposal to observing and making a list of all the birds. After we had refreshed ourselves on arrival at the Hotel Victoria, we sallied out to take a look at the place, and found that the Kur-Garten was exactly opposite to our hotel, across the road, that the springs and baths, and Concert Hall were there, and that the trees were tenanted by countless birds, whilst all along the banks of the Saale, which flowed close by, Wagtails, Flycatchers, Swallows, Martins, and other species were as busy as

they could be. Greatly delighted at our prospects, we closed our first day at Kissingen.

July 5th, Sunday.—After evening service we strolled along the banks of the Saale, and found there Blackbirds, Chaffinches, Goldfinches, Greenfinches, Serins, Grey Wagtails, Spotted Flycatchers, one Wood Warbler, Garden Warblers, the two Redstarts, and other species, and all wonderfully tame.

July 6th.—Observed twenty-one species of birds in the Kurgarten, including one of whose identity I was uncertain, but which had taken its station in a tree near the Iron Bridge, and which uttered from time to time some wonderfully loud and melodious notes, interspersed with some discordant cries like “aye, aye.”

July 7th.—Walked up to the Stationsberg, at height of about 470 feet, from which we had a lovely view of the Rhôn Mountains, glad to hear the Song Thrush and Robin, of which there were none apparently in the town. I watched for a considerable time the strange bird in the lime-tree near the bridge. Its notes were very loud and sweet, with some harsh, jarring sounds. I think this must have been the Icterine Warbler I heard in the Hosch at the Hague nine years ago. It is like a Willow Warbler; the back is green, bill horn-colour, chin silvery. Nuthatches were very tame and plentiful; fire-flies numerous.

July 8th.—Observed the same warbler again closely, and then felt sure it was the Icterine Warbler. Saw a male Great Spotted Woodpecker in the trees at the other side of the Saale, and was much interested to note its attitudes,—at one time over, and at another under, the branches,—like a boy’s on the parallel-bars. The call-note, like the word “gick,” reminded me of a Yellowhammer, and seemed very appropriate to his surroundings, as “Gicht” is the German for gout, which the waters of Kissingen are supposed to cure.

July 9th.—Walked up towards the Salinen-Bad, and heard two Reed Warblers on the river-bank; saw also a small warbler, very silvery underneath. In the evening, on the hill near the Belvedere, Lovely scenery! as one gets higher up, a gentle and tranquil beauty reminded me of the Thames Valley at Wargrave.

July 10th.—All the graves in the “Gott’s Acker,” or, as they beautifully term it here, the “Friedhof,” were decked with flowers and wreaths, as this was the twenty-fifth anniversary of the battle

of Kissengen, when the Austrians and Bavarians were defeated by the Russians on July 10th, 1866.

July 11th.—Had a good view of the Garden Warbler singing; this is, in my opinion, a most difficult bird to see, although one hears it everywhere. Red-backed Shrikes were very plentiful; they sometimes uttered notes like two stones knocking together. Many birds do this, such as the Robin, Wheatear, Stonechat, Whinchat, Blackcap, Garden Warbler, Redstart, yet there are certain modifications in each case, which a practised ear can readily detect.

July 12th.—“Mein Geburtstag”; climbed a hill as I always do on this day. My hill this year was the Finsternberg; saw a Hare, some Jays, and a Robin up there.

July 13th.—Took a lovely walk up the Stubenberge road, and heard both the Wood Pigeon and the Turtle Dove; saw also a Common Buzzard, and a hawk I took for a Goshawk mobbed by a Swallow and other small birds.

July 14th.—A splendid view from the Claushöhe, 730 feet above the Saale, a wooden tower 48 feet high, with an indicator to show the different objects in the distance; on the north the great Thüringen Wald—how I wished I could go there!—and the Kreuzberg, where I hoped to go next day. Saw in the woods that most interesting bird, the Crested Tit; its note, “splururra, splururra” always enabled me to identify it.

July 15th.—Feast of S. Swithin, and, alas! the weather forecast from Munich, posted in the Kur-Garten, announced “Gewitter und strich Regen.” Thunder-storms and rain on S. Swithin’s day, and the day of our long-looked for excursion to the Kreuzberg! No matter, if we have to brave it all: and so, at 10 a.m., we set forth in a capacious landau belonging to the hotel, drawn by two fine horses, and driven by a stout rubicund “Kutscher” in green livery. After a pleasant drive of about three hours, through many small villages,—and in Bavaria the villages are rarely two miles apart,—we entered a valley with a stream running through it, and somewhat precipitous hills on either side. Here an enormous bird attracted our attention, as it flew slowly to a large rock, and, turning round towards us, uttered a shrill scream; at once it was followed by another, evidently its mate, and a third, which we took for a young bird. “Geier,” cried our coachman, but evidently the birds were “Adler” (eagles), the first I had ever

seen in a wild state. Owing to the marshy ground we could not approach them, and they looked as if they would show fight had we done so; we were therefore reluctantly obliged to leave them to their reflections and resume our journey. Not long after we arrived at Sandberg, a village at the foot of the Kreuzberg, and there we "outspanned," and took a guide named Valentine to show us the way to the summit. We went our way briskly, and soon passed three German gentlemen, who had left Sandberg some time before us, and whose motto, as they told us, was "Immer langsam" (ever slowly), and in about an hour arrived at the Monastery, called here the Kloster, which stands almost on the summit of the Kreuzberg, and above the lovely woods which clothe the mountains for more than 2000 feet. From this lofty "coign of vantage" we saw again the Thuringian Forest, the Dreistelz, the two remarkable mountains called the Gleichen, and Kissingen, with the Bodenlaube far away in the distance. Of birds not observed before, we noted the Hen Harrier, Twite, and Meadow Pipit; and, as we returned, again saw the three Eagles in the same place in the Schmalwasser Valley. The people in this district are very poor, and cannot keep horses, as the host at the little tavern told us. Oxen and cows draw their carts, and thus serve more purposes than one in their domestic economy. He also informed us that Eagles were plentiful, and offered to shoot one for us, an offer which, however, we thankfully declined.

July 17th.—Near Winkels I saw and watched for some time what I took to be a pair of Crested Larks; they alighted near me, and I had a good opportunity of studying their markings. I heard at night a bird making a loud and curious noise, like "hack, hack, hack," along the banks of the river. What could it have been? A local naturalist averred that it was a Water Rail. We had splendid views of the country from Ludwig's Thurm and the "Höhe Eiche" (High Oak).

July 18th.—Temperature $81^{\circ} 5'$ in the shade. Visited the Museum in the Real-Schule, but was not favourably impressed therewith.

July 20th.—Had a most enjoyable carriage excursion to Trimburg, an old castle, about five miles away, commanding a splendid view of the country for many miles around. The ruin is indeed a most interesting one, and well repays a visit, perched as it is on a lofty eminence, and still retaining evident traces of

its ancient grandeur and strength. The lords of Trimbürg are mentioned as early as 1137, but their castle was burnt down during the Peasants' War, and the larger portion of the present ruin was erected, towards the end of the sixteenth century, by Bishop Julius of Würzburg. During the summer months refreshments are to be had within the ancient walls; and as we sat at afternoon tea we noted lower down a Nightingale threading its way through the thick bushes at the base of the walls; and looking up shortly afterwards, saw a tolerably large bird alight and remain on the wall high above our heads. With the help of my field-glass, I discovered that this was a Great Grey Shrike, and, as it looked down upon us from its lofty perch, it seemed well to deserve its name of *excubitor*, "the sentinel." The Red-backed Shrike, *Lanius collurio*, was everywhere numerous.

July 21st.—Went up to the Salinen in the steam-launch 'Kissingen'—an enjoyable trip. The river is but the width of a canal beyond Kissingen, and green banks with trees and bushes border it on each side. There was barely room for us to pass the sister ship 'Salinen' on the return voyage, but by skilful management we contrived to squeeze by. I saw a Siskin later on in the "Friedhof," as they call the cemetery here, though in most places the churchyard is styled "Gott's Acker." I know not which is the more beautiful name: "The Abode of Peace," or "God's Acre." Surely the cemetery, or "sleeping place," is both.

July 22nd.—A Willow Warbler appeared at the back of our hotel, the first I have seen here. Although I visited all the hills and woods around at nightfall, I failed to hear or see an Owl, whilst at Bex, last year, Owls and owlets might be heard on all the roads near the town. Frogs, however, were here, and most melodious they were outside the town; I never heard music like their's before.

July 24th.—Many Tree Sparrows and Yellowhammers were noticed at the Bodenlaube.

July 26th.—On the Finsternberg, in the evening, at 8.30, I heard a Sky Lark singing and also the "reel" of the Grasshopper Warbler, and so added a new bird to my list on my last day at Kissingen.

The following is a list of the species observed during my stay here:—Song Thrush, Blackbird, Wheatear, Whinchat, Redstart, Black Redstart, Redbreast, Nightingale, Whitethroat,

Blackcap, Garden Warbler, Chiffchaff, Willow Warbler, Wood Warbler, Icterine Warbler, Reed Warbler, Sedge Warbler, Grasshopper Warbler, White-headed Long-tailed Tit, Great Tit, Coal Tit, Marsh Tit, Blue Tit, Crested Tit, Northern Nuthatch (?), Nuthatch, Creeper, Wren, White Wagtail, Grey Wagtail, Tree Pipit, Meadow Pipit, Great Grey Shrike, Red-backed Shrike, Spotted Flycatcher, Swallow, House Martin, Sand Martin, Goldfinch, Siskin, Serin Finch, Greenfinch, House Sparrow, Tree Sparrow, Chaffinch, Linnet, Twite (?), Common Bunting, Yellow Bunting, Sky Lark, Crested Lark, Starling, Jay, Magpie, Carrion Crow, Swift, Great Spotted Woodpecker, Green Woodpecker, Wryneck, Hen Harrier, Common Buzzard, Golden Eagle, Goshawk (?), Sparrowhawk, Black Kite, Kestrel, Common Heron, White Stork (at Babenhausen, July 27th), Wood Pigeon, Turtle Dove, Water Rail (?).

This concludes my list of about seventy species, of which I have marked a few as doubtful. Had I been at Kissingen a month earlier, when the birds were in full song, I might have been able to add several others.

Of species common enough in this country, I did not observe the Missel Thrush, Hedgesparrow, Goldcrest, Bullfinch, or Rook; nor did I see a Jackdaw until I found one perching on the towers of Maintz. The fact that no Goldcrests were to be found in the many woods around Kissingen struck me as "passing strange."

And now, in conclusion, let me suggest that some competent ornithologist should draw up a list of the birds likely to be met with in those continental countries which, year after year, are crowded with English visitors. When acting as chaplain in Switzerland and in the Black Forest, I found that the greatest interest was taken in any remarks I ventured to make about the birds of the district, and I well remember the delight of two English ladies when, at Triberg in 1888, I pointed out to them that remarkable little bird the Crested Tit. When at Gimmelwald, also, in the Laaterbrunnen Valley, in 1889, where we were delighted to notice the Alpine Swifts, and that lovely little bird the Citril Finch, I was asked more than once by guests at the Pension Schilthorn, "What is the black bird with the white tail we often see flying about?" For a long time I was unable to say more than that I did not know, or that it must be some *lusus naturæ*. Until at last one day I discovered the secret when I saw

two Nutcrackers flap quietly into a tree, looking somewhat like small Jackdaws, with a white bar across the extremities of the tail-feathers underneath.

I think therefore that a list of such continental birds as are likely to be met with by tourists would be very welcome, if accompanied by a short recognisable description, and I would suggest that such a list should be drawn up by the Editor of this Journal and by Mr. W. Warde Fowler, author of that charming book, 'A Year with the Birds.' If such a manual or pamphlet were sold at the bookstalls, say for half a franc or half a mark, it should command a large circulation, and give much pleasure and instruction to the increasing thousands who are to be found year after year in continental resting-places.

[In 'The Zoologist' for 1890, p. 231, will be found a notice of Mr. Backhouse's 'Handbook of European Birds for the use of Field Naturalists and Collectors,' a small octavo volume of about 300 pages, published by Messrs. Gurney and Jackson.—ED.]

NOTES ON THE BIRDS OF DONEGAL.

BY HENRY CHICHESTER HART, B.A., F.L.S.

(Continued from p. 338.)

*GOLDEN PLOVER, *Charadrius pluvialis*, Linn. — Resident, breeding in the mountains in several places, as about Ardara and Killybegs. A pair bred at Long Lough, near Rathmullan, 1879. Much commoner in winter. About Killybegs Mr. Brooke finds them far less common than they were twenty years ago, though still abundant, winter and summer.

GREY PLOVER, *Squatarola helvética*, Linn.—A winter visitant in small numbers to the shores of Lough Swilly. In November I have seen small flocks two or three times. At Roskirk, in Fanet, a couple of miles inland, Patrick Campbell, a local fowler, shoots a few most years: he calls them "Silver Plover."

*LAPWING, *Vanellus vulgaris*, Bechstein. — Resident, and in many localities common; for example, along the north coast of Fanet, where many remain to breed.

DOTTEREL, *Eudromias morinellus*, Linn. — A very rare visitant. One obtained in Donegal is preserved in the National Museum.

*RINGED PLOVER, *Ægialitis hiaticula*, Linn.—Common on the coast of Donegal. I have seen this bird at various points of the N.W. coast, and in Fanet, at any rate, they remain throughout the year. Mr. Brooke has taken their eggs in several places near Killybegs. I have taken them at the mouth of the Mulroy.

TURNSTONE, *Streptilas interpres*, Linn.—Frequent in winter on the Bottom Shore, Fanet. I have seen a Turnstone near Kindrum in August. They are occasionally reported by the lighthouse keepers, as at Tory Island, Jan. 10, 1884, "a flock going south."

*OYSTERCATCHER, *Hæmatopus ostralegus*, Linn.—Frequent at all seasons round the coast, but commoner in winter. I have found their nests at Horn Head, Breaghy Head, and Melmore Head; the eggs are generally hatched by the end of May. These birds occasionally breed inland. I have taken their eggs on an island in Lough Erne, where several other marine species, Terns, Ringed Plovers, and Gulls breed. "Breeds on all the islands and detached rocks on the south-west coast" (A. B.).

GREENSHANK, *Totanus glottis*, Pallas.—I have seen Greenshanks along the north coast of Fanet several times in late summer. At one time I made sure they bred at Kindrum. At Ards, on Sheephaven, I have heard and seen these birds.

*REDSHANK, *T. calidris*, Linn.—Frequent, and resident on the larger lakes and swamps, where it breeds: abundant in winter.

*COMMON SANDPIPER, *Tringoides hypoleucus*, Linn.—May be found breeding on most of the mountain lakes, especially the lonelier ones, in Donegal.

PURPLE SANDPIPER, *Tringa maritima*, Linn.—A small flock or two of these birds usually frequent the rocky shore here at the end of the year. One was obtained by the light-keeper on Rathlin O'Byrne Island, Nov. 3rd, 1886 (Report on Migr. of Birds).

KNOT, *T. canutus*, Linn.—Visits the Donegal coast in autumn, and, I think, in many cases remains the winter.

*DUNLIN, *T. alpina*, Linn.—Abundant in winter, and remains about Lough Swilly and Sheephaven till the end of May. Probably breeds in several places. I have an egg taken near Ardara by a lad who got a clutch for Mr. Brooke.

LITTLE STINT, *T. minuta*, Linn.—Very rare. "One was shot by Mr. H. D. Barton, of The Rush, Antrim, at Fintra, Killybegs, in 1880, and is now preserved in Mr. Barton's collection" (A. B.).

*WOODCOCK, *Scolapax rusticola*, Linn.—Woodcocks remain to breed in most parts of Donegal. At Ards, Rathmullan, Glenalla, and Carrablagh, I have known their nests. In this county Woodcocks are scarcer in winter than they were twenty years ago. Places that afforded a couple of good days' shooting then, are now not worth beating for one. I sent a note to 'The Zoologist' in 1889 of my observation of the parent bird carrying a young one in its feet. Mr. Brooke has obtained their eggs from Lough Eske, where a few breed annually. "They are plentiful on the moors near the sea on the west coast at the beginning of December, though they begin to arrive at the end of October. Sometimes they are plentiful in February in similar situations, as if on their return journey from more inland places" (A. B.).

*COMMON SNIPE, *Gallinago media*, Leach.—Common in winter, a small proportion remaining to breed in various places.

JACK SNIPE, *G. gallinula*, Linn.—Usually, I believe, less common than the last species; apparently not so in several parts of Donegal. Never remains to breed. In Fanet, in winter, more numerous than Common Snipe.

CURLEW, *Numenius arquata*, Linn.—Abundant in winter. Breeds perhaps in some of the remote Donegal mountains, as at Muckish and in the Bluestack Mountains near Barnesmore. Mr. Brooke, however, has never met with them breeding in Donegal.

WHIMBREL, *N. phæopus*, Linn.—Frequent along the open coast in spring and autumn. Lord Leitrim informs me that many remain throughout the summer about Downing's Bay, and the keeper at Fanet lighthouse has shot Whimbrels near Rinboy Point, in Fanet, in July and August.

*COMMON HERON, *Ardea cinerea*, Linn.—A well-known bird. There are heronries at Fahan, Ards, Raphoe, Kilderry. A small heronry formerly existed at Greenfort, Fanet. A pair of Herons bred at Glenalla, in 1887. In the hard winter of 1881 a number of Herons were found dead about the heronry at Kilderry, either starved or frozen to death in their nests when they went to roost. This heronry was thus decimated, but has since recovered. A few pairs have bred for many years on an island in Lough Eske on some very low trees. Rooks also built in these trees. I heard last year (1890) that the Herons had left. They breed at Mr. Carre's, of Inver, and a pair last year built at Bonny Glen (near Inver).

BITTERN, *Botaurus stellaris*, Linn.—Very rare winter visitor. Mr. Brooke shot one near Killybegs about the year 1868. Several others were, he believes, shot the same winter in Donegal. Mr. J. E. Stewart, writing in 1880, states that Bitterns were resident, but very rare. Thirty years previously, he says, they were common.

