BOOK NO.
882

BRITISH ORNITHOLOGISTS' UNION.

1891.

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885. E. F. BECHER, Major R.A., F.Z.S.; care of Rev. W. Becher, Wellow-green Cottage, Wellow, Newark-on-Trent, Notts.
884. FRANK E. BEDDARD, M.A., F.Z.S., Prosector to the Zoological Society of London; 13 Castlebar Road, Ealing, London, W.
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m.
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1 & Son, 121 Cannon Street, E.C.
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31. HANS GADOW, Ph.D., F.Z.S.; Zoological Museums, Downing
1868. Street, Cambridge.

Date of Election.

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90 1876. H. C. Harford, 99th Regiment; Stapleton Lodge, Chel
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Basingstoke, Hants.
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1873. John A. Harvie-Brown, F.Z.S.; Dunipace House, Larb
N.B.
1868. Rev. Herbert S. Hawkins, M.A.; Beyton Rectory, Suffo
95 1887. Charles T. Hebbert, F.Z.S.; 12 Hereford Gardens, Londo

Date of Election.

1884. C. J. Holdsworth; Oxenholme, Westmoreland.

1877. E. W. H. Holdsworth, F.Z.S.; 84 Clifton Hill, St. John's Wood, London, N.W.

1891. Arthur H. Holland; Estancia Espartillar, Ranchos, Buenos Ayres.

1888. Herbert Knight Horsfield; Oakfield Terrace, Headingley, Leeds.

100 1881. Robert James Howard; Hawkshurst, Blackburn, Lancashire.

*Wilfrid Hudleston Hudleston, M.A., F.R.S., F.Z.S.; 8 Stanhope Gardens, S.W.

1879. Baron A. von Hügel; Museum of Archæology, Cambridge.

1869. Allan Octavian Hume, C.B.; Simla, India.

1890. Henry Charles Vicars Hunter; 7 Bury Street, St. James's, S.W.

105 1870. Hedworth Hylton, Lord Hylton, F.Z.S.; Merstham House, Red Hill, Surrey.

1870. Leonard Howard L. Irby, Lieut.-Col., F.Z.S.; 14 Cornwall Terrace, Regent's Park, N.W.; Army and Navy Club, Pall Mall, London, S.W.

1888. Frederick J. Jackson, F.Z.S.; 13 Westbourne Square, London, W.

1886. Harry Berkeley James, F.Z.S.; The Oaks, near Carshalton, Surrey.

1889. Frederick Ponsonby Johnson; Castlesteads, Brampton, Cumberland.

110 1891. Henry Hamilton Johnston, C.B., F.Z.S.; Queen Anne's Mansions, Queen Anne's Gate, S.W.

1880. Henry Robert Kelham, Major Highland Light Infantry; India.

1882. Philip M. Kermode; Seabridge Cottage, Ramsey, Isle of Man.

1891. J. Graham Kerr; Bellevue, Eskbank, Dalkeith, Edinburgh.

1892. Rev. Edw. Ponsonby Knubley, M.A.; Stavely Rectory, Leeds.

115 1884. Herbert Langton; 11 Marlborough Place, Brighton.

1881. Hon. Gerald Lascelles; Queen's House, Lyndhurst.

1885. George Lawson, C.B.; 36 Craven Hill Gardens, Hyde Park, London, W.

1876. William Vincent Legge, Col. R.A., F.Z.S.; Commandant's Office, Hobart Town, Tasmania.

1868. Hamon Le Strange, F.Z.S.; Hunstanton Hall, King's Lynn, Norfolk.

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1875. Paget Walter Le Strange, Col. R.A.; Dol-llan, Llandyosil, South Wales.

1889. Christopher John Leyland; Brynllywarch, Kerry, Montgomeryshire.

1886. Harold Littledale, B.A. &c.; Vice-Principal, The College, Baroda.

*Thomas Lyttleton, Lord Lilford, F.L.S., F.Z.S., &c.; Lilford Hall, Oundle, and 18 Princes St., Cavendish Sq., London, W.

1874. John Hayes Lloyd, Col., F.Z.S.; Sudley House, Bognor, Sussex.

1889. Arthur Purvis Loyd, F.Z.S. (Late Major 21st Hussars); 3 Queen's Mansions, Victoria Street, S.W.

1877. J. Lumsden, F.Z.S.; Arden House, Alexandria, N.B.

1886. Rev. Hugh Alexander Macpherson; 20 Cecil Street, Carlisle.

1875. John Wingfield Malcolm, F.Z.S.; 7 Great Stanhope Street, Mayfair, London, W.

1878. Henry Stacy Marks, R.A., F.Z.S.; 17 Hamilton Terrace, St. John's Wood, London, N.W.

1870. C. H. T. Marshall, Col., F.Z.S., Divisional Judge, Lahore, India.

1878. Rev. Murray A. Mathew, M.A., F.L.S.; Buckland Dinham, Frome, Somersetshire.

1883. Edmund Gustavus Bloomfield Meade-Waldo; Rope Hill, Lymington, Hants.

1886. John Guille Millais, F.Z.S.; 2 Palace Gate, Kensington, W.

1879. Frederick Shaw Mitchell; Hornshaws, Clitheroe, Lancashire.

1890. Thomas James Monk; St. Anne's, Lewes, Sussex.

1864. Alexander Goodman More, F.L.S., &c.; 74 Leinster Road, Rathmines, Dublin.

1887. George Morgan, Lieut.-Col.; Biddlesden Park, Brackley.

1886. George Muirhead, F.Z.S.; Mains of Haddo, Aberdeen.

1890. Albert Irving Muntz; Umberslade, Birmingham.

1885. Edward Neale; 43 Charlotte Street, Portland Place, London, W.

1882. Thomas Hudson Nelson; Apsley House, Redcar, Yorkshire.

1876. Hugh Nevill; Newton Villa, Godalming.

1872. Francis D'Arcy William Clough Newcome; Feltwell Hall, Brandon, Suffolk.

1890. C. M. Hayes Newington (Major King's Regt.); Lee, Kent, and Army and Navy Club.

Date of Election.

*Alfred Newton, M.A., F.R.S., F.Z.S., Professor of Zoology in the University of Cambridge; Magdalene College, Cambridge.

*Sir Edward Newton, M.A., K.C.M.G., F.L.S., C.M.Z.S.; 23 Wellington Esplanade, Lowestoft.

1891. Digby Seys Whillock Nicholl, F.Z.S.; The Ham, Cowbridge, Glamorganshire.

1886. Howard Hill John Nicholls, M.R.C.S.; The Moat, Eastbourne.

1876. Francis Nicholson, F.Z.S.; Oakfield, Ashley Rd., Altrincham.

1887. George Cameron Norman, F.Z.S.; 68 Lombard Street, E.C.

1882. Eugene William Oates, F.Z.S.; care of Grindlay & Co., 55 Parliament Street, London, S.W.

1889. Bertram Savile Ogle; Hill House, Steeple Aston, Oxford.

*Sir John W. P. Campbell Orde, Bart., F.Z.S., late Captain 42nd (Royal Highland) Regiment; Kilmory House, Lochgilphead, Argyllshire, N.B.

1883. Henry Parker, C.E., F.Z.S., Irrigation Officer, P.W.D.; Kurunegala, Ceylon.

1880. Thomas Parkin, M.A., F.Z.S.; Fairseat, High Wickham, Hastings.

1891. Robert Patterson; 57 High Street, Belfast.

1884. R. L. Patterson, F.L.S.; Croft House, Holywood, co. Down.

1891. Henry J. Pearson; Bramcote, Beeston, Notts.

1891. Frank Penrose; Colebyfield, Wimbledon, and 24 Clarges Street, W.

1886. E. Cambridge Phillips; The Elms, Brecon.

1886. E. Lort Phillips, F.Z.S.; 79 Cadogan Square, S.W.

1888. George Thorne Phillips; Wokingham, Berkshire.

1883. Thomas Mayer Pike, M.A.; care of R. H. Porter, 18 Princes Street, Cavendish Square, London, W.

1888. Mervyn Owen Wayne Powys, B.A., F.Z.S.; 33 Great Cumberland Place, Hyde Park, W.

1888. Eustace Radclyffe; Hyde, Wareham, Dorset.

1872. R. G. Wardlaw Ramsay, Major, F.Z.S.; Tillicoultry House, Tillicoultry, N.B.

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1883. William Herbert St. Quintin, F.Z.S.; Scampston Hall, Rillington, Yorkshire.

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*Philip Lutley Sclater, M.A., Ph.D., F.R.S., &c.; Secretary to the Zoological Society of London, 3 Hanover Square, London, W.

1891. William Lutley Sclater, M.A., F.Z.S.; Deputy-Superintendent, Indian Museum, Calcutta.

1881. J. Scully, F.L.S., F.Z.S., Surgeon-Major; care of Messrs. H. S. King & Co., 65 Cornhill, London, E.C.

1873. Henry Seebohm, F.Z.S.; 22 Courtfield Gardens, London, S.W.

1889. Humphrey Patricius Senhouse, B.A.; The Fitz, Cockermouth, Cumberland.

1871. Richard Bowdler Sharpe, LL.D., F.L.S., F.Z.S.; Senior Assistant, Zoological Department, British Museum (Natural History), South Kensington, London, S.W.

1886. William Carstairs Shaw; Bank of Madras, Madras.

1870. G. Ernest Shelley, F.Z.S., late Captain, Grenadier Guards; 10 Thurloe Square, London, S.W.

1865. Rev. Charles William Shepherd, M.A., F.Z.S.; Trottescliffe Rectory, Maidstone, Kent.

1881. F. B. Simson, F.Z.S.; Broom Hill, Spratton, Northampton.

1882. Rev. Henry H. Slater, M.A., F.Z.S.; Irchester Vicarage, Wellingboro', Northamptonshire.

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1864. Rev. Alfred Charles Smith, M.A.; Old Park, Devizes, Wilts.

1881. Thomas Southwell, F.Z.S.; 10 The Crescent, Chapel Field, Norwich.

1875. A. C. Stark; The Cottage, Whiteparish, near Salisbury.

1889. William Stoate; The Colony, Burnham, Somerset.

1881. Robert Wright Studdy, Lieut.-Col. 2nd Manchester Regiment, India; care of E. W. H. Holdsworth, 84 Clifton Hill, St. John's Wood, London, N.W.

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1887. Frederick William Styan, F.Z.S.; 23 Upper Bedford Place, London, W.C., and Shanghai, China.

1887. John Swinburne; Shona Ranch, St. John's, Apache Country, Arizona, U.S.A.

1882. Charles Swinhoe, Col. Bombay Staff Corps, F.L.S., F.Z.S.; Avenue House, Cowley Road, Oxford.

1884. W. C. Tait, C.M.Z.S.; Oporto, Portugal.

195 *Edward Cavendish Taylor, M.A., F.Z.S.; 74 Jermyn Street, London, S.W.

1873. William Bernhard Tegetmeier, F.Z.S.; 16 Alexandra Grove, North Finchley, N.

1889. Edward Priaulx Tennant; 40 Grosvenor Square, W., and The Glen, Innerleithen, N.B.

1886. Horace A. Terry, Captain 43rd Light Infantry; Burvale, Walton-on-Thames.

1891. William Blundell Thornhill; Castle Cosey, Castle Bellingham, Ireland.

200 *Rev. Henry Baker Tristram, M.A., LL.D., F.R.S., C.M.Z.S., &c., Canon of Durham; The College, Durham.

1890. John Tristram Tristram-Valentine, F.Z.S.; 1 Sheffield Gardens, Kensington, W.

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1890. Stephen Venour; Fern Bank, Altrincham, Cheshire.

1881. Willoughby Verner, Capt. Rifle Brigade; Junior United Service Club, S.W.

205 1884. A. S. Verey; Heronsgate, near Rickmansworth.

1891. C. W. de Vis; Queensland Museum, Brisbane.

1889. H. Howard Vyse; Stoke Place, Slough.

1886. H. D. Wade-Dalton, Lieut.-Col. Middlesex Regiment; Mhow, Bombay.

1881. Thomas, Lord Walsingham, F.R.S., F.Z.S.; Eaton House, Eaton Square, London, S.W., and Merton Hall, Thetford, Norfolk.

210 1874. Charles Bygrave Wharton, F.Z.S.; Hounsdown, Totton, Hants.

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1891. Benjamin Ingham Whitaker; Hesley Hall, Tickhill, Rotherham.

1884. Joseph Whitaker, F.Z.S.; Rainworth Lodge, Mansfield, Notts.

Date of Election.

1891. Joseph S. Whitaker; Malfitano, Palermo, Sicily.
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1887. Scott Barchard Wilson, F.Z.S.; Heatherbank, Weybridge Heath, Surrey.
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1872. Prof. J. V. Barboza du Bocage, C.M.Z.S.; Royal Museum, *Lisbon*.

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1872. Dr. Victor Fatio, C.M.Z.S., *Geneva*.

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1872. George N. Lawrence, C.M.Z.S.; 45 East 21st Street, *New York*.

1872. Baron De Selys Longchamps, *Liége*.

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1872. Prof. Alphonse Milne-Edwards, C.M.Z.S.; Jardin des Plantes, *Paris*.

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1872. Prof. Gustav Radde, C.M.Z.S., *Tiflis*.

1880. Robert Ridgway, C.M.Z.S.; Smithsonian Institution, *Washington, D.C.*

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THE IBIS.

ZOOLOGICAL Kolkata

SIXTH SERIES.

No. IX. JANUARY 1891.

I.—*A Visit to the Blasket Islands and the Skellig Rocks.*

By William H. Turle.

The Blasket Islands are the most westerly inhabited islands in Europe. Inishvickillane is five miles further west than the most westerly point of the mainland of Ireland, nearly three degrees further west than St. Kilda, and nearly a degree further west than the most westerly point of Spain. The Skellig Rocks are nearly, but not quite, so far west. These islands partake of the same character as most of the coast of the south-west of Ireland. They are stupendous piles of rock (for the most part trap and mica slate), which tumble headlong down to the sea or run out in perpendicular promontories. On the top of these cliffs there are often grassy slopes and green valleys gay with the white flowers of the bladder campion and the pink blossoms of the thrift. On some of these islands there are sheep, on many of them great numbers of rabbits; but their chief interest lies in the almost innumerable sea-fowl which breed on the grassy slopes and on the precipitous cliffs.

The Blaskets are a group of half a dozen islands and numerous less important rocks. They lie about 150 miles due west of Killarney. The Great Blasket is the largest of

these islands, and the only one that contains a village; Inishvickillane (or Inishmackillaun, as it was called half a century ago) is the next largest and is inhabited by a single family. The next in size is Inishnabro (formerly Inishnubro), and it is the loftiest, rising 583 feet above the level of the sea. It is uninhabited. There is a lighthouse on Inishtearaght (the Tiraght Rock of the old maps), but no other houses. Inishtoorskert (which used to be called Inishtui ero) and Beginish (the Beginist of the old maps) are quite uninhabited. There are no trees on any of the islands, and the shores are for the most part precipitous cliffs, where it is very difficult to find a landing-place.

I have paid two visits to the Blasket Islands, one in 1889 and the other in 1890. From Cork to Tralee there is a railway, but from Tralee to Dingle is a long drive of thirty-two Irish miles. The road passes along a range of mountains which rise higher and higher as the traveller proceeds westwards, until they culminate in the lofty peak of Brandon, 3127 feet above the sea. I arrived in Dingle on the 30th of April, and fortunately found my boatman waiting for a fine day to sail over to the Blaskets in his fishing-smack. I had just time to drive over to Sybil Head in a car to arrange with my climber to meet me in his canoe near Beginish on the following day. He is the youngest of three brothers, all fishermen, and is a handsome lad about 17 years old, belonging to the black-haired, black-eyed race that is to be found in some parts of Kerry and Galway, and is supposed by some to be of Spanish origin, but by others to be the remains of the old race which lived in Western Europe before the Celts came over. He only spoke Gaelic, but was a splendid climber.

We left Dingle early on the morning of the 2nd of May with a fair breeze and a dancing sea, which sometimes swept the decks, and as they were covered with sheep and oxen, I had to make the best of it. After rounding Slea Head we steered northwards through the Blasket Sound, where a very swift current is always running. Soon after noon the wind began to drop, and we made but little head against the

current. Late in the afternoon we picked up my climber, who had come down in his canoe, but, unfortunately, he brought no wind with him, and when it began to be dark we decided to lower the small boat and row to Inishvickillane, a distance of five or six miles, although there was a heavy swell on. We passed numbers of sea-fowl swimming around us and heard the cries of the Manx Shearwaters as they flew past, and finally we landed on the little beach, the only landing-place on the island, and groped our way in the dark along the winding path which has been made up the Silurian cliffs.

We had whistled loudly, hoping to arouse the family to come to our help; but they were afraid to come out in the dark for fear of the fairies, and the wild cry of the Oyster-catchers was the only reply. On reaching the cabin we were greeted by two rather savage dogs; but they recognized my voice, and I soon received a warm welcome from the inmates, who immediately lighted their only candle, a rush drawn through the oily body of a Stormy Petrel. I spent the next day on Inishvickillane and had a successful morning's birds'-nesting, though it turned out wet in the afternoon, which of course I devoted to blowing my eggs.

The rain cleared away in the night, and the next morning a brilliant sun was shining on a calm sea, so we rose early to avail ourselves of a smooth passage to Inishnabro. It is rather ticklish work sailing on the broad Atlantic in an Irish canoe, which is only a framework of wood covered over with tarred canvas. Even in calm weather there is a considerable swell on the ocean, and the landing-place is a bare rock. My climber was safe on the rock in an instant, but a wave broke over me as I caught the rock and wetted me to the skin. We spent a delightful day amongst the birds which swarm on the island, taking a Peregrine's nest and several eggs of the Stormy Petrel. During our row home we passed several large seals, but they kept at some distance from the canoe. On the following day we again visited Inishnabro, and on the next made a longer voyage to Inishtoorskert, both visits being as full of interest as possible.

After devoting a day to visiting the lighthouse on Inish-

tearaght and another to Inishvickillane, where our headquarters were, we crossed over to the Great Blasket. There is a small village at the east end of this island, which has about 150 inhabitants. They are a curious, quaint lot of people, mostly fishermen, and they live in very primitive cabins, made of mud and stones. We had a very successful day on the cliffs, and returned to our headquarters at night.