WATER RAIL, *Rallus aquaticus*, Linn.—Not unfrequent in autumn at Breaghy Head, Kindrum, Dunfanaghy, &c.

***CORN CRAKE**, *Crex pratensis*, Bechstein.—Common in summer in cultivated districts. Hardly penetrates to the north of Fanet.

***WATERHEN**, *Gallinula chloropus*, Linn.—Common at all seasons in suitable places.

***COOT**, *Fulica atra*, Linn.—To be seen on many lakes, sometimes in large numbers; on Ballymagahy Lake, in Fanet, I have counted as many as thirty in view at once, though it is not half a mile in circumference. The Coot remains on this lake throughout the year. In bad weather it sometimes leaves lakes near the shore, as Long Lough, Rathmullan, and takes to the salt-water estuaries. The Waterhen, on these occasions, does not leave the ditches or margins of its frozen home. The "Dabchick" also takes to the sea in winter.

(To be continued.)

NOTES AND QUERIES.

MAMMALIA.

Polecat in Oxfordshire.—In February, 1886, Mr. Darbey, taxidermist, of Oxford, showed me a huge male Polecat, which he had found to measure nearly two feet five inches; as stuffed, when I saw it, it was rather more. I have no note of the place where it was trapped, but fancy it was Stowe Wood, near Oxford. It was several inches longer than any of the numerous other specimens which had been caught in the neighbourhood during the previous autumn, none of which, I think, exceeded two feet.—ARTHUR H. MACPHERSON (51, Gloucester Place, Hyde Park, W.).

Polecat in Nottinghamshire.—In the month of January last a fine male Polecat was brought alive into Retford. It had been caught at a farm in the Forest, a few miles from that town.—L. BUTTRESS (Grove, near Retford, Notts).

The Serotine in Kent.—If you are not tired of hearing about my bats, I send you some further notes, with two specimens shot in September,

which I take to be *Vespertilio serotinus*. We had a rough, rainy, windy evening, and about 7 p.m., seeing several large bats flying about, to make sure they were not the Noctules returning to their winter quarters, I shot two of them. One, the largest and darkest, measured 15 in. from tip to tip of the wings; the other, much lighter in colour, measured 14½ in. If I am correct in determining the species, it is certain that this bat exceeds the Noctule in size. I take it, the lightest coloured one is a young specimen. The dentition of each specimen agrees with *V. serotinus*, but one is injured by a shot in the mouth. The measurements, taken in inches and tenths— are as follows:—Expanse of wings, tip to tip, 15 in.; one wing, 6·5; fore arm or humerus, ·9; radius, 2·1; 1st digit, 2 in.; 2nd digit, 0·8; 3rd digit, 0·4; tail from vent, 2·3; body and head from vent, 2·8; length of head, 1 in.; length of ear, posteriorly, 0·8; ditto, anteriorly, 0·5. The smaller of the two specimens measured only 14·5 in. in expanse of wing. The colour above is dark umber-brown; underneath, mouse-coloured; ears and wing-membranes nearly black. Nostrils fringed with hairs; eyes rather large; ears directed outward, and triangular; tragus narrow, pointing forward. I have seen no Noctules since I last wrote in August.—GEORGE DOWKER (Stourmouth House, Wingham, Kent).

CETACEA.

A White Porpoise.—I recently saw (Oct. 5th) on the Holderness coast, near the Spurn, a white Porpoise, closely accompanied and rolling with one of the normal colour, within fifty yards of the shore at high-water. It was a bright, clear day, and the appearance of the creature was particularly striking and attractive. The general colour white,—I can perhaps best describe it as the colour of a tallow-candle,—and inclining to deep pink about the roots of the dorsal fin and tail. There was a dusky narrow streak from the head backward along the centre of the back, but this did not extend in any degree down the sides; the dorsal fin, and also the caudal fin, or extremity of the tail, white, edged with dusky, after the manner of a black-edged envelope.—JOHN CORDEAUX (Eaton Hall, Retford).

BIRDS.

A new Work on the Birds of Devonshire.—Ornithologists will be pleased to hear that Mr. W. S. M. D'Urban, of Moorlands, Exmouth, and the Rev. Murray A. Mathew, of Buckland Dinham, Frome, have joined forces to bring out a work on Devonshire birds. Their joint notes and observations, collected for the last twenty-five years, cannot fail to be valuable. Mr. D'Urban's researches extend chiefly to the south of the county, Mr. Mathew's to the north. Correspondents who may have anything of interest to communicate will therefore know to whom they should be sent.

The Colour of the Iris in Albino Birds.—I was surprised to read (p. 358) that Mr. J. Jenner Weir had never seen an albino bird with pink eyes, considering the number of Crystal Palace Cage-bird Shows that he has judged, and then to miss seeing the few pink-eyed albinos that have been shown. No true albinos were exhibited at the last show, but at the previous show an albino House Sparrow and albino Blackbird, both showing the pink eye, were exhibited. In the show of 1888 white House Sparrows with pink eyes and others with dark eyes were shown. A few years earlier an excellent albino Greenfinch, distinctly showing the pink eye, was amongst the winners. In the pair of albino Budgerigars, or Grass Parrakeets, the pink eye was very distinct; they were exhibited at many shows in 1889, but not at a Crystal Palace Show.—J. H. VERRALL (Lewes).

I cannot understand Mr. Jenner Weir saying (p. 358) that he has never seen albino birds with pink eyes. He was actually judge at the Crystal Palace Shows at which I purchased three of my albinos—two Blackbirds and one Hedgesparrow—and all these have eyes of a most distinct pink shade; they are all alive now and can be seen. As to there being no true albinos at the last show, I bought one Blackbird and my Hedgesparrow at that show, and they are both pure white, with irides of a pink colour.—WILLIAM INGRAM.

Mr. Jenner Weir may have had "greater opportunities of seeing albino birds" than most people, but ornithologists who have paid any attention to this subject may be pardoned if they express surprise at the statement in his letter that he has "never seen a single instance of an albino bird having pink eyes." My impression is, that these albino birds almost always have irides of some shade between very pale dull pink and bright pink; but those ornithologists who have made an especial study of white birds will doubtless be able to enumerate far more examples of pink-eyed birds than I can. It is of course well known that numbers of white birds are found in a wild state which are not true albinos, and are known as "white varieties."—O. V. APLIN (Bloxham, Oxon).

[Mr. Weir sent a copy of his 'Zoologist' letter to 'The Field'; the above replies were addressed to the Editor of that journal.—ED.]

The editorial remarks under this heading (p. 358) upon the communication of Mr. Jenner Weir coincide with my own experience on this subject. Indeed I had almost come to the conclusion that pink eyes denoted a true albino; for whether in quadruped or bird they are usually associated with abnormally pale parts of the body which are bare of "fur or feathers." A white Weasel—whose occurrence I mentioned in 'The Zoologist' for 1889 (p. 449)—had pink eyes, whilst its feet and muzzle were comparatively white. With regard to birds, I have seen both Blackbirds and Thrushes with eyes of the same hue (Zool. 1875, p. 4692). As recently as June last, a gamekeeper showed me an albino Blackbird, about

three-parts grown, which had died after having been kept in a cage for some weeks, and its eyes were of the pale, semi-transparent pink such as I had previously observed in other specimens. Its legs and claws were almost white, its beak of a pale lemon-yellow, and the circle round the eyes a much deeper colour. On dissection this proved to be a male. Of other albino birds, I may mention Robin, Starling, and Sand Martin, all of which had pink eyes; but there is one peculiarity about such specimens as have come under my observation, *viz.* that they were for the most part immature; this, however, is not to be wondered at, for a white individual is sure to be singled out and sought after before its dusky relatives. I have from time to time seen many pied, and otherwise abnormally coloured, specimens of various species of birds; but in no case have I observed the pink eyes, unless the plumage was wholly white.—G. B. CORBIN (Ringwood, Hants).

American Red-breasted Snipe in Argyleshire.—On the 2nd Sept. last I shot a North American Red-breasted Snipe, *Macrorhamphus griseus*, near Crinan, Argyleshire. The bird was sent to Edinburgh to be identified, as I could not be sure from illustrations what it was. If you could find room for this notice, it might be of interest to your readers.—G. H. MALCOLM (1, Albert Road, Clifton, Bristol).

Blue Eggs of the Nightingale.—On May 22nd, after half an hour's careful stalking and searching, I was fortunate enough to find in a wood near Willesborough, about a mile and a half from Ashford, a Nightingale's nest containing five eggs, which were of a beautiful greenish blue, the same colour as those of the Whinchat, and minutely spotted and speckled in a zone at the larger end, in the same manner as those of the bird just named. On the 29th my brother discovered a second clutch of four eggs of the same bird, within thirty feet of the first nest, the eggs being of the same colour and marking. I find that Mr. Miller Christy mentions this variety in his 'Birdsnesting and Birdskinning,' but I believe they are anything but common, for although I have found numbers of Nightingale's eggs, this is the first instance in which I have obtained the blue variety.—PERCY F. BUNYARD (3, Wellington Road, Ashford, Kent).

Wilson's Petrel in Co. Down.—On Oct. 3rd, Mr. Sheals, of Corporation Street, Belfast, sent for me to see a bird he had just received from Mr. A. F. Charley, of Seymour Hill, Dunmurry, Co. Antrim. I recognised it as Wilson's Petrel (*Oceanites oceanicus*), the first Irish specimen I then knew of. I wrote to Mr. Charley for particulars, and quote from his reply:—"The Petrel was found in an oat-stubble field belonging to Seymour Hill Farm. The field is situated in the Co. Down, about a quarter of a mile from the canal at Mossvale. The bird was found by one of our farm hands called John Dunnoody, who had gone to catch a horse, and the bird was then brought to me. It was alive at the time, but seemed weak and

emaciated, and would not eat anything. I placed it in water to see what it would do; it flapped its wings and used its feet in the usual way. Its legs were apparently of little use for walking, and it sat with its breast resting upon the ground; however, it could get along a little by the aid of its wings. It was caught on 2nd October, at about half-past three in the afternoon, and was dead the following morning." On examination it proved to be a mature female in fair plumage. The only previous Irish note I know of is in Thompson, p. 417, vol. iii., where he states that in August, 1840, a specimen was presented to him by Mr. Glennon, of Dublin, who "believed it to have been obtained in Ireland, but did not preserve any record of the locality." With his usual caution, therefore, Thompson did not include this species in the Irish list. I have just learned that a second specimen was shot about the same time on Lough Erne, Co. Fermanagh, and was sent to Mr. Williams, of Dublin, from whom we shall doubtless have particulars. I should add that the last few days of September were stormy, strong W. and S.W. winds prevailing.—ROBERT PATTERSON (1, Windsor Park Terrace, Belfast).

Wilson's Petrel in Co. Fermanagh.—A specimen of this bird was shot on Lough Erne, on Oct. 1st, by Mr. Thomas Plunkett, of Enniskillen. It was sent to me for preservation, and was easily recognised by its remarkably long legs, and by the yellow colour on the basal portion of the webs.—EDWARD WILLIAMS (2, Dame Street, Dublin).

[An unusual number of Storm Petrels, Leach's Petrel, Manx Shearwaters, and the two specimens of Wilson's Petrel now recorded, have been reported to have been met with inland, chiefly in Ireland and the West of England, during the present month of October, after protracted stormy weather at sea.—ED.]

Manx Shearwater inland in Nottinghamshire.—During the first week of September last a Manx Shearwater, *Puffinus anglorum*, was caught by a collie dog at Treswell, a village not far from here, about forty miles from the coast. The bird was sent to Retford to be stuffed.—E. BUTTRESS (Grove, near Retford, Notts).

Manx Shearwater in North Norfolk.—An example of this species was picked up dead in a field in the parish of North Creake, on Sept. 7th, 1891, at a distance of four miles from the seashore, and given to me. It is a bird very rarely captured on the Norfolk coast; most of those recorded from the county have been taken inland, and between the middle of August and the middle of October. Mr. Southwell mentions seven such occurrences in the third volume of 'The Birds of Norfolk,' and the late Dr. Babington, in the 'Birds of Suffolk,' cited similar instances. Mr. Cordeaux considers this species not uncommon in the autumn off the Yorkshire coast, notably in the vicinity of Flamborough Head. I am at a

loss to suggest any satisfactory reason why these birds should have been captured or found dead inland on several occasions both in Norfolk and Suffolk, and yet to be so rare along the Norfolk coast, unless it is due to the peculiar configuration of the Norfolk coast-line. If we look at a map we can see at a glance that the north Norfolk shore-line is the most considerable stretch of English coast facing due north, whilst at any spot between Hunstanton and Cromer a prolongation of its longitude would pass to the North Pole, without cutting any land; in fact, the north Norfolk coast-line protrudes into the German Ocean for many miles at a right angle to the meridian of Greenwich, and is probably a serious barrier to oceanic birds on a southward course, hugging the eastern coast of England. Thus Shearwaters following the coast-line from Flamborough Head in their annual movement southward must, on reaching the Wash, be brought up by the land, and unless they divert their course sharply to the eastward, are liable to be cast inland. The low stretch of seaboard prevailing from Hunstanton to Sherringham, where during the hours of high-water sea and marsh commingle, doubtless adds to the difficulty that an oceanic bird must find in taking its bearings, and this may account for the Shearwaters having been cast away inland on so many occasions in Norfolk. The Scotch coast from the Moray Firth to Fraserburgh is the only other part of the British Isles that coincides in configuration with north Norfolk, and it would be interesting to learn whether similar observations on the stranding of Shearwaters appertain to that part of Scotland. Mr. Harvie Brown, who, I believe, is now engaged in working out the fauna of Moray, might kindly enlighten us.—H. W. FEILDEN (Wells, Norfolk).

Migration of Birds at Night. — On the night of the 4th May last a great rush of migratory birds seems to have passed over Dublin, evidently on their way to their northern breeding haunts. While sitting in our rooms in Trinity College, about 11 p.m., we were attracted by the loud call-notes of birds passing overhead. The night was calm and cloudy, not very dark. We listened at the open window until about 1 a.m., when they seemed to be still passing over in undiminished numbers. They were mostly Golden Plovers and Dunlins, easily recognised by their notes; but we frequently heard the cry of the Whimbrel, or the shrill call of the Common Sandpiper. It was most curious to hear these notes, at first far away towards the southwest, gradually becoming louder as the flocks drew nearer and passed overhead, and then rapidly passing away to the northward. Sometimes the whole air seemed full of their clear whistling notes; in one direction the loud, short, pipe of the Golden Plover, in another the shrill wheezing cry of the Dunlin, reminding one of the sound made by a whistle with a pea in it. Sometimes a bird or two would fly quite close over the house-tops, uttering its loud whistle close to the open window, but they seemed for the most part to fly at a great height. The migration stream probably lasted

all night, for at 1 a.m., when we ceased listening to them, the flocks of birds were still passing over in uninterrupted succession. — ALLAN ELLISON (Hillsborough, Co. Down).

Nesting Habits of the Magpie.—With reference to the notes on Magpies building in hedges (pp. 309, 351, 353), and especially that of Mr. Pilley, who refers to the supposed existence of two species of Magpies, the Bush and Tree Magpie (to which the Rev. J. C. Atkinson adds further that the two were said to be distinguished by the comparative length of their tails, the former being the short-tailed, the latter the long-tailed variety), may I say, that I once found a nest, about seven or eight feet from the ground, containing three eggs, in a thick holly in the hedgerow of a narrow lane in this neighbourhood. Oddly enough, the bird which flew off it had a very short tail. The Stoke Woods and several larch and fir copses were within half a mile of the site, and several good-sized trees were in the hedgerow itself, so it was not of necessity that this low nesting-place was chosen.—L. MARK KENNAWAY (Homefield, Exeter).

Immigration of Hawfinches.—Referring to the footnote on p. 367, in which it is indicated that the birds obtained at the Outer Dowsing light-vessel in 1882 and 1883 were not Hawfinches, but Bramblings, I may add that this also was the case in 1884, as I am informed by Mr. Cordeaux. The unusual abundance of Hawfinches in Norfolk in 1889–90 was remarked upon by Mr. J. H. Gurney (Zool. 1890, p. 332),—O. V. APLIN (Bloxham, Banbury, Oxon).

Roller in Co. Antrim.—About the middle of September a Roller, *Coracias garrulus*, was observed at the edge of Lord O'Neill's park, near Randalstown, Co. Antrim, about a mile from Lough Neagh. It frequented the same place for about a week, a few scattered shrubs and some old paling being its favourite places of perching. When first seen it was very tame, but after being fired at several times would not allow anyone nearer than 200 yards. When disturbed it retired to the thickest part of the park for a few hours, and then returned to its usual place. A boy broke its wing, and brought it to the station-master at Randalstown, who kept it alive for about a week, feeding it on bread. At the end of that time it died, and was sent to Sheals of Belfast, on Sept. 29th, in whose shop I saw it. I am not aware of any previous record from Ulster.—ROBERT PATERSON (1, Windsor Park Terrace, Belfast).

BATRACHIA.

The Venom of the Toad.—An interesting correspondence has lately taken place in the columns of the 'Lancet' respecting the precise action of the poisonous secretion in the glands of the skin of the Toad, and Dr. Lauder Brunton has given some useful details. Passing over the

Snakes, in which the poison is secreted by a modified salivary gland, he states that in the Toads and Salamanders the poison is secreted by glands in the skin, and it may be obtained for examination by scraping them with a blunt metallic implement. In the Toad the secretion is thick, yellow, and adhesive. It retains its poisonous character when dried for at least a year, and possibly longer. As a poison it does not appear to be particularly virulent when it is taken into the stomach of another animal, such as a Rabbit or Dog; but injected into a wound it is very active, and causes ulceration or mortification at the point where it is injected; it also produces vomiting, convulsions, paralysis of all the voluntary muscles, and the uncertain gait which follows such a state of things. It is noted that all Toads are not equally poisonous. The Italian Toad, which closely resembles, if it is not identical with, our Natterjack—distinguished by a yellow line down the centre of the back—appears to be more poisonous than the French species, which is identical with the common English Toad. In Moquin-Tandon's 'Elements of Medical Zoology' a good deal of information may be found regarding the poison of the Toad. Finches and Linnets inoculated with it will die in about five or six minutes. Even Dogs and Goats, under whose skin small portions of the poison are injected, usually die in less than an hour, the excitement which is produced in the first instance being followed by depression, vomiting, convulsions, and death. This poison is fatal to Frogs, even if only placed upon the back of these animals, but on the Toads themselves it has no action. A Dog, as is known, will seldom attack a Toad a second time, and some have been known to be killed by simply biting one.

FISHES.

Occurrence of the Opah on the Norfolk Coast.—Mr. Patterson informs me that a very beautiful specimen of the Opah, *Lampris luna*, was taken alive in the breakers near Caister, Great Yarmouth, on the 16th of October last. It was sold at the Fish Wharf, by auction, and was purchased by Mr. J. R. Nutman, for whom it is being preserved by Mr. Lowne. The total length was thirty-four inches.—T. SOUTHWELL (Norwich)

SCIENTIFIC SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

October 7, 1891.—Dr. DAVID SHARP, F.R.S., Vice-President, in the chair.

The Chairman referred to the death, on the 14th September last, of Mr. E. W. Janson, who had been a Member of the Society since 1843,

and who had formerly filled the offices of Secretary and Librarian respectively.

The Rev. Dr. Walker exhibited a long series of several species of *Erebia*, and of *Argynnis pales*, which he had recently captured near Roldal, in Norway.

Mr. W. L. Distant exhibited specimens of *Danaïs chrysippus*, with its two varietal forms, *alcippus*, Cram., and *dorippus*, Klug., all which he found together in the Pretoria district of the Transvaal. Mr. Jenner Weir, Colonel Swinhoe, and Mr. Distant took part in the discussion which ensued as to these forms and their distribution.

The Rev. W. F. Johnson sent for exhibition specimens of *Velia currens* from stagnant water near Armagh; also a specimen of *Nabis limbatus*, killed whilst holding on to its prey, a very hard species of Ichneumon. Mr. Saunders thought that, from the nature of the Ichneumon, the only chance the *Nabis* had of reaching its internal juices would be through the anal opening, as recorded by Mr. E. A. Butler in a similar case, in the Ent. Mo. Mag., Oct. 1891.

Mr. F. P. Pascoe exhibited two British species of Diptera, unnamed. He said they had been submitted to Mr. R. H. Meade, but were unknown to him, and are probably new to the British list.

Mr. R. Adkin exhibited two specimens of a supposed new species of Tortrix (*Tortrix donelana*, Carpenter), bred from larvæ found on pine trees at Tuam. Mr. C. G. Barrett said he examined the specimens with great care, but he did not consider that they belonged to a new species. He was unable to distinguish them from *Tortrix viburnana*.

Mons. A. Wailly exhibited preserved larvæ, in various stages, of *Citheronia regalis*, which he had bred from ova received from Iowa, United States. He said that the natives called this larva the Hickory Horned Devil, and that the specimens exhibited were the first that had been bred in this country. Mons. Wailly further exhibited three female specimens of *Antheræa yama-mai* bred from cocoons received from Japan; also a nest of cocoons of *Bombyx radama*, received from the west coast of Madagascar. Prof. J. B. Smith, of the United States, and Col. Swinhoe took part in a discussion on the habits of the larvæ of *Citheronia regalis*, and as to the period at which they dropped their spines prior to pupating.

Dr. Sharp exhibited several specimens of a weevil, *Ectopsis ferrugalis*, the ends of the elytra of which bore a close resemblance to the section of a twig cut with a sharp knife. He said he had received the specimens from Mr. G. V. Hudson, of Wellington, New Zealand, who stated that they were found resting in large numbers on dead trunks and branches of *Panax arborea* in the forests.

Mr. G. C. Champion stated that the species of *Forficulidæ*, captured by Mr. J. J. Walker, R.N., in Tasmania, and exhibited by himself at the

meeting of the Society in April last, was, he believed, referable to *Anisolabis tasmanica*, Bormans, described in the 'Comptes Rendus' of the Ent. Soc. Belgique, 1880, p. lxxviii.

The Rev. A. E. Eaton made some remarks on the synonymy of the *Psychodidæ*, and stated that since August, 1890, he had identified all of the British species in Mr. Verrall's list, except *Sycorax silacea*.

Mr. Gervase F. Mathew, R.N., communicated a paper entitled "The Effect of Change of Climate upon the Emergence of certain species of Lepidoptera." A discussion followed, in which Mr. Stainton, Mr. Barrett, Dr. Sharp, and Mr. M'Lachlan took part.—H. Goss, *Hon. Secretary*.

NOTICES OF NEW BOOKS.

An Introduction to the Study of Mammals, Living and Extinct.

By W. H. FLOWER, C.B., F.R.S., and R. LYDEKKER, B.A., F.G.S. 8vo, pp. i—xvi, 1—763. London: A. & C. Black.

It was an excellent notion to reprint in one volume the articles on Mammals contributed to the last edition of the 'Encyclopædia Britannica.' We advocated this course many years ago, and we are glad to find that time has since removed the objections which were then urged to its adoption.

We have now in a handy and amalgamated form a series of very valuable sections on living and extinct Mammalia, with all the original illustrations and some new ones, supplemented by much additional matter, and we are glad to find that the volume contains not only the work of the two authors whose names appear on the title-page, but also the articles contributed to the same Encyclopædia by Dr. G. E. Dobson, Mr. O. Thomas, and others.

The authors, in their 'Preface,' have anticipated criticism, on one point at least, by remarking on the difficulty of determining the amount of detail desirable to be introduced to meet ordinary requirements, without rendering the volume too bulky or too costly, and they admit having in many instances described certain little-known species at considerable length, while treating others with much greater brevity. This, we think, is to be regretted. It is the little-known animals that we want to know more about; animals about which we can find nothing in the ordinary text-

books, and concerning which we can only glean scraps of information by a laborious search through foreign periodicals.

To give an instance: one of the first animals we looked for in this volume was the Saiga Antelope, being desirous to learn something of its past and present geographical range. To our disappointment we find merely six lines descriptive of the genus, followed by the remark, "One species, Eastern Europe and Western Asia," and the statement that "the Saiga is a clumsily built and sheep-like Antelope inhabiting the steppes; it occurs fossil in the Pleistocene of France and England."

On the other hand, such a well-known animal as the Lion has no less than seven pages devoted to it!

The necessity for economising space has evidently necessitated, in some cases, the dismissal of an interesting topic in the fewest possible words. For example, on the question whether the Camel is known to exist in a wild state, we read (p. 297), "it is reported that wild Bactrian Camels occur in the more remote parts of Turkestan."

Presumably this refers to the report of Dr. Finsch, of Bremen, though his name is not mentioned, nor is any allusion made to the experience on this point of Col. Prejevalsky in the great desert of Gobi. A brief reference to the reports of these two travellers might well have been given in a couple of lines. Such indications of *sources* of information are most useful, but in several test-cases taken at random we have not found them.

In some respects the Index might be made fuller, particularly by including the common or local names of animals, under which they would naturally be sought for in an Index by those ignorant of their scientific appellations. Let us suppose that the reader desires to learn something of the systematic position, affinities, and habits of the so-called "Tasmanian Devil," he will find it under neither of these two words. If he happens to be ignorant of its scientific name (*Sarcophilus ursinus*), and does not know that it is a typical placental carnivore, he may turn over a good many pages before discovering it. Similarly he will look in vain in the Index for "Musk Cat" and "Musk Shrew," although the scientific names of both are there, if he only knew them.

These are mere trifles in comparison to the large amount of information given in this volume. They are not put forward in any carping spirit of criticism, but rather from the point of view

of an ignorant reader for whom the book might have been made still more useful than it is.

The "Introductory Remarks," however (pp. 1—6), and the "General Anatomical Characters" (pp. 7—81) leave nothing to be desired, being full, clear, and instructive. The same may be said of the diagnoses of the families and genera. The weak point, if we may venture to say so, lies in what relates to the life-history of the species, and, where want of space forbids quotation, the absence of a reference to a reliable source of information; though we must admit that in some cases this is supplied.

A Vertebrate Fauna of the Orkney Islands. By T. E. BUCKLEY and J. A. HARVIE BROWN. 8vo, pp. i—xxiv, 1—314. Edinburgh: David Douglas. 1891.

To the valuable series of faunal works relating to Scotland and the Isles, already issued by him, Mr. Harvie Brown, with the aid of Mr. Buckley, has during the present year added a delightful volume on Orkney. Historical, topographical, zoological, and pictorial, it is just the book for a naturalist contemplating a visit to these remote islands.

Dealing with their past history and condition from reliable sources of information, their present aspect and natural productions are described from the authors' personal experience. The mammals and birds which have died out, or have become replaced by other species better able to exist under the conditions of their environment; the fishes that furnish food to the sturdy islanders; the "waifs and strays" that chance has wafted to that treeless home have all been made the subject of patient investigation, and have furnished material for most interesting chapters.

We have first some remarks on the geographical position of the Orkney Islands and their physical features. These are followed by descriptions of the North Isles, Western Isles, the Mainland, Shapinsay and Copinsay, the South Isles, Stack and Skerry, and the Pentland Skerries. Then follow detailed Catalogues of the Mammals, Birds, Reptiles, Amphibians, and Fishes.

A map of the Islands, and a dozen or more illustrations, reproduced from excellent photographs, add much to the

appearance and utility of the volume, the views especially giving a good idea of the wild nature of the scenery amidst which the authors' notes were made.

An approved Treatise of Hawkes and Hawking. By EDMUND BERT. For the first time reprinted from the original of 1619. With an Introduction by J. E. HARTING. Sm. 4to, pp. i—vii, 1—109. London: Bernard Quaritch. 1891.

WHEN a work of merit has become so scarce that a copy only turns up about once in ten years, and then fetches an extravagant price, it is about time that it should be reprinted.

This is the case with Bert's book which bears the above title. It is one of the best of the old English works on Falconry, chiefly for the reason that it is founded on the personal experience of the author, who was very successful in training the Goshawk to take Partridges and Pheasants. He lived at Collier Row, near Romford, in Essex, and as that part of the country in James the First's time was even more wooded than it is at present, it is clear that for the author and his neighbours the short-winged hawk was preferable to the long-winged falcon, for the latter could not have been flown without great risk of losing it.

He used to ride out of Essex into Sussex to hawk over the downs, where (he says):—"I have killed for the most part of a month together with an intermewed goshawk eight, nine, or ten partridges in a day. The day of my going thither and the day of my return to London was just five weeks, and it was a fortnight or more in Michaelmas term when I came back. I killed in that time with that one hawk four score and odd partridges, five pheasants, seven rails, and four hares against my will."

He especially delighted in pheasant-hawking with a goshawk and spaniels, and, at the time of writing his remarks on the subject, had had seven years' experience in this branch of the sport. The hints and advice which he gives in relation to it are accordingly most practical and useful.

The present publication, which issues from the Ballantyne Press, is not only a *verbatim et literatim* reprint, but in regard to type, head-lines, initials, and other ornaments, is as nearly a *facsimile* as it is possible to make it without the aid of photography.

An Introduction to the study of British Birds: explaining the distinction between many allied species. By REV. H. A. MACPHERSON, M.A. Post 8vo, pp. 120. (The Young Collector Series). London: Swan Sonnenschein & Co. 1891.

CONSIDERING the limited space at the author's disposal, it would be difficult to give more information than is compressed in this small manual. On the whole it would seem that a judicious selection has been made of the species which are to be regarded as British, although considering the design and scope of the book we should have preferred to omit such birds as the Killdeer Plover, the Esquimaux Curlew, and the Buff-breasted Sandpiper, which, in the true sense of the word, are not "British," and to have devoted the space thus saved to fuller details concerning species having stronger claims to be considered.

For example, the range of the Nightingale and the Dartford Warbler might be noticed in more detail. It is not sufficient to state that the latter species is "a scarce resident upon the Surrey downs and other heaths in the South of England," seeing that it occurs also in the Midlands, and has been met with even in Yorkshire and Derbyshire.

Nor does it seem quite accurate to restrict the winter quarters of the Stonechat in England, to "our coast lines" (p. 9), seeing that it is to be found, at that season of the year, on many furze-clad commons at a considerable distance inland. The statement that the Rock Pipit "prefers to nest on islands" (p. 22), is somewhat striking when we remember how commonly it breeds on many parts of the English coast. The expression also that the female Golden Oriole as compared with the male is "a similar but duller bird" (p. 23), implies that it is dull black and yellow; whereas, so far as our experience of this species goes, the hen birds, seen in the nesting season on and about their nests, would be more correctly described as dull green and grey. Whether very old females ever become black and yellow, like the adult males, we cannot of our own knowledge say, but we should think not. These colours would be too conspicuous for a sitting bird.

By the way, our author might have added a few lines concerning the nesting of this bird in England, and the same with regard to the Hoopoe. As to the latter bird, one of the newest observations is that communicated (p. 49) by the Rev. H. D. Astley, who had a tame Hoopoe that was very fond of crickets

and blackbeetles, taking them out of his hand without any sign of timidity. On two occasions it flew out of the park, and when called returned at once, and flew to the hand of the servant who fed it. It invariably flew to the sides of the aviary when anyone went near, and uttered a little plaintive cry, as if asking for a tit-bit. When any one came down in the morning it would say "good morning" by uttering a noise like *hoo-hoo*, at the same time inflating its throat to produce the sound.

As regards the illustrations to this little book twenty woodcuts only are given, the best being copies from Bewick's familiar work; but as a series they do not strike us as being sufficiently representative, for we note that there is not a single game-bird, pigeon, rail, gull, or tern, figured, and only one wader, the Ruff. In any subsequent edition, whatever new cuts may be added, the publishers would do well to omit the atrocious figures of the so-called Great Grey Shrike, Hawfinch, and Crossbill, which only libel the beautiful species which they are supposed to represent.

A Catalogue of Local Lists of British Birds: arranged under Counties. By MILLER CHRISTY, F.L.S. 8vo, pp. 42. London: R. H. Porter. 1891.

It will be recollected that in 'The Zoologist' for July, 1890, Mr. Miller Christy published what no doubt he intended to be considered a tentative List with the above title. It contained about 275 entries. The result of this publication was to bring the author 180 more titles, showing the great interest which the List evoked, and the extensive literature which has been found to exist on this particular subject. Mr. Christy has now been public-spirited enough to reprint his Catalogue with all the additions received, and numerous emendations, making it as complete as possible, and we do not hesitate to say that it is not only an extremely useful compilation, but for those working at British Ornithology a really indispensable guide. The moderate price at which it is issued (a couple of shillings) places it at once within everybody's reach.

Mr. Christy states, in his introductory remarks, that in every case the titles of the volumes, or articles, entered in his bibliography have been taken direct from the works themselves, and have not been obtained second-hand, except in those few instances in which he has been careful to state that he had not seen them.

A List of the Birds of Worcestershire, and the adjoining Counties.

By J. W. WILLIS BUND, F.L.S., F.Z.S. 8vo, pp. 53.
Worcester: W. Leicester. 1891.

IN making a praiseworthy attempt to enumerate the birds which have been found within the area indicated in the above title, Mr. Willis Bund we hope will forgive us for saying that he has adopted a very inconvenient form of stating his facts.

In these days of cheap printing, when books issue from the press so rapidly that it is difficult to keep oneself *au courant* even with the literature of a special subject, the reader must always feel grateful to an author who saves trouble, and who presents his facts in the clearest and simplest manner. Mr. Willis Bund, in the pamphlet before us, prefers to convey his information in tabular form; in ruled columns, headed by capital letters which stand for counties, and filled in with signs which indicate authorities for the occurrence of any given species in any given county. This is all very well for those who have plenty of time on their hands and like to work it out, but to have to turn back constantly to the "Introduction" to ascertain what certain letters stand for, or what particular signs indicate, is, to us, a most irritating process, and one to which, we fear, we shall hardly get reconciled. Mr. Willis Bund has further complicated his subject, by introducing a number of species which are *not* found in Worcestershire nor in any of "the adjoining counties." Why these are included we are at a loss to understand, unless (following a bad precedent) the author wishes to show "what may be expected to occur." Even then, we should not expect to find in Worcestershire such species as *Anthus ludovicianus*, *Pycnonotus barbatus*, *P. capensis*, *Vireo olivaceus*, *Ampelis cedrorum*, *Progne purpurea*, *Cyanospiza ciris*, *Scolecophagus ferrugineus*, and a score of other species which are here included, and which are equally unlikely to occur.

As the author will doubtless receive numerous additions to his "List" from observers resident within the area indicated who are sure to examine it with interest, we trust that he will see his way to recast his information, and so render it more generally useful than it is likely to prove in its present form.

We gather from Table II (p. 43), that out of 199 species estimated to breed in the British Islands, 90 have been found

breeding in Worcestershire. Of these 62 are Passerine, and 8 Picarian birds, leaving only 20 species to be divided amongst eight other Orders.

A Briefly Annotated List of the Birds of Hampshire and the Isle of Wight. By REV. J. E. KELSALL, M.A. 8vo, pp. 32. Southampton: "Hampshire Independent" Office.

A still shorter List than the last-named is that of Mr. Kelsall with the above title. It has been reprinted from the 'Proceedings of the Hampshire Field Club,' but its brevity does not depreciate its value, since that is due to the very proper exclusion of all records which do not relate to the faunal area above indicated. We should like to know a little more about some of the rarer species which are included; for example, the Spotted Eagle, said to have been shot at Somerley, near Ringwood, in Dec., 1861, and yet unnoticed either in the 4th edition of Yarrell, or in Mr. Saunders' 'Manual'; also the Honey Buzzard, said to have nested at Selbourne in 1869, but of which no particulars are given. Again, the reported breeding of the Night Heron, in Hants, is a matter of interest of which particulars should be forthcoming.