We spent most of the next day in blowing and packing our eggs. On the day following the fishing-smack arrived by appointment to take us to the Skellig Rocks, but the wind proving contrary, we ran on to Dingle to wait for a favourable breeze. Fortunately the wind changed during the night, and we lost no time in crossing Dingle Bay, and, passing between Valentia Island and the mainland, we weighed anchor at Portmagee and rowed out to Puffin Island. As we stepped on shore we saw rabbits hurrying away to their burrows, and were soon lost in amazement at the prodigious numbers of Manx Shearwaters which breed on the island. We returned to Portmagee in the evening and sailed the next day to the Little Skellig, where the great colony of Gannets now is. After visiting the Great Skellig we started for home in the afternoon, but, although we had a fair wind, it was dark before we landed on the quay at Dingle.

The following notes comprise the most interesting of the ornithological observations made during the trip.

Falco peregrinus.

The Peregrine breeds annually on the island of Inishnabro in a cleft of a high cliff overhanging the sea. As we neared the spot the male bird began to fly round in circles, evidently uneasy at our approach. The female sat very close; we had to throw several stones down the cliff before she flew off and showed us the exact position of the nest, far away down the cliff. The rope having been adjusted, we lowered the climber down the precipice until two hundred feet of rope had been paid out. When I looked over the edge to see if the nest had been reached, a faint cry from below demanded more rope. Hand over hand we let out

forty feet more rope until we had only ten left, then, to our great relief, we felt the strain slacken, and we breathed more freely. Soon afterwards a pull at the rope signalled to us that the climber was ready to return, and we slowly hauled up the 240 feet of rope until the climber's head appeared over the edge, holding in his teeth a small red handkerchief containing three eggs, whilst the Peregrines in their excited flight were screaming their loudest.

We found a Peregrine's nest on Inishtoorskert in a much more accessible position, but it only contained one egg, considerably incubated.

A pair of Peregrines breed annually on Inishtearaght, but this year we were told that the Hooded Crows had devoured the eggs. A pair often nest on the Great Skellig, but not annually, as they do in other places.

FALCO TINNUNCULUS.

I was rather surprised to find a pair of Kestrels breeding on the island of Inishnabro. The nest was not a great way off the eyrie of the Peregrines, and contained four eggs, the nest itself consisting only of some dried grass loosely placed together.

SAXICOLA ŒNANTHE.

Wheatears were often seen, and I took several nests on Inishvickillane, also nests on Beginish and on Inishnabro.

ANTHUS PRATENSIS.

We found the Meadow Pipit breeding on Inishtoorskert and Beginish, as well as on Inishvickillane, where they are very common.

ANTHUS OBSCURUS.

The Rock Pipit we found breeding on Inishvickillane, also on Inishtearaght, and we saw several pairs of this bird on Inishnabro.

ALAUDA ARVENSIS.

We took a clutch of Skylark's eggs on Inishtoorskert, and the herdsman on Inishvickillane, where I was staying, found several of their nests containing eggs.

Fringilla montium.

The Twite breeds in several places on Inishtearaght; it has also been seen on the Great Skellig.

Fregilus graculus.

We saw a great number of Choughs, but found few nests. Many of these birds seemed to be wandering about in small flocks, without having any intention of breeding, possibly barren birds. A pair breed annually on Inishtearaght, and we were fortunate enough to take two clutches on the Great Blasket and a third on Puffin Island; several birds were about Inishvickillane, but I have reason to believe that they were not nesting.

Corvus cornix.

The Hooded Crow is very common on the Irish coasts, and commits great depredations on the breeding-ground of the sea-birds. My climber got two nests, each with five eggs, on Inishvickillane, and we took several nests on Inishtoorskert, also one on the Little Skellig, besides one on Inishtearaght.

Troglodytes parvulus.

We found a Wren's nest, containing six eggs, at the extremity of the burrow of a Puffin. The eggs were more profusely spotted, especially round the larger end, than is usually the case, and the spots were larger than usual. Curiously enough, the nest was not domed. Inishvickillane was the island on which we found it.

On the Little Skellig the number of Wrens nesting in the crevices of the rock was most remarkable; we found twenty or thirty nests, but none of them contained eggs, though several appeared to be quite finished.

Columba livia.

The Rock Dove does not seem to breed in any great numbers around these islands, the only place where we took any eggs being on Inishtoorskert, where we got three clutches. I never noticed the birds at the Skelligs.

Hæmatopus ostralegus.

The Oyster-catcher was found on all the islands which

we visited. They lay their eggs on the rocks just above high-water mark, and the nests are merely a few blades of grass loosely placed together. We took one very handsome clutch of their eggs; the ground-colour, instead of being the usual pale brownish buff, was a pale greenish blue.

ARDEA CINEREA.

I found a solitary Heron's nest, containing three eggs, on Inishtoorskert, the most northerly of the Blaskets, an uninhabited island very seldom visited. This seemed to be the only pair breeding on the island. The nest was placed in a cleft of a cliff, not a very great distance from its summit, and consisted of sticks, built in the usual way by that bird, and was lined with grass.

LOMVIA TROILE.

We got some very handsome varieties of the eggs of the Guillemot on Inishnabro, where this bird breeds in great numbers. They are also very common on the rest of the Blaskets. The Ringed Guillemot seems to be specially common on the Little Skellig Rock.

FRATERCULA ARCTICA.

We found many colonies of Puffins breeding in the turf at the top of the cliffs. On Inishvickillane we got some very nicely marked eggs, with a zone of spots round the large end, and took others on Inishtoorskert, Inishtearaght, &c. On the Little Skellig they breed in such incredible numbers that their eggs are often found on the bare rock.

ALCA TORDA.

We got plenty of eggs of the Razorbill on Inishnabro, Inishtoorskert, Inishtearaght, and on the Skelligs, but there were very few handsome eggs amongst them in proportion to the quantity.

PHALACROCORAX CARBO.

Cormorants were abundant on all the islands. I got a clutch of four eggs on Inishnabro, and there was a large colony on Inishtoorskert.

Phalacrocorax graculus.

We took some nests of the Shag on Inishnabro. They were likewise common on all the other islands.

Puffinus anglorum.

The Manx Shearwater is said to breed in abundance on Inishnabro (Payne-Gallwey, 'Fowler in Ireland,' p. 287), but neither on my visit to this island in 1889 nor in 1890 was I able to discover the slightest evidence that this is the case. As we neared Inishvickillane in the dusk of the evening, we heard the well-known cry of this bird, but failed to find a colony of them, though we spent many hours in the search. I obtained one solitary egg, which I found in digging out a Puffin's egg from down a rabbit's hole. There are plenty of Shearwaters on the Little Skellig, but their great breeding-grounds are on Puffin Island, between the Little Skellig and the mainland. This island ought to be called Shearwater Island, rather than Puffin Island. I was astonished at the enormous number we found nesting; they seem completely to have taken possession of the island, and far predominate over the Puffins; indeed, the whole of both sides of the island was inhabited by them. They lay only one egg, some considerable distance down their burrows; several which I dug out were four feet from the entrance. They make no nest, but lay their egg on the bare ground. In every case where I took an egg the old bird allowed itself to be lifted off the egg upon which it was sitting. These birds are never seen at their breeding-grounds in the daytime.

Sula bassana.

The Gannet used to breed on the Bull Rock in 1884 in great numbers (Barrington, 'Zoologist,' 1884, p. 477), but in consequence of the erection of a new lighthouse, which involved the blasting of rock, they deserted it. They seem to be all now concentrated on the Little Skellig, which has probably become their sole breeding-place on the Irish coast. As we approached this curious pinnacle-shaped rock, thousands of Gannets floated over our heads, their white plumage showing to wonderful advantage in the sun. As we neared

the island we could see that two sides of the rock were covered with the birds sitting on their nests, so close together that it looked as if a heavy fall of snow had just come on. Around us countless myriads of Guillemots, Puffins, and Razorbills, besides innumerable Gulls of several species, were flying and settling on the water. We rowed towards a side of the rock where the surf seemed less heavy than elsewhere, several seals following in our wake. My climber was the first to land, and was soon followed by myself and another man, whom I had brought with me to help. The noise of the birds was terrific, and their number so vast that at first we felt quite dazed. However, we soon pulled ourselves together and made at once for the colony of Gannets, the nesting-grounds of which are not unlike the Pyramids. The rock forms a series of high ledges arranged like steps, upon which the nests are placed so close together that it is impossible to walk without treading upon the eggs. On the top of the rock there is a flat space about twenty yards square, which is entirely covered with nests. We only found one egg in a nest, and this was jealously guarded by the old birds; indeed, so great was their devotion to their treasure that they did not move on our approach, and even allowed us to catch them round the neck. I noticed that they seemed unable to rise from a flat surface, and that in order to fly they were obliged to precipitate themselves over the ledges. The nests were made of various articles, mostly grass and rushes, but several also included pieces of rag and paper, the straw of wine-bottles, and pieces of cork. They are not very large for so big a bird, and somewhat resemble the nests of the Little Grebe, without the covering of moss which that bird places over its nest. Some of the nests contained newly hatched young, which were generally surrounded with several sorts of fish, brought by the old birds. I estimated the number of birds breeding on the rock at several thousand pairs.

There is a magnificent view from the top of the Little Skellig. Far away to the north lie the Blasket Islands on the horizon, while as far to the south lie the Bull and Calf

Rocks. During both my visits to the Little Skellig I never noticed any immature birds; all were evidently intent on breeding only.

Larus marinus.