Fremde Eier im Nest: ein Beitrag zur Biologie der Vögel. Von PAUL LEVERKÜHN. 8vo, pp. 212. Berlin (Friedlander), and London (Gurney & Jackson). 1891.

IN this contribution to the biology of birds, Dr. Paul Leverkühn has brought together a great number of facts illustrating the behaviour of certain species when the eggs of others are deposited in their nests, giving the results of his own experiments as well as the recorded observations of other naturalists. The cases cited by him he considers may be grouped under four headings; (1), the case of birds having eggs of their own species, but laid by other birds in their nests; (2), the case of a bird having eggs of its own species laid by another bird and introduced into its nest by man; (3), the eggs of one species deposited by the owner in the nest of another, as in the well-known case of the Cuckoo; (4), the eggs of one species introduced into the nest of another by man. On all these points Dr. Leverkühn has a good deal to say, and has evidently been at considerable pains to collect the facts which he has tabulated.

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ON THE HABITS OF THE STONE CURLEW OR THICK-KNEE,
ÆDICNEMUS CREPITANS.

By F. MENTEITH OGILVIE.

THE days of this bird, I fear, are numbered in this country. A few years ago the district of which I write had twenty pairs where now scarcely one can be found, and this notwithstanding the fact that, except in a very few instances, they have not been persecuted or molested. This, I believe, is partially owing to the larger number of cattle kept on the heathy commons or moorlands to which they resort, and which, no doubt, with their attendant herdsmen, disturb and frighten them, and also to the destruction of their eggs by Rooks. One of the greatest malefactors a Southern keeper has to contend with in these days is the Rook. It was not always so; once the Rook was good and harmless, and lived on grubs and worms. But *now*, all this is changed: he has become depraved in his appetite; he has found that eggs are easier to get, and form a daintier dish, than wire-worms or grubs; so eggs he must have. The amount of damage a Rook does during the "egging time" is simply incalculable. Starting with the Green Plover or Peewit, *Vanellus cristatus*, he goes steadily through the list of eggs provided, finishing up with the second laying of Partridges and Pheasants. Nothing in the shape of eggs comes amiss to him—fresh, rotten, or just on the point of hatching; all are devoured. I have watched Rooks early in April hunting the meadows for the unfortunate Peewit's eggs, quartering the ground with the

regularity of well-trained setters; and again in May, in the early mornings, searching the commons and hedgerows for Partridges' nests. When once a nest is found, woe to the owner thereof, for the robber does his work thoroughly, and leaves behind him but a few egg-shells. The eggs are generally carried away to a distance, but I have seen Peewits' eggs sucked *in situ*, while the wretched parents were screaming overhead.

No mercy is shown to the Grey Crow, *Corvus cornix*, in the North: no one has a good word to say for him; he is justly recognised as an evil doer, and strict are the laws meted out to him. Yet his black cousin of the South is beloved of poets, praised by naturalists, who appear to think he spends his life in honest toil, assisting the farmer, and saving his crops from insect ravages, and even keepers may be found who will put in a good word for him. But a day will come, unless he mends his ways, when the Rook will be known for what he is—when his fate will be even as the Hoodie's, and every man's hand will be against him.

To return, however, to the Stone Curlew or Thick-knee. It is the destruction of their eggs, no doubt, more than anything else, that has led to their diminution, and will lead to their extermination; and the fact that much waste ground, eminently suited to their needs, has been reclaimed in the last quarter of a century, and placed under cultivation.*

The bird arrives here early in May, and leaves late in September.† Like most of the later migrants, I think, it nests within a short time of its arrival. The nest is a mere hollow scraped in the bare peaty or sandy earth, in which the two eggs are deposited. The eggs are beautifully protective in colour, and extremely difficult for an inexperienced person to find, though they lie, large and boldly-marked, on the bare earth. The earth

* In the South of England, particularly in the counties of Kent, Sussex, and Wilts, the diminution in numbers of the Stone Curlew may be attributed to another cause—namely, the modern practice of rolling the young wheat in spring. In the counties referred to, the eggs of this bird at one time might have been found every spring upon the fallows; but now the heavy horse-roller passes over them; for the farm-labourer, even if observant enough to notice them, is generally too lazy or too indifferent to stop his horses and remove the eggs on one side out of harm's way.—ED.

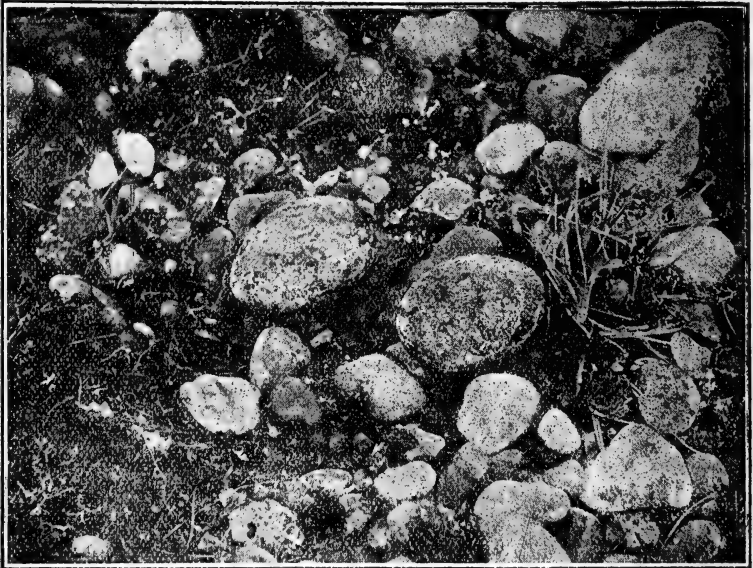
† In 1891 the first pair seen appeared on May 10th; the last were seen on September 23rd.

on which the eggs are laid is generally brown at first, but, as incubation proceeds, the rain and the sun gradually transform this brown colour into a dull grey, by washing the brown earth and leaving the sandy particles on the top. This is a point which, I think, may be of some small service to the birds, for the darker colour seems more protective for the eggs and the lighter tint for the nestlings. The Stone Curlew generally makes its scanty nest in the middle of a bare field or moorland waste, so that it is quite impossible to approach without the bird seeing the intruder, and she always steals quietly away at the earliest threatening of danger, leaving her eggs to take care of themselves, and well aware of the danger of remaining by them. I have never heard the Stone Curlew utter any note during the daytime, whether disturbed from the nest or merely flushed by chance, but after sundown they become very noisy, and their weird cries may be heard throughout the night, ceasing only as the morning begins to dawn. The local name in this district is "Shriek Owl" (from the cry, of course), and the name is appropriate. This cry is generally described as a whistle, even a "melodious" whistle; possibly this is the best description of it, but I always think it wants some epithet added to it, such as "weird" or "ghostly." Their wild cries, ringing out loud and clear on a still night, always suggest something uncanny.

I had this year an excellent opportunity of watching a pair of these birds which laid in their usually exposed situation on the common, but within about seventy yards of a large gorse-bush. I constantly tried to observe them by stalking behind this bush, but always failed, till at last the idea occurred to me of walking boldly up, disturbing them, and then laying up in the gorse-bush. This proved successful. After waiting about half an hour, I had the pleasure of seeing the female bird steal up to the nest and settle on the eggs. The male bird appeared at the same time, and stood on a raised knoll at some distance from the nest, evidently on sentry duty, and watching for danger from every quarter.

While I was looking at them, I unfortunately broke a small twig of gorse, in trying to shift myself into a more comfortable position. In a moment I was detected: both birds turned their heads sharply in my direction; the male disappeared over the side of the knoll; the female raised herself off the eggs, and stole away, with head lowered and neck extended, at a fast crouching

kind of a run, and though I waited another half an hour, nothing would induce them to return, but I occasionally caught a glimpse of the head of the male just showing over the top of the knoll, and evidently prospecting to see if the ground was clear. Not wanting to disturb the birds, I left my hiding-place, but I never had another opportunity of watching them, for they would not again approach the nest without first carefully scanning the gorse-bush, and making sure that no one was concealed there.



Eggs of the Stone Curlew, *Ædicnemus crepitans*. From a photograph by Mr. C. E. Salmon, of Reigate.

I watched these eggs hatching, and noticed an interesting fact connected therewith that I think deserves recording.

Both eggs were sprung on the 31st May: on the morning of June 1st, the eggs had two little holes in them, and the beaks of the nestlings were showing inside; at 6 p.m. on that day the first bird hatched, and at that hour was half out of the shell, and still wet, the egg having evidently only just broken; at 8 p.m. I again examined the nest, and found the first bird quite dry, and the still remaining egg not yet broken, though clearly on the point of doing so. But the egg-shell which I had seen in the nest at 6 p.m. was now nowhere to be seen. This was unquestionably removed by the parent birds as soon as the young one was hatched and

clear of the egg, and must have been done immediately after my visit at 6 p.m.

The young birds and the eggs are both protective in colour; but a broken egg-shell, with the remains of membranes and blood-vessels inside, is by no means so. In fact, it is a kind of sign-post pointing out the whereabouts of the nest to all comers. No one passing the nest could fail to see the broken egg-shell lying on the ground, and a Stoat or a Rook would observe it even more readily.

Young Thick-knees are able to leave the nest at a very early period; but I doubt if this period is ever less than twelve hours, and in the case of an egg remaining unhatched for some hours after the other (as happened here), the danger of leaving the egg-shell would be very great.

I believe that an almost constant law might be formulated, that birds which make open nests upon the ground remove their egg-shells immediately the young are hatched. This habit is noticeable not only in the birds referred to, but in others building in similar situations; for instance, the Green and Golden Plovers, *Vanellus cristatus* and *Charadrius pluvialis*, and the Common and Lesser Terns, *Sterna hirundo* and *S. minuta*. I have found a nestling Common Tern in a nest with two eggs, but no sign of an empty egg-shell, and have seen a Green Plover's nest with eggs one day sprung, and on returning the next day have found nothing whatever—neither nestlings nor egg-shells. From this, I think, we may conclude that the parents removed the egg-shells as each bird was hatched. The young cannot leave the nest so long as an egg on the point of hatching remains in it, since the mother must sit on this egg, and will brood over the newly-hatched nestling at the same time.

I have seen a few pounded fragments of shells in the nest of a Redshank, *Totanus calidris*; but this bird hardly comes in my category, since it does not build an *open* nest upon the ground. The nest is generally placed in a tuft of coarse grass or short rush, with a side entrance to it over which the parent bird draws the grass like a curtain on leaving or entering. If a Redshank laid absolutely in the open, like a Plover, I have no doubt the egg-shells would be destroyed or removed at once by the parent birds.

On the other hand, look at the game birds which build on the ground, but conceal their nests; with them the broken egg-

shells are left in the nests. The young are able to take care of themselves no sooner than is the case with the Plovers, but the egg-shells, in their hidden position, present no dangers, and consequently they are left. It is very often not till autumn frosts have knocked the leaves off the hedgerows that we become aware of the position of some of the Partridges' nests of the previous spring, and this by seeing a mass of broken shells in the long-deserted nest. Supposing that Partridges' eggs were protectively coloured, and were laid on the bare ground in the open like those of a Plover, and by this protective coloration escaped danger till the time of hatching, it is impossible to believe that the broken shells would be left lying about on the ground till the last of the fifteen or sixteen eggs had hatched.

The young of the *Charadriidæ*, equally with the game birds, are able to follow the parents *almost* immediately they are hatched. But it is this "almost" which would be the fatal point to ground breeders with open nests, were the egg-shells left lying in the nest; and this the birds know, and carry off every fragment of shell to a safe distance.

Many may think the habit trivial and of no vital importance to the bird. Yet it has been acquired in the struggle for existence, like any other beneficial factor, through sheer necessity—by death and extermination where it was not followed.

Many birds which breed in covered sites, as the Starling and Tits, remove the egg-shells from the nests, no doubt; but this they do for an entirely different reason, the comfort and cleanliness of their homes, just as they remove the excreta for this purpose. I once had the misfortune to break into a nest of the Great Tit, *Parus major*, deep down in a willow stump, containing eight young ones and four rotten eggs. The beautifully felted nest did not contain the smallest fragment of egg-shell, and was absolutely free from any trace of foecal matter, though it must have been an immense labour for the old birds to have kept their home in such a perfectly sanitary condition. But this habit has been brought about by necessity, and not through love of cleanliness—not till many generations of juvenile Tits had been carried off, perhaps, by avian forms of typhoid and other enteric fevers, and the race was growing smaller and smaller, did they hold their sanitary congress, and adopt the excellent laws which now govern the genus *Parus*.

ON THE NESTING HABITS OF THE RINGED PLOVER,
ÆGIALITIS HIATICULA.

BY THE EDITOR.

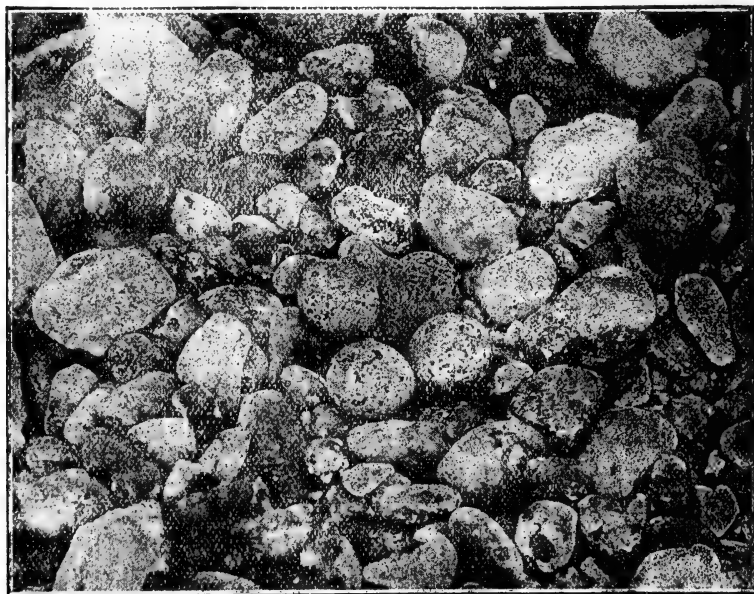
My object in penning a few lines under this heading is not to furnish an exhaustive account of the behaviour of this species during the breeding season, but merely to direct attention to the protective coloration of its eggs when laid upon the bare pebbles of the beach, as shown in the accompanying illustration, which has been reproduced from a photograph taken by an enthusiastic naturalist, Mr. C. E. Salmon, of Reigate.

The Ringed Plover is one of the commonest of British shore birds, and next to the Dunlin (Purre, Stint, or Oxbird, as it is variously termed), it is perhaps the most numerous. The two species are frequently found in company, feeding and flying together, resting at high tide upon the great ridges of pebble beach that on some parts of the coast extend for miles and miles, or retiring further inland to the little pools about the salt-marshes, there to while away the time until the tide turns, when they again make their way to the coast-line, or to the great mud-flats intersected by creeks which are left exposed at low water about the mouths of the tidal rivers.

The Ringed Plover, or Ringed Dotterel, has as many provincial names as the Dunlin. On the coasts of Kent and Sussex it is variously known as "Shell-turner," "Wideawake," and "Stone-runner"; while in Norfolk it is known as "Stonehatch," from its observed habit of occasionally paving with small stones the hollow in which its eggs are usually deposited. This, however, is by no means a general practice. I have found a great many nests of this bird on the great pebble ridge at Pagham, Sussex, on Lydd Beach, Kent, and amongst the sand-dunes which fringe the coasts of Norfolk and Lancashire, and in many cases the eggs were deposited in mere depressions of the beach, or in hollows between the sand-hills, without any paving of small stones, or other materials. On the other hand, according to Prof. Newton, the nests are sometimes "deep holes apparently found by the birds themselves, and having at the bottom a considerable number of small stones, almost enough to fill half the hole, and neatly arranged. On this pavement, whence (as he says) they derive

their ordinary appellation ('stonehatch') the four eggs are laid, with their pointed ends invariably meeting in the centre of the nest."*

As regards this habit of paving the nest, a remarkable instance of adaptation to altered circumstances has lately been brought to my notice by Mr. Allan Ellison, of Hillsborough, Co. Down. A small colony of Ringed Plovers (he writes) resorts annually in the breeding season to a rabbit-warren close to the sea at Portmarnock, Co. Dublin. This warren, which is strictly preserved,



Eggs of the Ringed Plover, *Ægialitis hiaticula*. From a photograph by Mr. C. E. Salmon, of Reigate.

extends for some distance among the sand-hills, and also takes in a large extent of flat barren ground, slightly raised above the sea, and separated by intervening sand-hills from the shore. The soil is dry and sandy, covered with short crisp grass or moss, with here and there groups of stunted blackthorn or furze-bushes. All over this ground, and the open spots among the sand-hills, Lapwings breed in large numbers. Ringed Plovers nest numerously on the neighbouring shore, but a small colony always resorts to

* Stevenson's 'Birds of Norfolk,' vol. ii. p. 85.

the interior of the rabbit-warren, where the Lapwings breed. Their eggs are frequently laid in the small hollows scraped by the rabbits, and the dry pellets left by these animals serve to line the bottom of the nest instead of the usual pavement of white pebbles or broken shells. The eggs laid here are almost always much darker in colour than the ordinary type, approximating somewhat to the tint of the moss with which the ground is carpeted. In one nest a considerable quantity of moss and scraps of bent was placed under the eggs.

Not only do the eggs of this bird resemble the surroundings amidst which they are deposited, as may be seen from the accompanying illustration, but the colour of the bird itself is also protective. The grey tint of the dorsal plumage so closely resembles the shingle or sand upon which it loves to alight, that so long as it remains motionless it is almost invisible, and its melodious pipe, as it rises close at hand, is often the first intimation given of its presence.

So likewise with the downy young. When first hatched, though able to run, they usually seek safety by crouching motionless amongst the shingle, and so beautifully do their tints harmonize with the mottled greys and browns of the surrounding pebbles, as almost to defy detection. This is well exemplified in a case in the Bird Gallery of the British Museum, wherein a pair of old Ringed Plovers are mounted with three downy young ones upon a patch of shingle. At first glance only two of the young ones are conspicuously visible, by reason of their being placed in a standing position; a third, which is crouching amongst the pebbles, has to be actually looked for before its presence is detected. This is one of the most beautiful instances of protective resemblance to be met with amongst birds.

I may add that in a third photograph forwarded by Mr. Salmon, showing the nest of a Kentish Plover on shingle, the eggs are more readily detected by reason of the slight collection of drift wood and other materials which have been placed round them by the parent bird. This, however, is not an invariable habit, for, as in the case of certain Terns, sometimes we find a rough attempt at a nest, at other times the eggs are laid in a bare depression.

THE BRITISH MARTEN.

MARTES SYLVATICA, Nilsson.

BY THE EDITOR.

(Continued from p. 409.)

And first, as to England. Commencing with the northernmost county, and working southwards, I find the following records amongst my notes:—

NORTHUMBERLAND. — Mr. Edward Charlton, of Reedsmouth, had a young Marten taken in that neighbourhood, as noticed by Wallis, *Nat. Hist. & Antiq. Northumberland* (vol. i. p. 412). Others, according to Messrs. Mennell and Perkins (*Cat. Mamm. Northumb. in Tyneside Nat. Field Club*, vol. vi. p. 125), have been met with at Slaley, near Hexham, and Unthank. In July, 1871, a Marten was killed on the North Tyne ('*Naturalist*,' 1886, p. 278); and in May, 1883, another was obtained near North Shields ('*Naturalist*,' 1886, p. 238). On May 23rd, 1883, one was taken alive in the grounds of Mr. Hedley, near Chirton, and passed into the possession of Mr. Yellowly, of South Shields, who reported its capture ('*Zoologist*,' 1883, p. 295). At first it was very wild and intractable, burying itself in the hay of its bed, and refusing to feed if looked at, but subsequently it became more reconciled to captivity.

CUMBERLAND. — In 1877, Mr. W. A. Durnford reported the Marten to be still plentiful in the wilder parts of Cumberland, and the immediately adjoining portions of Westmoreland and Lancashire, where it is hunted with hounds at all seasons. In the particular district where hunted, he estimated that from twelve to twenty were killed annually (*Zool.* 1877, p. 291). During a hunt in Wastdale, in the spring of 1878, an old "Mart," as it is locally termed, was observed to rush up the face of a precipice, with a young one about a quarter grown hanging on firmly to her tail, and both luckily escaped (*Zool.* 1878, p. 128). An interesting account of the Marten in Cumberland, derived from the huntsman of the Wastdale Head Hounds, is given (*Zool.* 1879, p. 171); and in the same volume (p. 264) two are noticed that were procured in April, 1879, one killed by the hounds on Middlefell, in Wastdale, the other trapped

near Dalegarth, in Eskdale. On April 2nd, 1880, Mr. C. A. Parker, of Gosforth, received an old female Marten which had been trapped by a gamekeeper at the head of Miterdale, a little valley running up towards Burnmoor, one of the loneliest and wildest parts of the district (Zool. 1880, p. 219). Early in November, 1881, a Marten was killed by Mr. Benson's foxhounds on Carlinot, one of the high fells between Loweswater and Ennerdale. He stated that he had not killed more than six during the previous seventeen years during which he had kept hounds. A fortnight later, however, a second was killed and eaten by his pack; and a third was seen near the same place (Zool. 1882, p. 108). About the middle of January, 1882, one was seen at the head of Borrowdale. And in October, 1887, I received one which had just been killed in Wastdale, and which I have had preserved. From this specimen a sketch was made by Mr. G. E. Lodge for the plate which appeared in the last number of 'The Zoologist.'

WESTMORELAND.—One was caught by a farmer in the Fairfield Valley, near Ambleside, 1877 (H. G. Tomlinson).

DURHAM.—About 1835, one was trapped in Stanley Wood; and on August 14th, 1849, a nest containing three young Martens was found in North Carr Wood, near Bishop Auckland (Zool. 1849, p. 2588). Mr. W. Backhouse had two specimens of the Marten which were killed some years prior to 1864 at St. John's, Weardale (Mennell & Perkins, Trans. Tyneside Nat. Field Club, vol. vi. p. 125). On May 31st, 1882, one was trapped at Hoppyland, about seven or eight miles west of Bishop Auckland (Nelson, Zool. 1882, p. 304).

YORKSHIRE.—In the winter of 1833, according to Mr. Hindson, a Marten was killed by W. Marshall, the gardener to Mr. John Foster, of Clapham. Others have been shot or trapped at Deepdale-in-Craven (where one shot in a rookery in the act of seizing a young rook in the nest); in Raydale, and in Kexby Woods, near York (Fothergill, 'Naturalist,' 1854, p. 145; 'The Field,' Oct. 1, 1881; and Zool. 1884, p. 174). One, killed at Lees Head, near Whitby, March, 1877, is preserved in the Whitby Museum; and the following year, Mr. T. Lister, of Barnsley, noted the occurrence of a Marten at Canon Hall Park, near that town. In Mid-west Yorkshire, one was killed at Buckden-in-Wharfedale in the winter of 1880 ('Naturalist,' 1891, p. 135). Messrs. Clarke &

Röebuck state that about the commencement of the present century the Marten was common in many districts of Yorkshire, and that during the past thirty years its occurrence has been quite exceptional and unlooked for (Handbook Yorks. Vertebrata, p. 6).

LANCASHIRE.—A dozen years ago the Marten was reported to be still hunted in the neighbourhood of Barrow-in-Furness, where it was estimated that from twelve to twenty of these animals were killed annually (Durnford, Zool. 1877, p. 291).

CHESHIRE.—Early in the "forties," a Marten was killed by a gamekeeper, named Robinson, in the service of the Marquis of Westminster, at Whitley, not far from the old Forest of Delamere; and about the same time, another which had been trapped at Hooton, in Wirral, was sent by Sir Thomas Stanley for preservation to Mr. Mather, of Liverpool (Byerley, 'Fauna of Liverpool,' p. 7). Mr. T. A. Coward, of Bowdon, has sent me an extract from a letter which appeared some years ago in the 'Manchester City News,' written by Mr. James F. Robinson, who says:—"With all my enquiries, I can only hear of two Martens having been seen in Cheshire during the past fifty years. . . . My first observation of this animal was in seeing a captive specimen which had been caught in the Royalties, a wooded district behind the hills at Frodsham. It was kept in the house by old John Hulse (well known in Manchester), along with owls, thrushes, larks, linnets, and other birds. My next record was a memorable one. I was out one Saturday, together with several school companions, after the foxhounds on foot in the neighbourhood of Eddisbury Hill, in the Forest of Delamere, when all at once the hounds were at fault. This was accounted for by some animal having passed recently over the ground. We had not long to wait before it was started from beneath a clump of gorse-bushes, and ran speedily out of sight up the trees. From its light fawn colour it could not be a Polecat, and the huntsman and others declared it was a Pine Marten. . . ." Mr. Coward adds:—"I obtained a very fine head of the Pine Marten about five years ago from a huntsman who had been exercising the foxhounds by Buttermere, in Cumberland; but as the Lake District seems the last stronghold of this beautiful animal, you have probably plenty of notes of occurrence in that district."

SHROPSHIRE. — In 1838, two Martens were reported to have been killed at Stapleton, near Shrewsbury; and the late T. C.

Eyton, who announced the fact (*Mag. Zool. & Bot.* vol. ii. p. 540), added that the species was then to be found on Snowdon, and near Barmouth.

STAFFORDSHIRE.—In Garner's *Nat. Hist. of the Co. Stafford*, 1844, the Marten is noticed (p. 246) as having occurred in the woods near Dilhorne, Consall, in Needwood Forest, and frequenting rocky places in the limestone district. Mr. J. R. Masefield, writing thirty years later on the existing indigenous Mammalia of North Staffordshire, says:—"I fear this species must now be numbered amongst the extinct of this county, and I should not have included it here, had I not been assured, by one on whose word I can rely, that one was killed within his recollection, but many years ago, on the Staffordshire side of Dovedale."

WORCESTERSHIRE. — Malvern Chace was at one time a haunt of the Marten, but "the annual falls of wood disturbed him in his retreats, and he is now (1834) rarely to be found" (*Hastings, Nat. Hist. Worcestershire*, p. 59).

HEREFORDSHIRE. — About 1860, three Martens were taken at Whitfield, near St. Devereux. In 1861 one was caught by the keeper of Mr. H. Wood, of White House, Vowchurch, in Lowerhouse Wood, in the parish of St. Margaret's, where ten years previously another had been killed. In 1866 one was trapped at Kentchurch, near the little brook that runs into the river Monnow. Mr. Borrer, of Cowfold, Sussex, has one preserved in his collection, which was procured at Grosmount, near Hereford, 13th July, 1873. In March, 1878, one was trapped in a covert called Paradise Brake, close to the house at Pontrilas Court, Hereford. This specimen is now in the British Museum collection. The last heard of in this county was seen by Mr. Walter Steward on the river Dore in the spring of 1884. It was crossing the stream by means of a tree which had fallen across, and was carrying a rat in its mouth (*Zool.* 1886, p. 240).

LINCOLNSHIRE.—In March, 1843, an adult female Marten was trapped by a gamekeeper in the employ of Mr. Cooke, of Burgh House, near Spilsby, and was considered a great rarity, only one other having been met with during the previous three years (*Zool.* 1843, p. 345). On Nov. 5th, 1854, a Marten was trapped at Girsby, about seven miles from Louth. Some years previously one had been taken in Burwell Wood, about four miles from Louth. In 1858 one was caught in Well Wood, near Alford,

and was preserved for Mr. Hibbert, the innkeeper there (Cordeaux, Zool. 1880, p. 239). In 'The Zoologist' for 1866 (p. 242), Mr. Cordeaux reported the capture of a Marten for the second time in the parish of Riby. A third was shot in a wood of 500 acres, known as South Wood, on the estate of Mr. Thomas Drake, of Stainfield Hall, near Wragby, in the winter of 1871-72, as noticed by Rev. A. P. Morres (Zool. 1877, p. 251); and a fourth was trapped in a wood near Appleby Hall, Brigg, in Sept. 1879, as announced by Mr. Charles Winn (Zool. 1879, p. 420). The same year one was taken on the estate of Mr. Heneage, at Hainton, near Wragby (Cordeaux, Zool. 1880, p. 240). The Rev. W. W. Fowler, of Lincoln, in June, 1882, announced that he had seen a Pine Marten which had been trapped only a few weeks previously near Bardney (Zool. 1882, p. 230). This is believed to be the latest met with in Lincolnshire.

LEICESTERSHIRE.—According to Harley, the Marten in this county has been met with in the wood at Gopsall, and on Lord Howe's estate, on the western side of the county. There is an old specimen in the Leicester Museum, supposed to be from Wellsborough, and another at Bradgate House, reported to have been killed in that neighbourhood many years ago. Mr. R. Widdowson heard that one was killed at Stapleford, but did not see it (Zool. 1885, p. 165).

NORFOLK.—Messrs. Paget, in their 'Sketch of the Nat. Hist. of Yarmouth,' published in 1834, note the Marten as having been found formerly at Herringfleet and Toft; but then (1834) regarded as extremely rare. Mr. Gurney was informed by an old woodman that "Marten Cats" were found in Brooke Wood, near Norwich, during the latter part of the last century (Southwell, Zool. 1871, p. 2754). The late Rev. H. T. Frere, of Burston Rectory, Diss, reported (Zool. 1883, p. 75) that in 1843 a Marten was seen throughout the summer at Gissing, in this county. In 1864 an old female Marten was trapped on Kelling Heath by a keeper of Capt. Bird (Zool. 1882, p. 146); it was stuffed by Travis, of Saffron Walden. In a footnote to his edition of Lubbock's 'Fauna of Norfolk,' 1879 (p. 4), Mr. Southwell states that one was trapped in a wood near Heydon, in July, 1878, and was sent to Mr. T. E. Gunn, of Norwich, for preservation. This subsequently proved to have been taken at Hevingham, as recorded by Mr. F. Norgate (Zool. 1879, p. 171). Mr. Southwell is of opinion that

no specimen of the Marten has occurred in Norfolk in a truly wild state since the second decade of the present century, and in support of these isolated instances being "escapes," states that, some years ago, he was informed that an Undergraduate at Cambridge had had a number of live Martens sent to him from Ireland, several of which had contrived to escape, and were said to be living at large in his neighbourhood *in the south of England*. He considers that "the same thing may well have happened in Norfolk without its being suspected" (Trans. Norfolk Nat. Soc. vol. iii. (1884), p. 668). This I venture to doubt. There are so many keen naturalists and observant sportsmen in Norfolk that it would be very difficult for any escaped Martens to be at liberty without the fact becoming speedily known and talked about.

SUFFOLK.—Three were killed in this county in 1811 by a gamekeeper named Richard Sharnton, on an estate, not named, of four thousand acres (Daniel, 'Rural Sports,' Suppl. p. 585). This same keeper acknowledged to have killed in that year 22 Foxes, 31 Polecats, and 446 Stoats. This is the account referred to by Mr. Gurney (Trans. Norfolk Nat. Soc. vol. ii. p. 223) and by Mr. Southwell (Zool. 1877, p. 338), neither of whom allude to the fact that it had been printed by Daniel (*l. c.*) in 1813. They have set down the number of Martens killed at forty-three, instead of three! but Daniel, writing only two years after the event, was probably right.

CAMBRIDGESHIRE.—The skull of a Marten from Burwell Fen has been described by Mr. J. W. Clark (Proc. Zool. Soc. 1873, p. 790). The species has occurred at Madingly, and at Allington Hill; also at Caxton, but so long ago as 1844 (Rev. Leonard Jenyns, now Blomefield).

NORTHAMPTONSHIRE.—In the summer of 1840, the Rev. L. Jenyns received two young Martens from the neighbourhood of Milton Park, near Peterborough. They were of equal size, measuring 17 in. in length, exclusive of the tail, which was not quite 9 in. (Annals & Mag. Nat. Hist. vol. vii. (1841) p. 263). Lord Lilford writes that between forty and fifty years ago this animal was not rare in Northamptonshire, and he remembers an old gamekeeper, who had served his father and grandfather before him, talking much of the number of Martens that used to be found in the forest of Rockingham, near Brigstock, Corby, and Weldon. His lordship has a dim recollection of a Marten

having been found and "treed" by the Fitzwilliam Hounds in Barnwell Wold many years ago, and adds that the last he heard of as being killed in the county was found within the last twenty years in Yardley Chace. In Edward the Third's time (1369), Thomas Engaine held lands at Pighlesle (now called Pitchley), in the county of Northampton, by the service of finding at his own proper cost certain dogs for the destruction of Wolves, Martens, Wild-cats, and other vermin within the counties of Northampton, Rutland, Oxford, Essex, and Buckingham (Rot. fin. 42 Edw. III. m. 13). He was doubtless a descendant of Sir John d'Engaine (d'Engayne or d'Engagne), who in Edward the First's time held land of the king at Pitchley of the annual value of £20, with appurtenances, by the service of hunting the Wolf for his pleasure in that county—"per servitium fugandi ad lupum pro voluntate sua in comitatu isto" (Plac. Coron. 3 Ed. I. rot. 20).

OXFORDSHIRE.—Mr. O. V. Aplin writes word that, many years ago, a Marten was shot in Bruern Wood, near Chipping Norton, and was thought to have strayed from Wychwood Forest. Another was reported to have occurred in the woods at Wroxton Abbey, but no direct evidence on the point has been received.

BUCKINGHAMSHIRE. — Formerly found in the extensive beechwoods (Lubbock, 'Fauna,' p. 5).

BERKSHIRE. — In the 'Report of the Wellington College Nat. Hist. Society for 1878,' mention is made of a Marten taken at Lord Downshire's, but no date or other particulars are given.

HERTFORDSHIRE.—A Marten, killed in Oxey Wood, Dec. 26th, 1872, is preserved at Bushey.

ESSEX.—Daniel, in his 'Rural Sports' (vol. i. p. 503), states that a farmer in the parish of Terling, in Essex, was famous for taming this animal, and had seldom less than two. He adds that some years since (1801) one used to run tame about the kitchen of the 'Baldfaced Stag,' on Epping Forest. About 1822 one was shot out of a Crow's nest in the Waltham Woods, near Chelmsford, by Mr. Thomas Gopsill, of Bromfield, near Chelmsford (H. M. Wallis, Zool. 1879, p. 264). On Feb. 11th, 1881, being at Colchester, Ambrose, the birdstuffer there, informed me that the last Marten he had seen in Essex was killed in the autumn of 1845 at Walton, near Colchester, by a keeper who sold it to him for half-a-crown. He skinned and preserved it, and disposed of it to Mr. Maberley, of Colchester, for ten shillings. On Nov. 27th,

1880; being in Epping Forest, near Loughton, I learnt from T. Luffman, one of the keepers, that in March or April, 1853, while he was acting as keeper to Mr. Maitland, he trapped a Marten in a covert near Loughton. After keeping the carcass for some days, till it was nearly spoilt, he took it to Epping, where it was purchased by the late Mr. Doubleday. At a sale of Natural History specimens at Stevens's Auction Rooms on the 10th Dec. 1889, a case of British Weasels (lot 52) contained a fine Marten, stated to have been killed at Chingford, Essex—date not mentioned. It belonged to a Mr. West, of High Street, Gravesend, for whom the case was bought in at a reserved price ('Essex Naturalist,' vol. iii. p. 271). Mr. E. A. Fitch, of Maldon, heard that the reason the capture was not published was that the woodman who set the trap was afraid of getting into trouble, and that they knew all about it at the 'Bald-faced Stag' ('Essex Naturalist,' vol. iv. p. 126; see also vol. iv. p. 185).