The Great Black-backed Gull is by no means a common bird on those parts of the Irish coasts which I have visited. I took a nest with three eggs on Inishvickillane the day after I landed, and on the following day I took several fine clutches on Inishnabro, the adjoining island. I also took some eggs on the Thunder Rock, an offshoot of Inishvickillane. They generally lay three eggs, never more to my knowledge. A few pairs were breeding on Inishtoorskert and a pair or two on Puffin Island and the two Skelligs, but there are no great colonies as there are of the Herring Gull. I was also told by the lighthouse-keeper on Inishtearaght that they breed there, but personally I did not see any.

Larus canus.

The Common Gull is also one of the rarer Gulls on the Irish coast. I only found it nesting on the Blaskets, and there only on Inishnabro, in very small numbers.

Larus ridibundus.

I was surprised to find a small colony of Black-headed Gulls breeding on Beginish, a small island between the Great Blasket and the mainland. This island is quite low, and not more than 50 feet above the sea. The nests were placed near the centre of the island, on soft marshy ground, around which rushes were growing.

Larus argentatus.

Herring Gulls were constantly to be seen. I found a small colony breeding on the grassy slopes of Inishvickillane, and a much larger one on Inishnabro, not very far from the summit of the island; we often found half a dozen nests in as many square yards. They were breeding in some numbers on Inishtoorskert and Inishtearaght, and less plentifully on Puffin Island. Great numbers were breeding on the Little Skellig and also on the Great Skellig.

LARUS TRIDACTYLUS.

Kittiwakes are very numerous, both at the Blaskets and on the Skellig Rocks, and breed in thousands on the cliffs, especially on Inishtearaght and the Little Skellig. Now and then we saw a flock of these charming birds following a shoal of fish, and near their breeding-stations their cries were constantly to be heard.

PROCELLARIA PELAGICA.

In a comparatively modern work, published in 1856 ('Fullerton's Gazetteer of the World,' i. p. 779), it is stated that "innumerable flocks of sea-fowl frequent the Blaskets or Ferriters Islands; among them is a delicious bird called in Irish *Gourdet*, resembling the Ortolan, and said to be peculiar to the Blaskets." Who would guess that this bird is the Stormy Petrel? There is an account of the excellence of the Stormy Petrel as an article of diet in a book published thirty years later (Seebohm's 'British Birds,' iii. p. 441). Mr. Seebohm spent a month on the Blasket Islands in the autumn of the very same year in which Fullerton's Gazetteer was published, and obtained both eggs and young in various stages of growth in the middle of September. It is quite obvious that the Stormy Petrel must rear two broods in the year, for I obtained a good many of their eggs in the last week of May on Inishnabro, the very island where Mr. Seebohm procured some in 1856. They were breeding amongst the rocks, and in what had evidently been rabbits' holes. I also found them breeding on Inishvickillane, and eggs were sent to me later on from both the Inishtearaght and Skellig lighthouses. In a recent work (Payne-Gallwey, 'Fowler in Ireland,' p. 259) mention is made of the Stormy Petrel hatching her *three* white eggs. Though I have seen several dozens of nests, I have never come across more than one egg in the same hole.

PROCELLARIA LEUCORRHOA.

Leach's Fork-tailed Petrel probably breeds in various places on the south-west coast of Ireland, and possibly in greater numbers than has been suspected. I got an egg on

Inishnabro on the 29th of May, 1889, which can only be that of Leach's Petrel, and which I have carefully compared with several specimens in Mr. Seebohm's splendid collection. A similar egg was taken on the 1st of July, 1886, by Mr. Regan, the keeper of the lighthouse on Inishtearaght, the most westerly of the Blaskets (Ussher, 'Zoologist,' 1886, p. 367), and shortly afterwards a second egg was procured on the same island (Ussher, 'Zoologist,' 1887, p. 349). My egg measures 1·31 inch in length and ·97 in breadth.

The foregoing list comprises all the species of birds which I found breeding on these islands. They are, of course, visited by many other species, both in summer and in winter, and more extended observations would add several species to the list of breeding-birds. In the various Reports on the Migration of Birds, accounts of the occurrence of many interesting species are to be found, both from the lighthouse-keeper on Inishtearaght and from that on the Great Skellig. In spring, and especially in autumn, almost any British bird may accidentally wander as far as the Blaskets.

During his stay on Inishvickillane in 1856, Mr. Seebohm actually shot a Hoopoe (*Upupa epops*) on the island, and he assures me that in those days the White-tailed Eagle (*Haliaetus albicilla*) bred every year on Inishnabro. We were informed that it used to breed on the Great Blasket, but that it had ceased to do so for many years. It has been recorded that the Black Guillemot (*Uria grylle*) nests numerously on the cliffs near Dingle and on some of the Blasket Islands (Payne-Gallwey, 'Fowler in Ireland,' p. 287), but I have never been fortunate enough to discover any traces either of these birds or of the Great Shearwater (*Puffinus major*). I trust, however, that I may be more fortunate when next I visit this paradise of sea-fowl.

II.—*Extracts from the Letters of* Mr. J. Graham Kerr, *Naturalist to the Pilcomayo Expedition**.

'Bolivia,' Rio Pilcomayo,
Lat. 24° 25' S., Long. 58° 40' W.,
Tuesday, June 3rd, 1890.

We entered the Pilcomayo on March 12th, and have therefore been three months on the river. We have managed to penetrate about 300 miles by river in that time, but owing to the extraordinary tortuosity of the Pilcomayo, our distance in a straight line from Asuncion I do not suppose is more than 100 miles, if so much. The river is very disappointing from the points of view of æsthetics, botany, zoology, geology, and anthropology. As regards the first, the scenery in the lower reaches is certainly beautiful, but of a type of beauty which soon palls upon one and becomes intensely monotonous. The scenery is very much that of a sluggish-flowing river at home. When we first entered the river I was amazed at its small size—only about fifty yards in width. Up here it seldom measures twenty yards, and is frequently not more than ten, and there is scarcely any water in it at all. For the last two months we have not got forward more than ten leagues, at the very outside, and what little we have done has been by building dams, letting the water accumulate, and so getting forward for a short distance, when another dam is built, and so on. The larger steamer, the 'General Paz,' we had to leave far down the river. The military detachment, which we had left a few miles down, was discovered the other day to have departed, their provisions, no doubt, having run short. We brought a corporal and two men on with us:

* [See 'Ibis,' 1890, p. 350, for Mr. Kerr's previous letter, which was dated November 1889, before the Expedition had started. It left Buenos Ayres about the end of the year, and arrived at the mouth of the Pilcomayo in March last.

Letters dated from Buenos Ayres in August last bring the sad intelligence of the death of Capt. Page, the leader of the Expedition, on the 2nd of that month. About ten days previously, being seriously ill, he had left the 'Bolivia' in about 23° 25' S. lat., under the charge of his son, and came down the river in a canoe, in which he died before reaching Asuncion.—Ed.]

the other day, however, one of these deserted, and has, no doubt, either gone over to the Indians or been killed by them. To return, however, to the scenery. Here, and for a long distance down, we have had a type of scenery which is to be found in very few parts of the world—that of an immense palm-forest, covering thousands of square miles. It consists typically of a perfectly low plain, clothed with breast-high grass, over which are closely studded palm-trees, with large fan-shaped leaves. All around as far as the eye can see is an interminable vista of palm-trees, varied only by an occasional clump of brushwood, or near the river by small patches of forest. In no way is the aspect of nature suggestive of the tropics here—that is, when one has got over the impression induced by the palm-trees. The Gran Chaco is, in fact, an immense wilderness. Large game occurs only in small numbers. I have managed to get only a couple of peccaries, and no one else has shot any larger game. I have not even got a jaguar yet, and have only once had anything approaching an adventure with one. Other adventures we have had absolutely none. Intense monotony and uninterestingness are the chief characteristics of the river. Botanically speaking, it is an absolute desert. In an ordinary summer's afternoon-walk at home one sees more species of plants in flower than I have met with since we entered the river. . . . . However, this may improve, as it is now dead winter here, and with the advent of spring I hope to see many new and interesting flowers appear. Zoologically, too, it is disappointing, except in the case of birds. In the lower parts of the river not a bird was to be seen, but now they are rather more frequent, and I have already observed 116 species, of which I believe about 30 have not been before collected in Argentina. Owing to the desert nature of this part of the Chaco, its human inhabitants are very few, scattered, and nomadic. We have not seen a single Indian, or even a canoe, on the Pilcomayo. But we know that they are about, for nearly every day we see their great fires, made for hunting, all around us, and we occasionally come across a chipped palm or the remains of an old *tolda*, the rude shelter which

serves the Indians as a tent. Now and again, too, we see a human footprint, sometimes of immense size, impressed upon the muddy margin of a lagoon. So we are always on the alert, the four Britons of the Expedition keeping watch at night, fully armed and wide awake. The four said Britons are Poole, Kenyon (English), Henderson (the chief engineer), and myself. When I go away collecting, as I do every day, I always carry a loaded revolver and knife, ready for emergencies; for, in addition to Indians, there are abundance of jaguars about, which one has to be prepared for. Yesterday we got an alligator close to the boat, 8 feet long. The alligators here are all small, 8 feet being the largest we have seen.