KENT.—Mr. W. Oxenden Hammond writes:—"As to the occurrence of the Marten in Kent, the only reported case I know of happened about sixty years ago, when my uncle, Sir Henry Oxenden, kept the East Kent Hounds. At that time it was said that they saw a Marten two or three times. It was always found at the same place in the 'Covet Wood,' a large woodland of 1000 acres or more, but was never brought to hand, and I am not sure that the animal was identified beyond doubt."

SURREY.—In May, 1834, a Marten was caught in Richmond Park by Thomas Neal, an under-keeper employed by J. Sawyer ('The Field,' March 10th, 1860). At a meeting of the Surrey Nat. Hist. Society, held at the Museum, Guildford, June 3rd, 1847, Mr. R. A. Austen, one of the Vice-Presidents, announced that a Marten had been recently caught in a wood near Black-heath, Albury, by Mr. Bray, of Shere (Zool. 1847, p. 1806).

SUSSEX.—About the year 1841, a Marten was caught in a rabbit-wire by one of the Duke of Norfolk's keepers in Clapham Wood, near Findon; and, about the same time, another and a finer one was killed at Wadhurst by Mr. Gill, of Applesham. On that gentleman's death and sale of his collection this specimen was purchased by Mr. R. D. Drewitt, of 53, Holland Park, Kensington, who furnished this information. A third, killed about the same time, was taken in a rabbit-wire in Michelgrove Woods, Arundel, and was for a long time in possession of one of the

Duke of Norfolk's gamekeepers. It turned up at a sale at Peppering, near Arundel, on Aug. 26th, 1891, but who became the purchaser I have not ascertained. The last Marten believed to have been seen in this county was killed by the Crawley and Horsham foxhounds at Holmbush, near Crawley, five and twenty years ago. It was stuffed by Leadbeater, of Brewer Street, London, for Mr. Borrer, of Cowfold, in whose collection I have seen it, with four others from Brecknockshire, Scotland, and Ireland. It was subsequently, however, destroyed by moth, and only the skull is now preserved.

HAMPSHIRE.—Mr. Edward Hart, of Christchurch, writes word that he is unable to cite any instance of the occurrence of the Pine Marten in his part of the country within the memory of the oldest inhabitant, although he has often questioned the old keepers and woodmen whom he has met. Nevertheless there is a stuffed specimen, as I learn from Mr. Kelsall, in the Alton Museum, which was killed at Hackwood, near Basingstoke, some five and forty years ago. Perhaps this is the specimen referred to by Mr. Selater (Zool. 1845, p. 1018) as having been killed near Odiham, which is only a few miles from Hackwood. Since the date referred to, but previous to 1857, a Marten was procured at Cadlands, in the New Forest, and, as I learn from Mr. Kelsall, is preserved in the possession of the Rev. R. E. Harrison, Rector of Droxford.

ISLE OF WIGHT.—Writing of the Mammalia met with in the Isle of Wight (Zool. 1844, p. 783), the Rev. C. A. Bury included the Marten, on the strength of one seen in the rocky wilderness at the Undercliff. It was closely approached by the Rev. J. F. Dawson, who was near enough to perceive "the deep yellow tinge of the throat." He adds that the track of a Marten was subsequently observed in the snow. See Venables' 'Guide to the Isle of Wight,' p. 411.

WILTSHIRE.—"Upon the disafforestations, the marterns were utterly destroyed in North Wilts. It is a pretty little beast, and of a deep chestnut colour, a kind of polecat, lesse than a fox; and the furre is much esteemed; not much inferior to sables. It is the richest furre of our nation. In Cranborne Chase and at Vernditch are some marterns still remaining." So wrote John Aubrey between 1656 and 1691 (Nat. Hist. Wilts, edited by John Britton, F.S.A., 4to, 1847, p. 59).

DORSETSHIRE.—Mr. Mansel Pleydell (Zool. 1879, p. 171) thought that the last Dorsetshire Marten was killed in the Chace Woods by the late Mr. Chafin's hounds about the year 1804; but in 1851 one was killed on the estate of Mr. Weld, of Lulworth, and about the same time another was taken on the property of Sir John Smith, near Dorchester ('Naturalist,' 1855, p. 176). Mr. C. W. Dale (Zool. 1879, p. 170) states that Martens have been killed at Halnest, at Stock, and at Blandford, in this county.

DEVONSHIRE.—Formerly found in the woods at Lydford and Buckland-in-the-Moor (Bellamy, Nat. Hist. S. Devon, p. 194); Stoke Wood, near Exeter (D'Urban); and on the Glenthorn Estate, on the borders of Dartmoor (Rev. M. A. Mathew). Mr. Edward Parfitt, in his 'Fauna of Devon' (Mammalia, p. 18), considered, in 1877, that the Marten was nearly extinct in Devon. He had heard of one killed near Ashburton in 1871, and two others at Answell Rock, Ashburton, which were stuffed by Messrs. Hele.

CORNWALL.—About 1843, a pack of foxhounds in drawing Bodethiel Coombe, in the Glynn Valley, near Bodmin, found and killed a Marten, and the late Mr. E. H. Rodd, who recorded this fact (Zool. 1878, p. 127), added that in March, 1878, a full-grown female Marten was captured in the neighbourhood of Delabole Quarries, in North Cornwall.

(To be continued.)

NOTES ON THE BIRDS OF DONEGAL.

BY HENRY CHICHESTER HART, B.A., F.L.S.

(Concluded from p. 424.)

WILD SWAN or WHOOPER, *Cygnus musicus*, Bechst.—Occasional winter visitant in hard weather. Sir R. Payne Gallwey mentions that Whoopers have been shot at Glen Lough and Mulroy.

BEWICK'S SWAN, *C. minor*, Keys. & Blasius.—Wild Swans, probably of this species, visit Ballyhernan Lake almost every winter, in Fanet. Lough Fern and many other lakes are visited, chiefly in hard winters, when the numbers are much larger. One was shot near Carrick by Mr. Musgrave in 1878 (A. B.). On

Dec. 28th, 1890, hearing that there were Wild Swans in Fanet, I visited several lakes. On Kinnylough there were twenty; they kept up a continual yelping noise; five rose and flew. At Rinboy Lake there was a much larger flock: I counted sixty on the water. This lake is about half-a-mile broad and three-quarters in length. The Swans kept in the middle, and were a beautiful spectacle, a brilliant sun shining on them. They kept up a continual yelping and sort of guttural whining. The notes of the darker cygnets, of which there were five or six, were distinct. I saw eighty-four Swans this day, and by all accounts there were never so many in Fanet any winter before: twenty to forty is the ordinary number. They remain till the end of February.

? GREYLAG GOOSE, *Anser ferus*, Gmelin.—Rarely occurs. In the winter of 1880–81 grey geese were numerous. At Greenfort Island, Carrablagh, a flock of about fifteen remained several days, when five were shot. This was an unexampled occurrence. Others were obtained at Kindrum, and eight went up Lough Swilly as far as Ramelton. The description I received agreed with the Greylag Goose, but the White-fronted Goose may have been mistaken for it.

BEAN GOOSE, *A. segetum*, Gmelin.—A regular winter visitor to the inland Donegal bogs in many places. This is the ordinary "wild goose" seen inland in winter, as the Brent Goose (miscalled the Bernicle) is the commonest tidal species.

WHITE-FRONTED GOOSE, *A. albifrons*, Gmelin.—Probably occurs every winter. A number visited south-western Donegal in the winter of 1879–80, and several were shot on the mountains inland (A. B.). One was shot on Rathlin O'Byrne Island, May 3rd, 1887 (Report on Migr. of Birds, 1889).

BERNICLE GOOSE, *A. leucopsis*, Bechst.—Said to visit Mulroy annually, where it is called "Bernacle" as well as the following much commoner species. Sir R. Payne Gallwey states that it regularly visits Aranmore Island in considerable numbers.

BRENT GOOSE, *A. bernicla*, Bechst.—Abundant winter visitor in Loughs Foyle and Swilly. I have seen them arrive on Sept. 12th and 14th, at the mud-flats on Inch Island, Lough Swilly—a favourite haunt. Generally leave in March. "Said to be frequent on Innisduff Island, near Killybegs, in winter" (A. B.).

SHELDRAKE, *Tadorna vulpanser*, Fleming.—Breeds, or did breed, a few years ago, at Ards. In 1881 a pair bred at Inch Island,

Lough Swilly. Formerly frequented Horn Head, and probably breeds at several other localities. These birds remain throughout the year in the places they frequent. "Breeds in the sand-hills between Ballyshanon and Bundoran" (A. B.).

*WILD DUCK, *Anas boschas*, Linn.—Breeds in many places, the numbers in the county increasing much in winter.

WIGEON, *A. penelope*, Linn.—An abundant winter visitant, but has not as yet, I believe, been observed to breed in Donegal, though it most probably does so.

*TEAL, *Querquedula crecca*, Linn.—Breeds in most of the mountain lakes, more numerous perhaps than even the Wild Duck. Great numbers arrive in autumn for the winter.

POCHARD, *Fuligula ferina*, Linn.—A winter visitant in small numbers to Mulroy and Sheephaven Bays, also Lough Swilly. Sir R. Payne Gallwey ('Fowler in Ireland,' p. 47) gives the proportion of Wigeon, Teal, Duck, Pochard, Scaup and Divers that Capt. Dover killed with his punt-gun in the years 1861, '62, and '63, in Mulroy and Sheephaven. I saw a few on Nov. 9th, near the lighthouse in Fanet.

SCAUP, *Fuligula marila*, Linn.—Winter visitor in some quantity. They are to be seen annually about the upper reaches of Lough Swilly, about Inch, and at Mulroy and Sheephaven. One was shot at Glenalla river, near Ray, on Lough Swilly, on July 1st, 1882: probably a wounded bird.

TUFTED DUCK, *F. cristata*, Leach.—The "White-sided Duck," as it is here called, is a regular winter visitant in small numbers to some of the lakes in Fanet. A local fowler, Patrick Campbell, has obtained these birds several times.

COMMON SCOTER, *Ædemia nigra*, Linn.—Not a regular winter visitant to Lough Swilly. Very numerous in the winter of 1880-81. I have seen Scoters off the north coast of Fanet several winters in small numbers.

VELVET SCOTER, *Æ. fusca*, Linn.—In January, 1890, three of these birds remained with a small company (about thirty) of Pochards in Lough Swilly for several days. They were usually a quarter of a mile from shore, and I often watched them with a telescope. There was a very heavy swell in the Lough at the time and a desperate sea outside. The white mark on the wing was unmistakably observed.

*RED-BREASTED MERGANSER, *Mergus serrator*, Linn.—Breeds

at Ards, on an island in Sheephaven, and at Lough Eske. About the first half of May to the third week there are generally several pairs about the shores of Lough Swilly at Carrablagh swimming in deep water; but they do not appear to breed.

GOOSANDER, *M. merganser*, Linn.—A rare winter visitor. "One was shot on Killybegs Bay by H. D. M. Barton in 1879 or 1880, and Archdeacon Cox, of Glenties, at various times preserved three specimens" (A. B.). The last were obtained on the Owenea river.

GREAT NORTHERN DIVER, *Colymbus glacialis*, Linn.—Frequents the mouth of Lough Swilly. I have reason to believe some of the birds remain along the coast throughout the year. The cry is unmistakable, and I heard it both in June and July from my house this year, though too far out for me to make out the birds. One of my men called my attention to it, saying there would be a storm when the "Hollan Hawk" cried like that. I have seen the Great Northern Diver here in May and in September. I do not suggest that they remain for the purpose of breeding. "Frequents Killybegs in winter" (A. B.).

*RED-THROATED DIVER, *C. septentrionalis*, Linn.—Not unfrequent in Lough Swilly in winter, but less common near the shore than the last species. I have seen these Divers here in September. The eggs have recently been taken on Dunglow Lake, in the north-western corner of the county. "This bird has been known to breed in this locality for the past eight or ten years" (A. B.).

GREAT CRESTED GREBE, *Podiceps cristatus*, Linn.—I saw a specimen that was shot at Ray, Lough Swilly, in April, 1879. It does not appear to be common, but probably visits some of the lakes.

*LITTLE GREBE, *P. minor*, Gmelin.—Breeds in many lakes and takes to the sea-loughs in winter.

RED-NECKED GREBE, *P. griseigena*, Bodd.—A specimen obtained on Inver Bay, by Mr. A. R. Wallace, is now in the National Museum.

*PUFFIN, *Fratercula arctica*, Linn.—Breeds abundantly at Horn Head, where it arrives from early May (or perhaps earlier) to about the 12th August. Few eggs laid before the end of May (1881). Puffins breed on several other parts of the coast,—notably at Tormore, near Glen Head,—but in less

numbers. In 1879 a white Puffin was seen at Horn Head several times.

***RAZORBILL**, *Alca torda*, Linn.—Breeds abundantly at Horn Head, and in lesser numbers elsewhere, as at Dunaff Head. Less common on this coast than the Guillemot.

LITTLE AUK, *A. alle*, Linn.—One was picked up dead in Donegal Bay in the winter of 1884 (A. B.), on Inver-strand.

***GUILLEMOT**, *Uria troile*, Linn.—Breeds in many places round the coast, but most abundantly at Horn Head. Begins to lay first week in June generally—a little later than the Puffin or Razorbill. The ringed variety (formerly regarded as a species) has been observed breeding at Horn Head also. Mr. Brooke writes that this species, as well as the Puffin and Razorbill, breeds in great numbers about Tormore.

***BLACK GUILLEMOT**, *U. grylle*, Linn.—Breeds in small numbers in several places, as at Dunaff Head, Melmore Head, Horn Head, Breaghy Head, &c. Sheephaven Bay is a favourite haunt of these birds. At Slieve League also they are frequent. Not common at Horn Head, and seems to be more solitary in its habits than others of the tribe. Mr. Brooke informs me that two or three pairs breed regularly at Innisduff Island.

***CORMORANT**, *Graculus carbo*, Linn.—Very common on the Donegal coast. Breeds in most of the places mentioned for Guillemots, &c., but the largest assemblage I remember is at Breaghy Head. Here the eggs are easy of access, which is never the case with the following species. Young birds are mostly hatched and gone before the Guillemots begin to lay.

***SHAG**, *G. cristatus*, Faber.—Less common than the last species. Much more numerous, however, at Horn Head, which is their chief breeding-place. Shags do not breed strictly in companies, like the last species, and always, if possible in the mouths of caves, the latter rarely or never choosing such a station.

GANNET, *Sula bassana*, Linn.—Not unfrequent, especially in stormy weather, in Lough Swilly, throughout the year, but not breeding in Donegal. “Often to be seen in Donegal Bay” (A. B.).

***COMMON TERN**, *Sterna fluviatilis*, Naumann.—Common and breeds in many places, both inland and maritime, but especially on stony islets on low-lying lakes. Mr. Brooke mentions several islets in his neighbourhood, both inland and maritime, where these birds breed in great numbers.

*ARCTIC TERN, *S. hirundo*, Linn.—Common along the coast, and breeds on islets off the north coast of Donegal in great numbers.

*LESSER TERN, *S. minuta*, Linn.—Frequents the shores of Lough Swilly, and breeds, no doubt, in several places. I have not succeeded in finding their eggs here, though I was undoubtedly amongst them in two or three places.

*BLACK-HEADED GULL, *Larus ridibundus*, Linn.—Breeds abundantly at Gartan Lough, Churchill; on an island in Kinnylough, Fanet; on an islet in a lake near Mount Charles; and elsewhere. "In great quantities on an island in Lough Eske" (A. B.).

KITTIWAKE, *L. tridactylus*, Linn.—Breeds abundantly, and very common at that season. Horn Head is its most notable station.

*COMMON GULL, *L. canus*, Linn.—Frequent inland in winter; a few pairs breed on an island in Lough Fern.

*HERRING GULL, *L. argentatus*, Gmel.—Very common all round the coast, breeding everywhere, but never in crowds, like the Kittiwake. At Horn Head they have their own colonies of thirty to fifty pairs, where no other birds interfere. Often they breed along the coast, a pair or two at a place.

ICELAND GULL, *L. leucopterus*, Faber.—One of these graceful gulls flew up Lough Swilly past my house in a heavy gale from W.N.W. on Jan. 20th, in the present year. He passed close to me, and the flight was very powerful. The long tern-like wings and the gleaming white colour, coupled with the size, intermediate between Kittiwake and Herring Gull, rendered it unmistakable. I was, moreover, familiar with this bird in Greenland.

*GREATER BLACK-BACKED GULL, *L. marinus*, Linn.—A few of these birds are generally to be seen in Lough Swilly, especially when fish are in. Breeds at Horn Head, and I have seen these birds at Slieve League and Dunaff Head, and in other places along the coast in the breeding-season. "I was told by Mr. J. Young that a pair bred on Lough Eske [inland lake] one year, and I have seen a pair at Innisduff island [maritime] in the breeding season" (A. B.). With reference to the freshwater breeding-place, I may mention here that about thirty years ago Great Black-backed Gulls used to breed on islands in Lough Erne.

*LESSER BLACK-BACKED GULL, *L. fuscus*, Linn.—Breeds at Horn Head and Slieve League. Not so frequently seen on Lough Swilly as the last species, but also breeds, I think, at Dunaff Head.

COMMON OR GREAT SKUA, *Lestris catarractes*, Linn.—A pair of these birds appeared in Lough Swilly in October, 1890, when there was great fishing among the gulls. They broke up the “togher” in approved fashion, and I watched their magnificent evolutions amongst the gulls (chiefly Kittiwakes) with a telescope for some time. I have seen them once or twice before, and a Ramelton fowler (J. Griffin) saw one in the winter of 1880–81. I have watched Eagles in the air many a time, and Falcons and Merlins are familiar birds, but I know no performance on the wing at all to compare with that of a couple of these ferocious tyrants amongst a crowd of Kittiwakes. They inspire abject terror amongst them at once, and all attempt at fishing is fairly abandoned. The light-keeper at Fanet has seen Skuas (“Skaws”) occasionally. He says they lie outside on the open sea, but come near shore sometimes after fishing Gulls. I have learned that one of these birds was obtained on an inland lough near Dawross Bay, Ardara, by Major Johnson in 1890.

POMATORHINE SKUA, *Stercorarius pomatorhinus*, Temminck.—Mr. Holt, the naturalist attached to the Fishery Commissioners' Survey steamer under the command of the Rev. W. Green, obtained a specimen of this bird, which he kindly showed me, in Donegal Bay, in May, 1891.

RICHARDSON'S SKUA, *S. crepidatus*, Gmelin.—One of these birds was also obtained by Mr. Holt and shown to me. It was shot in Sheephaven Bay, 1891. Other examples of both species were observed.

BUFFON'S SKUA, *S. parasiticus*, Linn.—Mr. Holt saw what he believed to be one of these birds in Sheephaven, May, 1891.

*MANX SHEARWATER, *Puffinus anglorum*, Temminck.—Seen in summer about Tory Island. Breeds at Aranmore. One killed itself against the lighthouse at Fanet, in April, 1891.

GREAT SHEARWATER, *P. major*, Faber.—I saw three of these birds flying out of the mouth of Lough Swilly on the 19th May, 1890. Their flight, which I am well acquainted with, is unmistakable. A gale was blowing at the time, and the manner in which they followed each other, like automata, dipping into

the trough of the heavy sea with their peculiar, graceful flight, was a pleasure to observe. I saw them first at a quarter of a mile or less, but followed them with my telescope for a couple of miles.

FULMAR, *Fulmarus glacialis*, Linn.—The Rev. W. Green, while in charge of the steamer investigating the Fisheries off the Coast of Ireland (1890—91), met with Fulmars in Donegal Bay, within 10 miles of land, in 1890: and others about 20 miles from land in 1891.

*STORM PETREL, *Procellaria pelagica*, Leach.—Breeds at Tory Island and at Rathlin O'Byrne's Island, off Slieve League. Seldom seen from the shore. Large numbers breed on Tory Island, or at least visit the island during the season. I received eggs from there thirty years ago.

NOTES AND QUERIES.

MAMMALIA.

Hybernation of Squirrels.—Referring to the notes which have already appeared (pp. 61, 100, 151, &c.), "whether Squirrels are torpid in winter," permit me to say that, during many winters passed in the backwoods of North America, I have seen Squirrels frisking among the trees in the coldest weather. On bright sunny days especially they delight in chasing each other from tree to tree among the evergreens, and cover the snow with their tracks. The young are born early in the spring; here I speak of the ordinary Red Squirrel. The "Chipmunks," or little striped Ground Squirrels, certainly do not hibernate; for in the autumn they lay up a store of provision of grains, nuts, &c., for winter, and on fine days may be seen sunning themselves. I have on several occasions come across their hoards, and once saw two large bucketsful of shelled buckwheat taken from the hollow of an old birch tree that the woodmen had chopped down on the edge of a clearing which had been cropped the previous summer with that grain. The instinct of the animal had apparently taught it that in the shelled state the grain would not germinate.—C. FITZGERALD.

BIRDS.

On the Colours of the Adult Female Golden Oriole.—Although I have spent many pleasant hours with the Golden Oriole in the Rhineland and in France, studying its nesting habits, listening to the rich flute-like

song and cat-like calls of the male Orioles in their brilliant livery,—watching, too, the first essays at flight of the young bird that has newly left the hammock-like nest,—I never had the pleasure of meeting with this species on migration until April of the present year. On the 20th of that month, Messrs. Johnson, A. C. Chapman, and myself happened to walk up to the head of Roncevaux Pass from the Spanish side, and saw several Golden Orioles resting on passage. First, a male and female flew across a beech-clad hollow on the hill-side, and then several brilliant males followed in company. The first two birds had perhaps already paired. With regard to the reviewer's remarks (p. 437) on the plumage of the Golden Oriole, I do not think that the "covering" phrase, to which exception is taken, can fairly be construed to bear the interpretation put upon it. The female Golden Oriole is "a similar but duller bird than the male," similar in flight and general appearance, though much more soberly attired. It is not easy to study the female Orioles, because they frequent the higher branches of forest trees, and are shy and retiring. But that the female of this Oriole gradually progresses towards the yellow dress of the male, I have no doubt at all. It was long ago so stated by Hoy, and I am not aware that his statement, quoted in the 4th edition of 'Yarrell,' has been challenged until the present time. Even the plumage of the young resembles distantly that of the adult, *i. e.*, yellow strongly predominates. I am not sure, however, that the reviewer and I have the same colour sense. It is possible that what appears to him green, appears to me to be yellow. Recently a lady casually informed me that the breast of the Great Titmouse is green, not yellow. My reviewer may take the same view. At all events, though the female of *Oriolus galbula* is usually "a duller bird" than the male, she is similar to her mate in everything but brilliancy of tint. I do not think that the female of this Oriole would be at all exposed to danger, when sitting, by bright colours. It is not easy to see even a male Golden Oriole in the top of a big oak or elm in the breeding season. The birds crouch close to the boughs if alarmed, and neither they nor their nests are easy to distinguish among the fully-expanded leaves.—H. A. MACPHERSON (Carlisle).

Inland Occurrences of the Manx Shearwater.—I have met with four occurrences of this species inland during the autumn, namely, the one recorded in the current number of 'The Zoologist,' p. 428, near Retford, in the first week of September; another killed on the first of the same month at Wooton, near Ulceby, by a reaping machine, and now in the collection of Mr. J. Topham; another at Grainsby, also in Lincolnshire, which I have; and a fourth in Holderness. I have not been able to ascertain the dates of the two latter with any degree of accuracy, but in the case of the two former (the 1st September and first week in September), it is by no means improbable that these may have been driven quite across the country from some

western locality by the tremendous gales from the S.W. on August 26th, and again on September 1st from the W.—JOHN CORDEAUX (Eaton Hall, Retford).

The Manx Shearwater Inland.—Ornithologists, generally speaking, look upon the presence of the Manx Shearwater inland as due to stress of weather. From its regular appearance in Notts, however, during the months of September, October, and November, I have come to the conclusion that we must look to a moderate amount of overland migration as the cause; the birds apparently travelling by the usual route *via* the Trent Valley and across the intervening counties to the Bristol Channel. As the Manx Shearwater is a maritime bird, we should naturally expect most of the inland records to refer to those counties bordering the sea. Had all specimens been recorded that have been captured in Nottinghamshire, I think we should find that not a year has passed without one specimen having occurred. For the last five or six years I can say from my own observations that not a year has passed without one being captured, in some years two, and once as many as three having come under my notice. The winds at the time of these occurrences, when noted, have usually been strong, and always from the west or south-west. If we take the last five or six years as average years, we shall see at once that the records for Notts greatly exceed those for Norfolk and Suffolk, quoted by Colonel Feilden, which probably extend over a long period. There is no doubt that the trend of the Norfolk coast and the position of the Wash may lead the Manx Shearwater astray, but, considering the scarcity of this bird in the adjacent sea, I am more inclined to think that the Norfolk birds are stragglers from the overland line of migration, driven out of their course by the prevailing winds. For the intervening counties lying in the route, I have few records to refer to; but for Leicestershire six specimens are recorded, and a seventh was captured during September of the present year. For Oxfordshire, which, however, is rather out of the regular course, half a dozen specimens are noted of comparatively recent occurrence, and chiefly during the months of September, October, and November. Immediately preceding Col. Feilden's note (p. 428) is another record of the occurrence of this bird in Nottinghamshire.—F. B. WHITLOCK (Beeston, Notts).

Fork-tailed Petrels in North of Ireland.—The number of Fork-tailed Petrels which have recently been met with in different parts of Ireland has been very remarkable. On the 27th September two were picked up dead, two were shot, and three others seen near the Glenavy shore of Lough Neagh. On the same day one was observed on Lough Conn, Co. Mayo, and the following morning one was picked up dead, and another stoned to death by boys at the same place. On the 28th one was found alive in one of the suburbs of Belfast, and one dead near Bunclraha, Co. Donegal. One

was found on the outskirts of a wood near Ramelton, Co. Donegal, on the 29th, and on the 30th a dying one was picked up near Lough Neagh, and another found at Crumlin, Co. Antrim. By the 1st October they had crossed Ireland, one being seen at Donaghadee, Co. Down, and on the same day one was observed and another picked up dead near Crumlin. One was seen on Lough Neagh on 6th October, and on the 7th a correspondent wrote that "dozens were lying about Moy," Co. Tyrone. On the 9th, 10th, and 11th individuals were observed in different parts of the parish of Glencolumbkille, Co. Dónegal; and at Inver, in the same county, about the middle of October, one was shot, one picked up dead, and two were seen. I have read reports of other occurrences of this bird in different papers, but all those above mentioned have come under my own notice. It is rather remarkable that I only heard of one Storm Petrel, which was sent in from Toome, Co. Antrim.—ROBERT PATTERSON (1, Windsor Park Terrace, Belfast).

The Fork-tailed Petrel in Ireland.—I send a list of the Fork-tailed Petrels that have come under my observation during the late visitation, which seems to have been pretty general all over Ireland. I have received twenty-seven specimens for preservation from the following localities:—Sept. 28th.—One, Mullingar, Co. Westmeath; one, Thurles, Co. Tipperary; two, Galway; four, Athlone, Co. Westmeath. 29th.—Two, Nenagh, Co. Tipperary; one, Cashel, ditto; one, Athenry, Co. Galway; one, Dublin city. 30th.—One, Londonderry; one, Waterford town; one, Eyrecourt, Co. Galway. Oct. 2nd.—One, Ballyjamesduff, Co. Cavan; one, Hollymount, Co. Mayo; one, Mountrath, Queen's Co. 3rd.—Two, Galway; one, Mullingar, Co. Westmeath. 5th.—One, Loughrea, Co. Galway; one, Woodlawn, ditto; one, Carrick-on-Shannon, Co. Leitrim. 6th.—One, Tralee, Co. Kerry. 9th.—One, Kilcock, Co. Kildare. The birds were in every instance in a very emaciated condition, and all the specimens were just half through their moult—not a perfect-plumaged bird among them. A peculiarity (which I have noticed before in the species) was that six out of the twenty-seven had the tarsus mutilated, one with the leg completely gone. It would be interesting to discover the cause of this, as I have noticed the same thing in the Manx Shearwater, though probably rabbit-traps in the breeding season might account for it in that species. Mr. Frank Neall, writing to Mr. Barrington from Limerick, remarked:—"It may interest you to know, that quite a large number of Storm Petrels were to be seen flying about the Shannon here yesterday (Sept. 27th), right up opposite the town, and, in their eagerness to pick up food, coming within five or six yards of spectators who stood to watch them. A strong westerly wind was blowing all day, but on the whole the day was a fine one without rain." Another correspondent, writing to Dr. Scharff, enclosing a specimen from Moy, Co. Tyrone, states that a number of these birds were found

lying about the fields dead. So far as my observations went, strong south-westerly winds prevailed all the last week of September.—EDWARD WILLIAMS (2, Dame Street, Dublin).

White-tailed Eagle at Scarborough.—On Nov. 7th a nice specimen of the White-tailed Eagle was shot near Scarborough by Mr. William Wright. Its captor states that, while lying in wait for wildfowl at Scalby Ness, he perceived a large bird, which he took to be a Heron, slowly flying across the water, followed and harassed in its flight by a number of Hooded Crows. On reaching the shore it immediately alighted on the cliff, where Mr. Wright was fortunate enough to get within twenty-five yards, bringing it down with a charge of No. 4 shot. The bird, being only wounded, made a powerful resistance, and its captor had no little difficulty in securing it. On examination it proved to be an immature bird in good condition, measuring $34\frac{1}{2}$ in. from beak to tail, and over 7 ft. in expanse of wing. Mr. Wright did not appear quite clear as to whether there were two of the birds or not; but the matter was settled beyond question later in the day by the appearance of another Eagle, presumably of the same species. It was again seen on the 8th, and on the 9th, being on the north shore early in the morning, I was fortunate enough to see it. It was slowly flying in a southerly direction, about 250 yards out to sea, and finally disappeared over the cliffs. Judging from the size, which appeared somewhat smaller than the one secured, it was probably the male bird. The one shot is now being preserved for the local museum.—WM. J. CLARKE (44, Huntriss Row, Scarborough).

Capture of a Spotted Eagle near Colchester.—I have just seen (Nov. 9th) a live specimen of the Spotted Eagle, *Aquila navia*, a rare straggler to the British Islands, which was captured on Oct. 29th, 1891, at Elmstead, near Colchester. It appears that on the day mentioned a farm labourer saw a strange bird, evidently in an exhausted condition, alight in the field in which he was working. On going after it, it rose again, and flew about a hundred yards. He soon came up to it, and, after some little difficulty, from its pugnacity, captured it alive and uninjured, and in a few days sold it to a gipsy, who in turn disposed of it to Mr. Pettitt, our local taxidermist. Its plumage appears to indicate good health, and its appetite certainly favours that idea, and, if any injury led to its capture, all marks of it have quite disappeared. From its size and markings it corresponds with Mr. Howard Saunders's description of the small northern race. Mr. Pettitt, who is taking great care of the bird, is willing to dispose of it if a purchaser can be found.—HENRY LAVER (Colchester).

Unusual Nesting of the Chiffchaff.—On the 10th August last, in the woods of Ballyraine, Arklow, I found a Chiffchaff's nest, from which the young had some time flown. It was built in the side of a bramble thicket, at the edge of a path, and thickly shaded above by trees. It was raised

fully three feet from the ground, and was well concealed by the leaves of the bramble. I have never seen a nest of this bird actually upon the ground, but very rarely more than a foot or so above it, and generally surrounded by dry leaves, grass, fern, or some tangle of the kind; but this nest more resembled in its situation that of a Chaffinch. — ALLAN ELLISON (Hillsborough, Co. Down).

The Hawfinch in Middlesex.—Having read Mr. Aplin's article on the "Immigration of Hawfinches" (p. 367), it occurs to me that the following note may be of interest to your readers. On Dec. 8th, 1889, while watching some birds feeding on crumbs and fruit in a garden here, I discovered two Hawfinches. They were very shy, and kept under the shelter of a rhododendron-bush, apart from the Sparrows, Chaffinches, and other birds. I saw them only on that day, though I looked for them on several subsequent occasions.—ALFRED SICH (Burlington Lane, Chiswick).

Squacco Heron in Wales.—About sixteen years ago a Squacco Heron, *Ardea ralloides*, was shot at Glansevern, Gathruyl, Montgomeryshire, at some ornamental water close to the house. It is a full-plumaged bird, and has been nicely set up; it is in the possession of Mr. A. C. Humphreys-Owen at Glansevern.—CHARLES F. ARCHIBALD (Rusland Hall, Ulverston).

Red-breasted Flycatcher at Scarborough.—The Red-breasted Flycatcher, *Muscicapa parva*, shot at Scarborough on Oct. 23rd, 1889, and mentioned by Mr. Cordeaux (p. 363) is not in my collection, as he supposes, but is among the recent additions to Sir Vauncy Crewe's collection.—J. H. GURNEY (Keswich Hall, Norwich).

Notes from Christchurch, Hants.—I have added one new species to my collection, *viz.*, a Lapland Bunting, which I slightly wounded on March 18th last, just after that great snow-storm; it lived some months, but unfortunately died. I have it now preserved in my collection, being the only Hants specimen that I know about. A Spoonbill was in the harbour during May. Wildfowl came in rather early; Wigeon by Sept. 25th. On the 29th five Avocets were in the harbour, and an Osprey for several days; this bird was shot at, but not killed. On Oct. 8th saw first Phalarope. Oct. 12th Fieldfares arrived. After this came that extraordinary visit of Phalaropes from the 16th to 22nd; there were simply hundreds. The wind then went N.E., and they soon made on south; the last I saw was on the 28th. On that morning I shot the first Brent Goose for the season. I also saw the same or another Osprey; it was seen again next day. It has not been killed up to the present, I am glad to say. On Friday night last (6th) a female Night Heron was shot by a river-keeper on the Stour; the man brought it to me just after, but, having them so well represented in my collection, I did not require another. I think his master, Mr. Wilkes,

has sent it to be stuffed. A Mr. Coles, of Keyhaven, told me he had killed a Sabine's Gull on Oct. 21st last; it is at the stuffer's now, but I hope to see it soon, and trust it will prove to be correctly identified, not having any note of this occurring before in Hants. I ought to mention that during the dates on which the Phalaropes were so plentiful a large number of Buffon's Skuas were here; I saw five in view at once. Curiously, they were mostly adult birds, but the date was just too late for them to have the long tail-feathers. I managed to shoot two that had not moulted them, which I wanted to place with one adult I shot in 1879. Immature birds I have often shot.—EDWARD HART (Christchurch, Hants).

Wildfowl on Rainworth Water, Notts.—When walking round the lake here, in August last, I was very much surprised to see a Pochard, never before having seen one here during the summer, though this water is just the place one would expect to see one. I was more astonished to see a male in full winter plumage; his head was as red and his back as grey as they might have been on Christmas Day. The other wildfowl on the water were forty-two Tufted Ducks, nine Shovellers, six Teal, five common Wild Ducks, one Scaup (very early), and one Great Crested Grebe; besides very many Coots and Waterhens. I may add that yesterday (Nov. 9th), there were ninety-five common Wild Ducks here.—J. WHITAKER (Rainworth, Mansfield, Notts).