As regards food, we are on very short rations, being within a month or so of the end of our provisions. The canoe is to be sent down soon, I believe, to hurry up the fresh supplies of provisions, and by it I shall send this letter, although it is very doubtful whether you will ever get it. The health of the men is not good; we have always two or three of the seventeen on board ill. I have, however, had excellent health. The only thing disagreeable is the fearful cold. In the mornings the thermometer is often nearly at the freezing-point, and I feel quite benumbed. Fortunately, it generally gets a little warmer during the day, the temperature rising in the afternoon to between 70° and 90° F. The river-water is regular brine here, quite as salt as sea-water, and when occasionally we run out of fresh water for a few days, it is very disagreeable having to take coffee, &c., made with salt water. Of fruits here there are none worth eating. The young parts of the palm-trees are eatable, and we use a good deal of it in order to economize the rice, &c. I do not expect at all that we can possibly reach Bolivia, and I do not think the river Pilcomayo could ever be made navigable.

III.—*Further Notes on the Birds of the Argentine Republic.* By A. H. Holland. *With Remarks* by P. L. Sclater*.

[Mr. Holland has now sent home a second collection of nicely-prepared bird-skins from Argentina. It contains about 60 specimens, referable to 46 species, all from the Estancia Espartillar, near Ranchos, on the Southern Railway of Buenos Ayres. I give some of Mr. Holland's interesting field-notes on these birds, and insert a few remarks of my own, to which my initials are appended.

The following is a list of the species of which there are examples in the present collection :—

1. Polioptila dumicola.
*2. Tachycineta meyeni.
3. Progne chalybea.
*4. Procnias tersa.
*5. Tanagra bonariensis.
6. Paroaria cucullata.
7. Zonotrichia pileata.
8. Chrysomitris icterica.
9. Sycalis pelzelni.
10. —— luteola.
11. Agelæus thilius.
12. Leistes superciliaris.
13. Amblyrhamphus holosericeus.
14. Pseudoleistes virescens.
*15. Tæniоptera coronata.
16. —— dominicana.
17. Alectrurus risorius.
18. Lichenops perspicillatus.
19. Machetornis rixosa.
*20. Centrites niger.
*21. Serphophaga subcristata.
22. —— nigricans.
23. Elainea albiceps.
24. Pyrocephalus rubineus.
*25. Empidonax bimaculatus.
26. Geositta cunicularia.
27. Cinclodes fuscus.
28. Phlæocryptes melanops.
29. Chrysuronia ruficollis.
30. Conurus patagonus.
*31. Circus cinereus.
*32. Falco peregrinus.
33. Ardea candidissima.
*34. Heteronetta melanocephala.
35. Mareca sibilatrix.
36. Columbula picui.
37. Oreophilus ruficollis.
*38. Eudromias modesta.
*39. Ægialitis falklandica.
*40. Thinocorus rumicivorus.
41. Gallinago paraguaiæ.
*42. Rhynchæa semicollaris.
*43. Tringa maculata.
*44. —— fuscicollis.
*45. Rhyacophilus solitarius.
46. Podiceps rollandi.

P. L. S.]

2. Tachycineta meyeni.

[*Petrochelidon meyeni*, Bp. Consp. i. p. 48.

Tachycineta meyeni, Sharpe, Cat. Birds, x. p. 116; Sharpe & Wyatt, Monogr. Hirund. pls. ix., x.

To my great surprise, a single skin of a Swallow sent by

* For an account of the first collection see 'Ibis,' 1890, p. 424.

Mr. Holland, labelled "*Common Martin*," turns out to be *T. meyeni* and not *T. leucorrhoa* (Arg. Orn. i. p. 31). All previous specimens of this species with authentic localities that I have met with have been from Chili, Patagonia, or some part of Western South America, and it is curious to find it so far to the eastward.

T. meyeni is closely allied to *T. leucorrhoa*, but at once distinguishable by the glossy blue back, the absence of the white front, and the white terminal edges of the secondaries. It is new to the avifauna of Argentina, and I should be glad to receive more specimens of it, and further information respecting its occurrence in the country.—P. L. S.]

4. Procnias tersa.

[*Procnias tersa*, Scl. Cat. Birds, xi. p. 50.

This is also quite a new species to the Argentine avifauna. Mr. Holland's collection contains a single example of it, in female plumage. It is labelled "Green Martin, ♀, no. 42."

The furthest southern record I am acquainted with for this species, before the receipt of the present specimen, was the province of São Paulo, Brazil (*Joyner*). *Cf.* Scl. Cat. B. xi. p. 50.—P. L. S.]

5. Tanagra bonariensis. (Arg. Orn. i. p. 39.)

March 26th. No. 124. Blue-and-Yellow Tanager (*Siete colores*). ♀. Common.

Legs brown; eye hazel; beak brown.

Arrives here in great numbers in May, *but departs in* September. Many of the males are in immature plumage, which closely resembles that of the hens.

[In 'Argentine Ornithology' Mr. Hudson speaks of this species as "appearing in small flocks in *summer*."—P. L. S.]

15. Tænioptera coronata. (Arg. Orn. i. p. 115.)

April 10th. No. 107. Black-crowned Tyrant. ♂. Rare.

Legs black; eye black; beak black.

This was the only specimen seen here. It was found perched on the summit of an acacia tree, from which it took a few short flights after insects, returning to its original branch.

20. Centrites niger. (Arg. Orn. i. p. 134.)
March 2nd. No. 120. Red-backed Tyrant. ♂. Common.
Legs black; eyes black; beak black.
Arrives here in February, and departs about August.

21. Serphophaga subcristata. (Arg. Orn. i. p. 140.)
April 11th. No. 110. White-crested Tyrant. ♂. Common.
Legs black; eye black; beak black.
This small Tyrant is seen in every small plantation, where it seeks its food like a Flycatcher, darting off a branch to capture insects on the wing; it is commoner than is usually supposed, as it is easily overlooked on account of its colour and retiring disposition. These birds seem to pair for life, and are never seen in flocks, nor do they appear to migrate. The cup-shaped nest is placed in the fork of a shrub, or suspended in fir trees at no great height: it is composed of twigs, rootlets, horse-hair, lichen, and a great deal of moss; inside the lining is of soft feathers. The eggs are four in number, pear-shaped, and of a uniform cream colour.

25. Empidonax bimaculatus. (Arg. Orn. i. p. 155.)
April 11th. No. 108. Rare.
Legs dark brown; eye black; beak black; under mandible yellowish.
These birds arrived on April 11th, and departed next day, this being the only time I have noticed them here. They were exceedingly tame, and numbered some fifty individuals. They seemed to prefer the Paradise-trees, from which they constantly made short turns after passing insects.
[Along with this specimen, which Mr. Holland mistook for *Contopus brachytarsus*, came an example of *Serphophaga nigricans*, apparently obtained on the same occasion.—P. L. S.]

31. Circus cinereus. (Arg. Orn. ii. p. 57.)
March 17th. No. 121. ♂. Rare.
Legs orange; eye reddish brown; beak brown.
This Hawk seems to have no fear of man, but follows him apparently in hopes that he will put up some small bird. It has a peculiar mode of alighting. When flying quietly along

it suddenly turns sharp round and drops into some mound or thistle-stalk, as if it had seen some prey, but I do not think it has; the action looks just like a stoop without an object.

32. Falco peregrinus. (Arg. Orn. ii. p. 67.)

Feb. 20th. No. 100. Peregrine Falcon. ♂. Rare.

Legs orange; nails black; beak horn-colour, base yellow; nostrils orange; eye black; cere orange; crop contained young bird.

Usually found in the same spot for days together either in trees or perched on a particular skull in camp, from whence it preys upon small birds. Here I have only observed one pair; the male I procured, but it had not finished its moult.

34. Heteronetta melanocephala. (Arg. Orn. ii. p. 130.)

April 14th. No. 113. Black-headed Duck. ♂. Very rare.

Legs brown; eyes black; beak bluish.

This is the only specimen of this Duck that I have yet observed here. It was found along with a flock of Teal in a reedy lagoon.

38. Eudromias modesta. (Arg. Orn. ii. p. 171.)

April 30th. No. 119. Winter Plover. ♂. Fairly common.

Legs greenish; eye hazel; beak brown.

This specimen frequented the muddy edges of an arroyo, although flocks of the same species are usually found on the high camp.

39. Ægialitis falklandica. (Arg. Orn. ii. p. 172.)

April 4th. No. 103. Patagonian Sandplover. ♀. Fairly common.

Legs brown; eye black; beak black.

Arrives along with the Sandpipers, but has not yet departed (July 2nd). Frequents the mud on the edges of the arroyos or lagoons. It seems a solitary bird, although the first I procured was in company with a flock of Bonaparte's Sandpipers.

40. Thinocorus rumicivorus. (Arg. Orn. ii. p. 176.)

April 27th. No. 118. Common Seed Snipe. ♂. Fairly common.

Legs yellow; eye hazel; beak straw-colour.

When these birds first arrive they are to be found on the roads sitting close when passed, and, because of their plumage, this is the safest way for concealment; but later on, in June, they frequent the edges of lagoons.

42. Rhynchæa semicollaris. (Arg. Orn. ii. p. 182.)

April 6th. No. 104. Painted Snipe. ♀. Fairly common, not migratory.

Legs greenish; eyes black; beak greenish, tip red.

Inhabits thick reedy swamps, and is found singly or in scattered flocks of six to eight individuals. The flight is very feeble and short.

43. Tringa maculata. (Arg. Orn. ii. p. 183.)

April 8th. No. 106. Pectoral Sandpiper. ♀. Fairly common.

Legs yellow; eye black; beak black.

Usually found in marshy land with long water-weeds abounding, frequenting the same spot for weeks together. When approached they sit as close as a Snipe, until one or two have risen, when the whole flock, numbering some forty individuals, rise, and after circling once or twice, alight suddenly again in the same spot.

44. Tringa fuscicollis. (Arg. Orn. ii. p. 185.)

April 3rd. No. 102. Bonaparte's Sandpiper. ♂. Common.

Legs dark brown; eye black; beak black.

Arrives here the middle of March, and departs the beginning of May. Found in variously sized flocks, frequenting marshy swamps or edges of lagoons, where it keeps running in and out of the water.

45. Rhyacophilus solitarius. (Arg. Orn. ii. p. 188.)

April 6th. No. 105. Solitary Sandpiper. ♂. Rare.

Legs yellow; eye black; beak black.

Found on the muddy edges of small pools in twos and threes, constantly on the move, running about in search of food.

IV.—*Notes on* Buteo (Onychotes) solitarius.

By the late John Henry Gurney*.

Buteo solitarius of Peale was originally described under that name in the first edition of the Zoology of the United-States Exploring Expedition (Birds, p. 62), published in 1848, from a specimen obtained near Karakakoa Bay, in the island of Hawaii, by the Rev. Mr. Forbes, and sent by him to Dr. J. K. Townshend, who presented it to the collection of the Academy of Natural Sciences of Philadelphia.

In the second edition of the above-named work, edited by the late Mr. Cassin, and published in 1858, this specimen was described at p. 97, and figured on pl. 4 of the accompanying atlas. In the letterpress of that article the specimen is stated to be "adult," but the accompanying plate shows it to be in the paler stage of plumage, which appears to me to be indicative of immaturity.

Mr. Cassin inserted this species in his work under the title of "*Pandion solitarius*," but in 1874 it was again (and certainly more correctly) referred to the genus *Buteo* in Messrs. Baird, Brewer, and Ridgway's 'History of North-American Land-Birds,' vol. iii. p. 255; and Mr. Ridgway's views as to the Buteonine character of the species were quoted by me in 'The Ibis,' 1876, p. 231. The preceding page of the same volume of the 'North-American Land-Birds' contained a description and woodcut of a melanistic example of the same bird under the name of "*Onychotes gruberi*," by which it had previously been described by Mr. Ridgway in the 'Proceedings' of the Philadelphia Academy of Sciences for December 1870, p. 149.

It was only at a later period that, through the acute discrimination of Mr. Ridgway, the identity of *Onychotes gruberi* with *Buteo solitarius* was demonstrated, the specimen originally described under the former name having been sent to the Smithsonian Institution from San Francisco, and having been supposed (as it is now thought, erroneously) to have been obtained in California.

* [Found amongst Mr. Gurney's papers, and communicated by his son, Mr. J. H. Gurney.—Ed.]

The Smithsonian Institution subsequently obtained an additional specimen in the plumage which I now consider to be the normal adult dress, but without any reliable information as to the locality where it was originally procured. Both these specimens were described by Mr. Ridgway under the name of *Onychotes gruberi* in his 'Studies of American Falconidæ,' published in 1876, p. 135, and were referred to by me under the same title in 'The Ibis' for 1876, p. 476, and for 1881, p. 396, the latter notice being accompanied by coloured figures (on pl. 12) of both of them.

H.M.S. 'Challenger' visited the island of Hawaii in August 1875, and brought home amongst other specimens two examples of *Buteo solitarius*. One of these was for a time accidentally mislaid, but the other, a normal adult female, was recorded in a paper on the collection of birds brought home by the 'Challenger,' contributed by Mr. Sclater to the 'Proceedings' of the Zool. Soc. for 1878, which included a description of this specimen drawn up by myself, and subsequently reprinted in the Official Scientific Report of the Voyage of the 'Challenger,' Zoology, vol. ii. pt. 8, p. 96. This description was in both cases rendered inaccurate by an unfortunate printer's error, owing to which the occiput and hinder part of the neck were misprinted as being "white-coloured" instead of "whole-coloured;" this error was, however, rendered less important by an accurate coloured figure of the specimen, which formed plate 21 of the ornithological volume of the 'Challenger's' Report. The missing bird subsequently came to light, and proved not to be very different in plumage from the female which had been figured, though probably a somewhat younger bird. This specimen was described at p. 141 of my 'List of Diurnal Birds of Prey,' published in 1884.

Both the specimens brought home by the 'Challenger' are now preserved in the British Museum.

The figure of *Buteo solitarius* published in the Report of the 'Challenger' Expedition struck Mr. Ridgway as so closely resembling the second example of *Onychotes gruberi* which had been acquired by the Smithsonian Institution that he

was led to a further investigation of the subject, which resulted in his being convinced that these two names had in fact been assigned to one and the same species.

Mr. Ridgway published the conclusion at which he arrived, and the data which led to it, in the 'Proceedings' of the United-States National Museum for 1885, p. 36.

The Editors of 'The Ibis,' at p. 450 of the volume for 1885, announced and accepted the conclusion at which Mr. Ridgway had arrived, and as to the correctness of which there can, I think, be no possible doubt.

Mr. Ridgway, in his paper above referred to, expresses the opinion that "the genus or subgenus *Onychotes* . . . . is tenable" for the present species, and gives a diagnosis in support of that view; but my own feeling is that the Hawaiian Buzzard does not differ sufficiently from other members of the genus *Buteo* to make it needful to refer it to a distinct subgenus. It is of very similar dimensions to *Buteo pennsylvanicus*, and their proportions, though different, do not differ very greatly, as may be seen by the annexed comparative measurements (in inches and decimals) of an adult of each of these two species; but I ought to add that I believe the sexes of the specimens measured are different, *B. solitarius* being probably a male, and *B. pennsylvanicus* a female.

	Cere.	Culmen without cere.	Wing.	Tail.	Tarsus.	Middle toe without claw.	Claw of middle toe.	Hind toe without claw.	Claw of hind toe.
B. solitarius	·30	·95	10·75	6·20	2·80	1·70	·80	·70	1·30
B. pennsylvanicus..	·25	·75	11·30	6·40	2·50	1·35	·65	·70	1·10

If I am correct in my view as to the normal immature and adult plumages of *Buteo solitarius*, the following list will enumerate the specimens now existing in different English and American collections so far as I am acquainted with them:—

Nestling in down.

One specimen collected by and in the possession of Mr. Scott B. Wilson.

First year's plumage (normal).

Type specimen of *Buteo solitarius* in the collection of the

Academy of Natural Sciences of Philadelphia, figured in the second edition of the Zoology of the United-States Exploring Expedition, Ornithology, pl. 4.

One obtained by Mr. Wilson, and placed in the Norwich Museum.

One retained in Mr. Wilson's collection.

Adult or nearly adult plumage (normal).

One in the United-States National Museum, Washington, figured in 'The Ibis,' 1881, p. 396 (right-hand figure), under the name of *Onychotes gruberi*.

Two in the British Museum, brought home by the 'Challenger,' one of which is figured in the Zoology of the Voyage of H.M.S. 'Challenger,' Birds, pl. 21.

One obtained by Mr. Wilson, and placed in the Norwich Museum.

One retained in Mr. Wilson's collection.

Melanistic specimens.

Type of *Onychotes gruberi* in the United-States National Museum, Washington, figured at p. 254 of vol. iii. of Baird, Brewer, and Ridgway's 'North-American Land-Birds,' also in 'The Ibis,' 1881, p. 396 (left-hand figure).

One obtained by Mr. Wilson, and placed in the Norwich Museum.

One retained in Mr. Wilson's collection.

Summary of Specimens referred to.

In Philadelphia Museum	1
In Washington Museum	2
In British Museum	2
*In Norwich Museum	3
In Mr. Wilson's collection	4
Total	12

* [The three examples in the Norwich Museum are entered in the Catalogue as obtained at Keanhow and Puniki Waimea in June and November 1889, the June one being the immature bird which is mentioned above by my father, and marked as a male by the collector.—J. H. G.]

V.—*Report on Birds from British New Guinea.*

By C. W. De Vis, M.A.*

Queensland Museum, Brisbane,
August 23, 1889.

To Sir William Macgregor, K.C.M.G., &c.

Dear Sir,

The examination of the birds committed to me has now so far progressed that I am able to place at your service a Report on the results. These are in accord with the promise given by the birds on a first inspection, and are of much interest.

I find in all one hundred and sixty-one (161) specimens, representing eighty-two (82) species; of these no fewer than thirteen (13) appear to be hitherto unrecorded, and of the apparent novelties one at least lays claim to generic rank. This is a

* Reprinted from Appendix G of "Colonial Papers," No. 103, British New Guinea. London, 1890.