Notes from West Sussex.—I have to report to you the recent occurrence of three Fork-tailed Petrels. One fell in Midhurst, Oct. 16th, and was fed with morsels of cod-fish, but died next day; weight barely three-quarters of an ounce. The second was found near your old haunt, Elsted Down, on Oct. 20th. The third was picked up on Oct. 23rd at Pallingham, Wisborough Green, by a shepherd of Mr. Percy Neale, and forwarded to me; I have sent it to Pratt's, Brighton, for preservation. These birds must have gone till they dropped. Mr. Arnold reports from Emsworth, Oct. 20th, a good specimen of the Pomatorhine Skua (*Stercorarius pomatorhinus*). On Oct. 24th another Skua, killed at Selsey, was shown to Mr. Arnold in Chichester, but he had not time to determine whether it was one of the same species, or Richardson's Skua. I tried to see this bird, but failed. A great many Grey Phalaropes have occurred in different localities, as at Thorney, Havant, Eastney Barracks, Portsmouth, Emsworth, Midhurst Mill, and Lynchmere; the last two I saw. On October 22nd, Mr. Arnold reported another example of the Pomatorhine Skua, brought to him from Emsworth. The curator of the Chichester Museum, Mr. Anderson, reported to me a month ago that Scoters had bred successfully near Chichester this year.—H. D. GORDON (Harting Vicarage, Petersfield).

[This we doubt; most likely the birds referred to were Tufted Ducks. Further details are desirable.—ED.]

Spotted Crake at Scarborough.—A nice specimen of the Spotted Crake was obtained at Scarborough during the early part of October. It was killed by flying against the telegraph-wires, and proved to be in fully mature plumage. This is the second example of this species which has occurred recently in this district.—W. J. CLARKE (44, Huntriss Row, Scarborough).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

November 5, 1891.—Prof. STEWART, President, in the chair.

Mr. W. L. Brown was elected, and Prof. W. F. Weldon was admitted a Fellow of the Society.

On behalf of a number of subscribers, Mr. Carruthers presented to the Society a half-length portrait in oils of Sir John Lubbock, Bart., M.P., P.C., and F.R.S., a former President, painted by Mr. Leslie Ward; and the remarks which he made on the services rendered to biological science by Sir John Lubbock drew from the latter a graceful acknowledgment of the honour conferred upon him.

Amongst the exhibitions which followed, Mr. E. M. Holmes showed some new Marine Algæ from the Ayrshire coast; Mr. J. G. Grenfell showed some Diatoms with pseudopodia, illustrating his remarks with diagrams, upon which an interesting discussion followed; the President exhibited and made some observations on a tooth of the Walrus, which illustrated in a curious manner the periods of growth; Mr. R. V. Sherring called attention to a large series of framed photographs which had been taken under his direction in Grenada, and illustrated the general character of the West Indian Flora, as well as the physical features of that particular island.

Mr. J. E. Harting exhibited a specimen of Wilson's Petrel, which had been picked up in an exhausted state in the Co. Down on the 2nd October last, and had been forwarded for inspection by Mr. R. Patterson, of Belfast. Mr. Harting gave some account of the species, and remarked upon the unusual number of Petrels, Shearwaters, Skuas, and other marine birds which had been driven inland to a considerable distance during the recent gales.

A paper was then read by the Rev. Prof. Henslow, M.A., entitled "A Theory of Heredity based on Forces instead of any special form of Matter." The author maintained that no special form of matter (as is generally supposed) other than protoplasm is required, the latest discoveries of the organised structure of protoplasm militating against the idea of any other special form of matter. Taking illustrations from the Animal and

Vegetable Kingdoms, he enquired why two varieties of chickens, fed from the first day to full growth, were different? It seemed to him more probable that the results were due to different arrangements of the same kinds of molecules rather than to different kinds of "germ-plasms." *Ranunculus heterophyllus*, he pointed out, produced a "land-form" and a "water-form," according to its environment; it therefore exhibited both "heredity" and "acquired characters." As the materials of its structure were the same in both cases, the different results, he considered, must be due to different arrangements of its molecules, and must be effected by Forces. The sudden appearance of stomata on the "land form" illustrated a case of forces normally "potential" while the leaf is submerged, becoming "actual" when the leaf developed in air. After some further deductions, Prof. Henslow concluded that protoplasm and the forces bound up with it were perfectly able to do all the work of transmitting parental characters, as well as to acquire new characters, which in turn might become hereditary as well.

ZOOLOGICAL SOCIETY OF LONDON.

November 3, 1891.—Professor W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the months of June, July, August, and September, 1891, and called attention to certain interesting accessions which had been received during that period.

The following objects were exhibited:—(1) on behalf of Mr. F. E. Blauw, a stuffed specimen of a young Wondrous Grass Finch, *Poephila mirabilis*, bred in captivity at his house in Holland; (2) on behalf of Prof. E. C. Stirling, a water-colour drawing of the new Australian mammal, *Notoryctes typhlops*; (3) by Mr. G. A. Boulenger, an Iguana with the tail reproduced; (4) by Mr. R. Gordon Wickham, a very fine pair of horns of the Gemsbok, *Oryx gazella*, from Port Elizabeth, South Africa; and (5) by Dr. Edward Hamilton, a photograph of an example of the Siberian Crane, *Grus leucogeranus*, shot on the island of Barra, Outer Hebrides, in August last. [This proved to be an escaped bird. See 'The Field,' Nov. 14th.]

Mr. R. Lydekker gave a description of some Pleistocene bird-remains from the Sardinian and Corsican Islands. These belonged mostly to recent forms, but to genera and species which in several instances had not been found fossil. They showed rather more of an African character than the present Avifauna of these islands. He also read some notes on the remains of a large Stork from the Allier Miocene. These remains were referred to the genus—closely allied to *Ciconia*—lately named *Pelargopsis*, but which (that term being preoccupied) it was now proposed to rename *Pelargoides*.

He also exhibited and made remarks on the leg-bones of an extinct Dinornithine bird from New Zealand, upon which he proposed to base a new species allied to *Pachyornis elephantopus* (Owen), and to call it, after the owner of the specimen, *Pachyornis rothschildi*.

Dr. A. Günther read a description of a remarkable new fish from Mauritius, belonging to the genus *Scorpæna*, which he proposed to call *Scorpæna frondosa*.

A communication was read from Mr. Roland Trimen, containing an account of the occurrence of a specimen of the scarce fish, *Lophotes cepedianus*, Giorna, at the Cape of Good Hope.

A communication was read from the Hon. L. W. Rothschild, giving a description of a little-known species of *Fapilio* from the island of Lifu, Loyalty Group.

Mr. R. J. Lechmere Guppy read some remarks on a fine specimen of *Pleurotomario* from the island of Tobago.

A communication was read from Mr. L. Péringuey, giving an account of a series of beetles collected in Tropical S.W. Africa by Mr. A. W. Eriksson.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

Nov. 4, 1891.—Dr. DAVID SHARP, M.A., F.R.S., Vice-President, in the chair.

Major John Nathaniel Still, of Seaton, Devon, and the Junior United Service Club, Charles Street, St. James's, S.W., was elected a Fellow of the Society.

Mr. W. F. Kirby exhibited a series of a very dark-coloured form of *Apis* reared by Mr. John Hewett, of Sheffield, from bees imported from Tunis, which he proposed to call "Punic Bees." They were larger than the black *Apis unicolor*, Latr., of Mauritius and Bourbon, and were almost entirely black, except in the legs, which were of a more or less reddish colour.

Mr. C. G. Barrett exhibited five melanic specimens of *Aplecta nebulosa*, reared by Mr. Collins, of Warrington, from larvæ collected in Delamere Forest, Cheshire, and described by him, in the 'Proceedings of the Lancashire and Cheshire Natural History Society,' as *A. nebulosa*, var. *Robsoni*, in honour of Mr. John E. Robson, of Hartlepool. Mr. Barrett also exhibited a beautiful variety of *Argynnis aglaia*, taken in Norfolk by Dr. F. D. Wheeler, and two specimens (male and female) of *Lycæna argiades*, taken in August, 1885, on Bloxworth Heath, Dorsetshire, by Mr. C. O. Pickard-Cambridge and Mr. A. Pickard-Cambridge respectively.

Mr. H. St. John Donisthorpe exhibited a collection of Coleoptera, comprising about thirty-six species, made in a London granary in 1890 and

1891. The genera represented included *Sphodrus*, *Pristonychus*, *Calathus*, *Quedius*, *Creophilus*, *Omalium*, *Trogosita*, *Silvanus*, *Lathridius*, *Dermestes*, *Anthrenus*, *Corynetes*, *Ptinus*, *Niptus*, *Anobium*, *Blaps*, *Tenebrio*, *Calandra*, *Bruchus*, &c.

Mr. A. B. Farn exhibited a series of specimens of *Eubolia lineolata*, bred from eggs laid by a specimen taken at Yarmouth. The series included several remarkable and beautiful varieties, and the size of the specimens was much above the average.

The Rev. Dr. Walker exhibited specimens of *Argynnis ino*, *A. pales*, and *A. frigga*, from Norway.

Mr. B. A. Bower exhibited, for Mr. J. Gardner, specimens of *Nephopteryx splendidella*, H.-S., *Botys lupulinalis*, Clk., and *Bryotropha obscurella*, Hein., taken at Hartlepool last June and August.

Mr. R. Adkin exhibited two very dark specimens of *Peronea cristana*, from the New Forest.

Colonel C. Swinhoe exhibited, and remarked on, types of genera and species of moths belonging to the *Tineina*, all of which had been described by the late Francis Walker, and placed by him amongst the *Lithosidæ*.

Mr. H. Goss exhibited specimens of *Callimorpha hera*, taken in August last by Major-General Carden in South Devon, and observed that the species appeared to be getting commoner in this country, as Gen. Carden had caught seventeen specimens in five days. Mr. Goss said that the object of the exhibition was to ascertain the opinion of the meeting as to the manner in which this species had been introduced into this country. A long discussion on this subject and on the geographical distribution of the species ensued, in which Mr. G. T. Baker, Mr. Stevens, Mr. Barrett, Colonel Swinhoe, Mr. McLachlan, Mr. Verrall, Capt. Elwes, Mr. Fenn, Mr. Jacoby and others took part.

Mr. C. J. Gahan contributed a paper entitled "On South American species of *Diabrotica*: an Appendix to Part II."

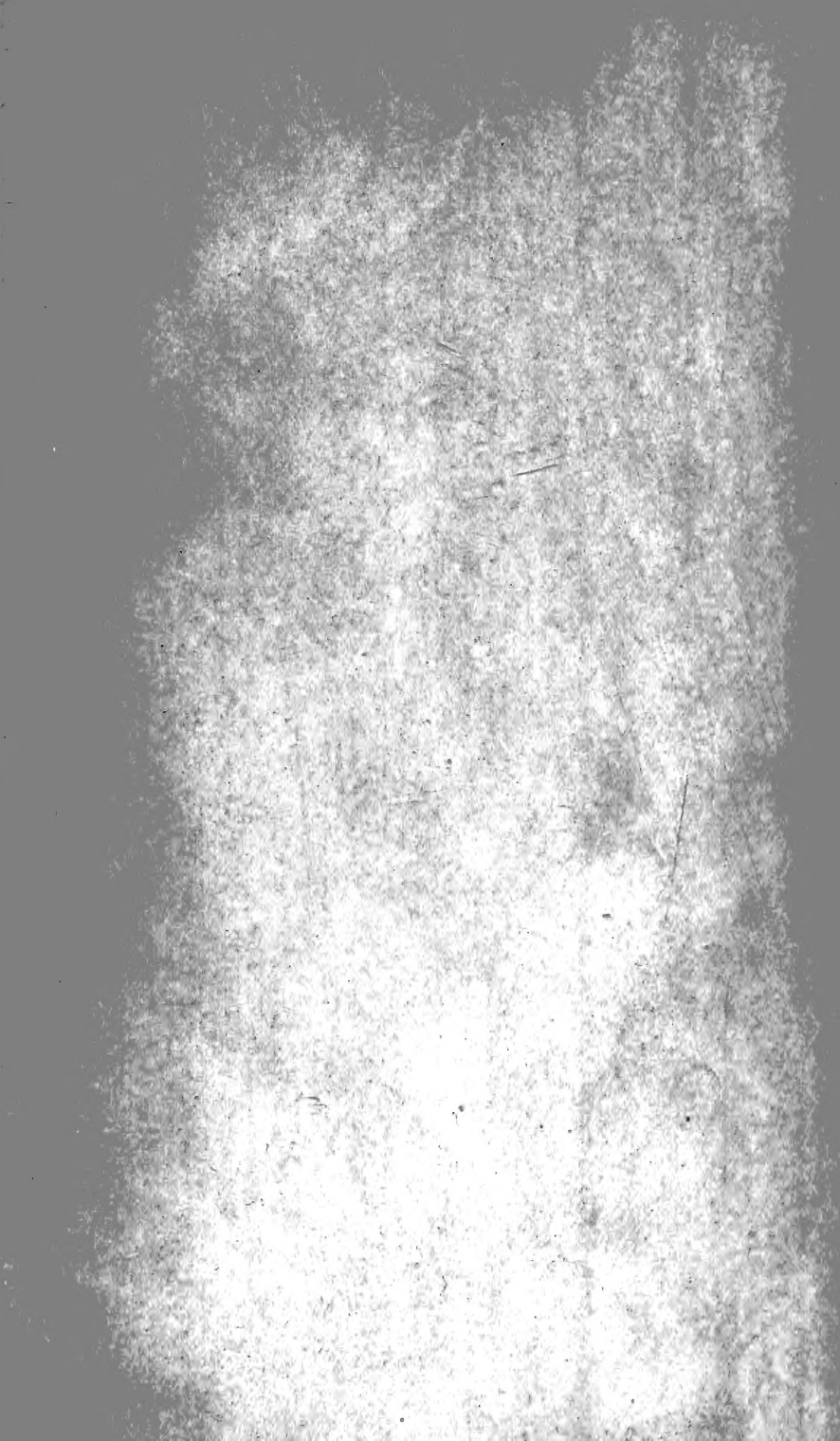
Mr. McLachlan contributed a paper entitled "Descriptions of new species of holophthalmous *Ascalaphidæ*."

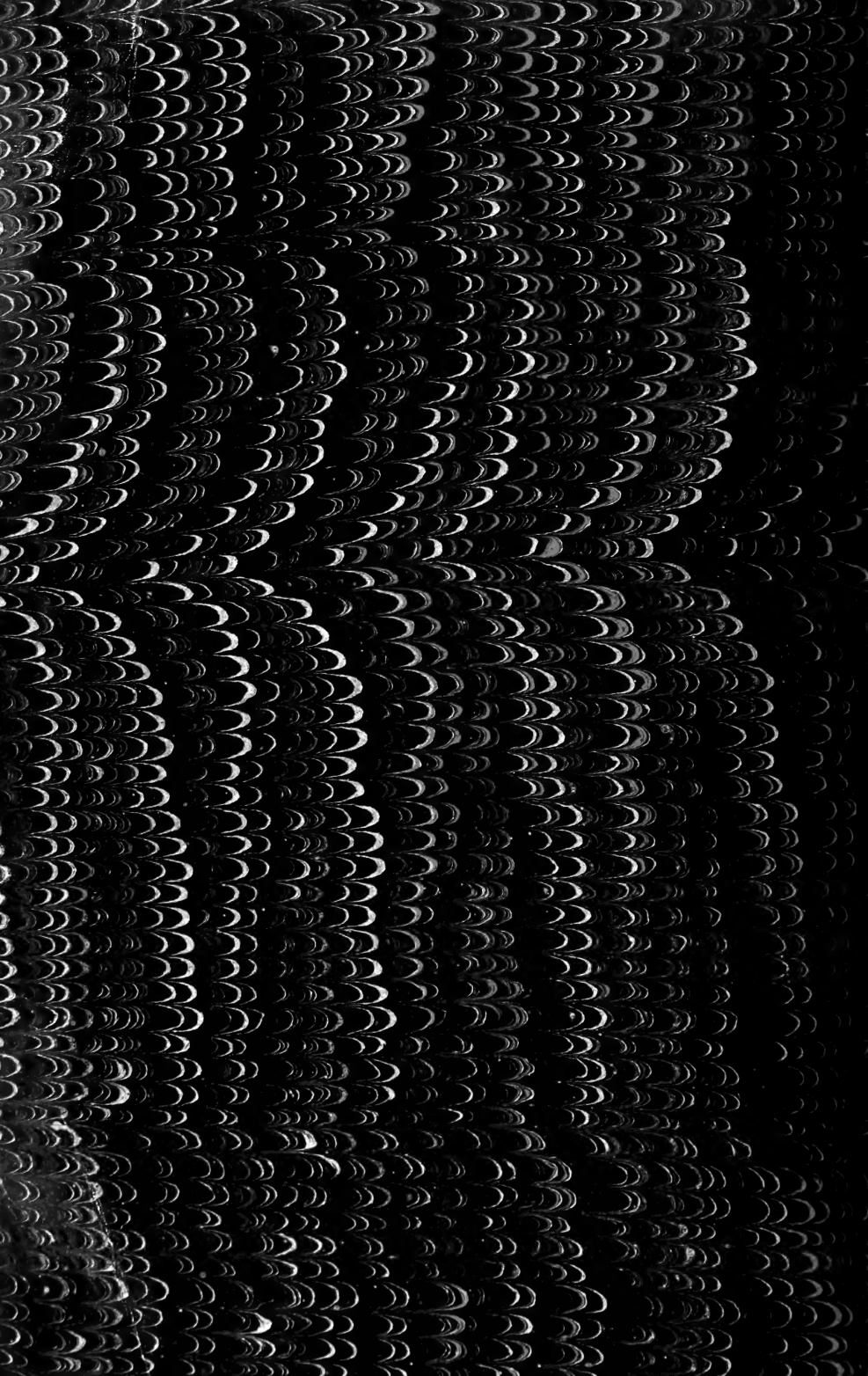
Mr. W. L. Distant communicated a paper entitled "Descriptions of four new species of the genus *Fulgora*."

Mr. F. Enock read a paper entitled "Additional notes and observations on the life-history of *Atypus piceus*." Every detail in the life-history of this spider was most elaborately illustrated by a large number of photographs, made by Mr. Enock from his original drawings, and shown by means of the oxy-hydrogen lantern. A discussion followed, in which Mr. C. O. Waterhouse, Dr. Sharp, Mr. G. C. Champion, the Rev. A. E. Eaton, Mr. P. Crowley, and others took part.—H. Goss, *Hon. Secretary*.











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