[This very interesting Report contains an account of the collection of birds made by Sir William Macgregor during his recent expedition to the summit of the Owen-Stanley Range in S.E. New Guinea. A narrative of this Expedition has been given in the 'Proceedings' of the Royal Geographical Society for 1889 (p. 905). An account of the Paradise-birds and Bower-birds met with during the Expedition has been already published in this Journal by Mr. A. P. Goodwin (Ibis, 1890, p. 150). Mr. Goodwin's *Xanthomelus macgregori* seems to correspond with *Cnemophilus macgregorii* of the present paper, while Mr. De Vis's *Amblyornis macgregoriæ* is doubtless the same as Mr. Goodwin's *A. musgravianus*. *Cnemophilus macgregorii* is certainly a very remarkable discovery, and we hope that specimens of this bird will soon reach this country. It will be observed that species from Ferguson and Sudest Islands and other localities are also included in the present Report. The more noticeable species of birds found at a high elevation on Mount Owen-Stanley and its adjoining heights appear to be the following:—

Nasiterna bruijni.
Aprosmictus chloropterus.
Coriphilus wilhelminæ.
Rhipidura auricularis.
Pœcilodryas sigillata.
Micrœca læta.
Graucalus longicauda.
Chætorhynchus papuensis.
Pachycephala schlegeli.
Pristorhamphus versteri.
Merula papuensis.
Parotia sexpennis.
Lophorhina superba.
Epimachus meyeri.
Astrarchia stephaniæ.
Amblyornis subalaris.
—— macgregoriæ.
Cnemophilus macgregorii.

It will be obvious that there is nothing like a decidedly arctic form in this list.—Ed.]

very distinct kind of Bower-bird, obtained on Mount Knutsford, at an elevation of 11,000 feet, and rivalling the Regent-bird in beauty. The name *Cnemophilus* (Mountain-slope Lover) has been appropriated to it, and the species I propose, with permission, to dedicate to yourself. A second new Bower-bird, constituting a third species of the genus *Amblyornis*, and distinguished by a very ornate crest, will, if allowed, be honoured with the name of Lady Macgregor. It is well to note that the diversity in the structure of the bowers of this and of the other crested species of *Amblyornis* is far greater than the differences in their personal attributes. At your request the name of Mr. Belford, one of your party, has been associated with a capture in which he was concerned, a new Honey-eater, of the genus *Melirrhophetes*: a similar compliment has been paid to another member of your collecting staff, Mr. C. Kowald, in connection with the beautiful genus of Flycatchers, *Todopsis*. The number of species procured during the Expedition to the Owen-Stanley Range was 61, eight of them being apparently new to science.

The expectations of ornithologists who have for some time been awaiting the exploration of that region will thus be in some measure fulfilled, notwithstanding that no new Birds of Paradise have been discovered. Perhaps, however, the greatest interest attaching to the ornithological results obtained arises from the fact that the decided change of climate observed at the altitude attained, over 13,000 feet, is not attended by a corresponding change in the types of bird-life; it would seem that there is even here no infusion of forms characterizing temperate or cold latitudes. It is true that no birds were brought down from the highest points reached, but at 13,000 feet a Flycatcher was procured which is essentially Australian in type. The presence of a Blackbird, now first discovered in New Guinea, is not in this connection contradictory, since the genus *Merula* is represented in other of the Pacific Islands.

Some interesting additions to our knowledge of the birds of the Louisiade Archipelago result from your visits to the islands within your jurisdiction. 21 species from East,

Sudest, Ferguson, Rossel, and other islets have been determined; of these several cannot be identified with species previously known, so far as I am able to judge. As these birds were procured hurriedly, they doubtless represent but a very small proportion of the several faunas. If it were possible to station a collector on one of the larger islands, Sudest, for example, so that a fairly complete knowledge of its zoology could be obtained, science would be greatly benefited.

I now submit a descriptive list of the birds in your collection:—

1. An Owl from Goodenough Island, with the uniform upper surface and tail of *N. theomacha*, from which it is distinguished by the bold pattern of its lower surface. It is very like the small Owl of the Cardwell district of Queensland, noticed by me as a variety, *lurida*, of *N. boobook*, but which is more probably a distinct species. The tail of the young of *N. boobook* has been stated to be uniform, but this I am not able to confirm, and as *N. theomacha* is the only *Ninox* so characterized known to me, I am constrained to regard the present bird as undescribed.

Ninox goodenoviensis, n. sp. (*Op. cit.* p. 107.)

Upper surface, ear-coverts, and tail brown, all but immaculate. Back, scapulars, and least wing-coverts slightly rufous. Head inclining to ashy brown. Scapulars with a few small concealed white spots. Wings brown, the primaries faintly barred with lighter brown on the upper surface of the inner web; on the under surface at the base with white; beyond the base with ash-grey, the bars ceasing some distance from the tips. Secondaries and tertiaries conspicuously barred with white on both surfaces of the inner web. Tail uniform brown, paler on the lower surface. Frontal and loral plumes with black shafts and grey webs. Throat brown; upper breast rufous, varied with white; lower breast and abdomen rufous; each feather with a larger median and smaller apical white spot on each side, these spots more or less confluent, the rufous centres forming ill-defined longi-

tudinal bars, which are more or less continuous. Thighs rusty white. Under tail-coverts rusty, with broad fuscous centres. Edge of wing white. Under wing-coverts rufous; the greater series fuscous, broadly barred with white. Bill fuscous, the culmen and tip yellowish white. Feet pinky brown. Tarsus rufous, with fuscous centres; the feathers descending to the toes. Total length 285 mm., wing 222, tarsus 31. A second example, with the legs tied as a female, has the head uniform with the rest of the upper surface, and the abdomen with continuous longitudinal bars.

2. Microglossus aterrimus, Gm.
Owen-Stanley Range, ascending to about 5000 feet.

3. Nasiterna bruijni, Salvad.
Musgrave Range, at 8000 feet.

4. Aprosmictus chloropterus, Rams.
Owen-Stanley Range, at from 7000 to 9000 feet.

5. Psitacella brehmii, Rosenb.
Musgrave Range, at 4500 feet.

6. Geoffroyus sudestiensis, n. sp. (*Op. cit.* p. 107.)

Male. Above bright green, beneath paler. Front, cheeks, chin, throat, and ear-coverts cinnabar-red, the last tipped with lilac. Head and fore neck pale lilac-tinted blue, on the vertex strongly tinged in certain lights with yellow. Quills fuscous, first primary narrowly edged with dark blue, rest of quills with their outer webs entirely, and inner webs to an increasing extent, green. No shoulder-spot. Axillaries and under wing-coverts bright blue, under surface of wing fuscous; upper tail-coverts and middle tail-feathers above yellowish green, inner webs and under surface of tail greenish yellow. Rump green. Maxilla red, with the tip pale, mandible bluish fuscous. Feet fuscous. Total length 240 mm., wing 175, tail 100, bill 24, tarsus 15.

Hab. Sudest Island.

A species distinguished from the two red-throated species by a strong wash of yellow on the head, visible only in certain lights, and by the absence of the cubital spot.

7. Eclectus cardinalis, Bodd.
Normanby Island.

8. Dasyptilus pesqueti, Less.
Goodwin's Village, at 4000 feet.

9. Lorius erythrothorax, Salvad.
Foot of Owen-Stanley Range.

10. Lorius hypœnochrous, Gr.
St. Aignan, Rossel Island.

11. Coriphilus wilhelminæ, Meyer.
Musgrave Range, at 8500 feet.

12. Rhytidoceros plicatus, Penn.
Owen-Stanley Range, at 5000 feet, in company with *Microglossus aterrimus*.

13. Ceyx solitaria, Temm.
Normanby Island.

14. Tanysiptera galatea, Gr.
Rossel Island.

15. Halcyon sanctus, Vig. & Horsf.
St. Aignan.

16. Halcyon saurophaga, Gould.
East Island.

17. Sauromarptis gaudichaudi, Quoy & Gaim.
Foot of Owen-Stanley Range.

18. Eurystomus crassirostris, Sclat.
St. Aignan.

19. Podargus ocellatus, Quoy & Gaim.
Ferguson Island; Normanby Island.

20. Ægotheles wallacei, Gr.
Mt. Kowald, at 2600 feet; Musgrave Range, 4000 feet.

21. Macropteryx mystacea, Less.
Upper Vanapa River, at 4500 feet.

22. Collocalia fuciphaga, Thunb.
St. Aignan.

23. Monarcha melanopterus, Gr.
Sudest Island; Rossel Island.

24. Monarcha guttulatus, Garn.
Sudest Island.

25. Monarcha chalybeocephalus, Garn.
St. Aignan.

26. Rhipidura setosa, Quoy & Gaim.
St. Aignan. A bird which I can only regard as a form of this species; the differences—namely, a distinct supraciliary stripe, an almost perfectly uniform grey chest, and axillaries and subcaudals (except the tips of the latter, which are white) ochraceous, like the abdomen—do not appear to be of specific importance, though as great as those which serve to separate *R. assimilis*, Gr.

27. Rhipidura auricularis, n. sp. (*Op. cit.* p. 108.)
Upper surface smoky grey. Head brownish black; lores, face, and anterior ear-coverts black; posterior ear-coverts white, elongate; a broad stripe over the lores and eyes white. Throat white, the feathers with black bases gradually losing their white tips as they approach the chin, which is nearly black; a broad pectoral band black, well defined from the throat. Middle of lower breast and abdomen buff, the former varied with black; sides of the breast and abdomen and the flanks dark grey; subcaudals white, with black bases. Wing-coverts black: the least with a few minute white tips; the median with larger white tips, forming a transverse row; the greatest with still larger, forming a broad bar across the wing. Quills externally uniform dark brown. Tail brownish black above and below; the three outer feathers with narrow white tips. Innermost axillaries white, black on the basal half. Under wing-coverts white, varied with black, under surface of wing ashy brown; the primaries edged with grey, secondaries and tertiaries with buffy grey. Bill dark brown. Mandible white, with the tip brown. Legs black. Total length 145 mm., wing 82, tail 90, tarsus 16, culmen 6.
Hab. Musgrave Range, from 7000 to 9000 feet altitude.

The closest allies of this Flycatcher are *R. javánica* and *R. nigritorquis* in Java and the Philippines respectively.

28. Pœcilodryas (?) sigillata, n. sp. (*Op. cit.* p. 109.)

Adult. Wholly black, except a black-centred white patch, including the bases of the penultimate inner tertiaries and all but the tips of the innermost. Bill, legs, and feet black. Total length 150 mm., wing 102, tail 72, culmen 9, tarsus 28, middle toe 20, hallux without claw 8.

Young. Above rufous-brown, with narrow pale shaft-streaks, the feathers growing black in patches; inner tertiaries with a broad whitish shaft-stripe; rump brighter rufous. Tail fuscous brown, the laterals slightly edged with rufous, below fuscous brown. The feathers of the sides and lower abdomen becoming black; throat and breast with conspicuous pale streaks, widening at the apex. Under surface of wing and tail ashy brown. Wing-coverts chestnut-brown, with buffy-white tips, the median series forming a transverse, the greatest an oblique bar across the wing; under wing-coverts fuscous. Bill, legs, and feet dark brown.

Hab. Mount Victoria, at 13,000 feet. It is probably doing too much violence to the genus *Pœcilodryas* to place in it the present bird, which has longer and stouter legs and feet than even most of the Tarsigers, and a wing reaching to within the length of the hallux (without claw) from the tip of the tail. The tarsus is nearly thrice the length of the culmen, and the feet outstretched pass beyond the tip of the tail.

29. Pœcilodryas cyana, Salvad.

Mount Kowald, 2500 feet.

30. Micrœca læta, Salvad.

Musgrave Range, from 7000 to 9000 feet.

31. Todopsis kowaldi, n. sp. (*Op. cit.* p. 109.)

Male, young? Head black, surrounded by feathers largely tipped with ultramarine-blue, forming a coronal cincture. Lower ear-coverts dark brown; upper white, tinged with blue at the tips, and elongate. Upper surface olive-brown. Wings brown, wing-coverts rather darker brown, a few of the median

and greatest series minutely tipped with buff. Quills externally edged with yellowish brown. Tail uniform brown, paler below. Lower surface and cheeks buff, deepening from nearly white on the throat to deep buff on the lower abdomen; subcaudals rufous. Flanks and thighs olive-brown. Edge of wing, axillaries, and under wing-coverts isabel; under surface of wing ashy brown; inner edge of quills pale salmon. Bill dark brown, mandible pale yellow at the side of the base; legs dark brown. Length 155 mm., wing 85, tail 60, culmen 14, tarsus 29.

A species of unusual size (al. 85), allied to *T. wallacei*, G. R. Gr., but with the upper auriculars white and the whole body brown and buff. On the ticket attached to the skin it is said to be a male; if so, it may be a young male in female plumage. According to Salvadori the sexes in *T. wallacei* are alike.

32. Graucalus cæruleogriseus, G. R. Gr.
Mount Belford, 6000 feet; Musgrave Range, 8000 feet.

33. Graucalus subalaris, Sharpe.
Mount Kowald, 2000 feet.

34. Graucalus longicauda, n. sp. (*Op. cit.* p. 107.)

Male. Head, neck, wings, tail, chin, and throat black, the last circumscribed; the head, chin, and throat lustrous. Back, rump, supracaudals, breast, abdomen, and subcaudals grey. Innermost tertiaries on outer web and upper wing-coverts ashy grey; under wing-coverts ashy grey, edged with dark grey. Bill, legs, and feet black. Total length 330 mm., wing 180, tail 180, bill 22, tarsus 28.

Hab. Musgrave Range, 7000 to 9000 feet.

As it is possible that this species may be identifiable with *G. lettiensis*, Meyer, or *G. timorlaoensis*, Meyer, descriptions of which are not yet to hand, the characters given are to be considered merely provisional.

35. Lalage karu, Less.
St. Aignan, Normanby Island.

36. Dicruropsis carbonaria, Müll.

37. Chætorhynchus papuensis, Meyer.
Musgrave Range, from 7000 to 9000 feet.

38. Strepera rosa-alba, n. sp. (*Op. cit.* p. 110.)
Female. General colour above and below black; head a little mottled with grey. A rosette in front of the shoulder; axillaries—inner tertiaries at the base of both webs forming a stripe along the wing; preanals, subcaudals, distal supracaudals, and a large spot near the tip of the inner webs of the two outermost rectrices white. Legs and feet black. Bill dingy white, stained irregularly with blue and with a bluish-black tip. Total length 285 mm., wing 154, tail 136, tarsus 28, bill 40, 20 in height, and 18 in breadth at the base.

The first primary is less than three fourths of the second in length; the tip of the wing is formed by the fourth and fifth, but the third is nearly equal to them in length. Culmen a little decurved, and feebly hooked at the tip; rictal bristles present; tarsal scutes completely fused; hallux shorter than middle toe. These details are given because the bird does not fit well into *Strepera*, *Gymnorhina*, or *Cracticus*.

Hab. Sudest Island.

39. Rhectes dichrous, Bp.

40. Colluricincla discolor, n. sp. (*Op. cit.* p. 111.)
Male. Back, scapulars, rump, supracaudals, edge of secondary, outer webs of tertiaries, and edges of tail-feathers olive-green, washed with yellow, especially on the rump. Head, neck, and hind neck brown, contrasting with the back. Wing and tail brown. Lower surface brownish-white, fading to white on throat and chin and middle of lower abdomen, browner and washed with yellow on sides of breast and flanks. Subcaudals pale citron-yellow. Feathers of lower throat with dusky central streaks. Under wing-coverts dark grey, with broad pale-grey edges. Edge of wing grey, under surface of wing ashy brown, the edges of the quills pale grey. Bill black. Legs and feet dark brown. Total length 180 mm., wing 103, tail 88, bill 20, tarsus 25.

Hab. Sudest Island. Three examples, two males, one female.

Distinguished from *C. melanorhyncha* by the rather bright olive-green of the upper surface, contrasting with the clear dull brown of the head and neck, and by other characters.

41. Pachycephala schlegeli, Rosenb.
Musgrave Range, 7000 to 9000 feet.

42. Pristorhamphus versteri, Finsch.
Mount Musgrave, at 8000 feet.

43. Myzomela nigrita, Gr.
St. Aignan.

44. Myzomela rosenbergi, Sclat.
Mount Knutsford, at 1900 feet.

45. Myzomela cineracea, Sclat.
Rossel Island.

46. Melirrhophetes ochromelas, Meyer.
Mount Knutsford,

47. Melirrhophetes belfordi, n. sp. (*Op. cit.* p. 111.)
Female, young. Front, sinciput, lores, subocular region, and ear-coverts dull black. A broad stripe commencing over the middle of the eye and running back towards the occiput white. Naked ocular and temporal region apparently deep blue; lower eyelid apparently red. Chin and throat greyish black, bounded above by a broad white stripe descending from the mandible; hind neck brownish grey; nape and lower back greyish brown, mantle and wing-coverts fuscous, the feathers broadly margined with grey; upper tail-coverts brown, faintly margined with olive; under surface and sides of neck grey-brown; the feathers of the abdomen faintly tipped with grey. Thighs fuscous brown; under tail-coverts and adjacent feathers of the flanks ferruginous. Wing-coverts fuscous; the greater series narrowly edged with olive-green. Quills brown; all but the first and second primaries edged externally with golden green; under wing-coverts, ashy grey; under surface of wings ashy brown. Tail brown; the feathers narrowly edged with golden green, and very narrowly tipped with greyish white. Bill black. Legs and feet reddish

brown. Wattle pink. Total length 280 mm.; wing 160, culmen 33, tail 145, tarsus 35, wattle 8.

Hab. Mount Knutsford.

It is chiefly on the probable assumption that the young female of *M. leucostephes*, Mey., does not greatly differ from the young male that I venture to describe the present species.

48. Ptilotis subfrenata, Salvad.
Musgrave Range.

49. Ptilotis erythropleura, Salvad.
Musgrave Range.

50. Tropidorhynchus novæ-guineæ, Müll.
Normanby Island.

51. Zosterops pallidipes, n. sp. (*Op. cit.* p. 112.)

Male. Generally similar to *Z. brunneicauda*, Salvad., and perhaps only a local form. The lower surface is less yellow, that colour being largely diluted with greenish yellow. The legs and feet are pale flesh-pink. The whole mandible and the edge of the maxilla towards the tip yellowish white.

Hab. Rossel Island.

52. Pitta rubrinucha, Wall.
Exton Junction, 1200 feet.

53. Eupetes leucostictus, Sclat.

54. Eupetes castanonotus, Salvad.
Mount Knutsford, at 2000 feet.

55. Merula papuensis, n. sp.* (*Op. cit.* p. 112.)

Upper surface bright dark brown, paler and duller on the head; chin and throat pale greyish brown, forming a gorget clearly distinguishable in a side-light from the dark brown of the breast and abdomen—these are paler and duller than the upper surface. Præanal feathers white-tipped, under tail-coverts with pale shafts, and obscurely tipped with pale

* [A *Geocichla papuensis* from S.E. New Guinea has already been described by Mr. Seebohm (Cat. B. v. p. 158), but this species appears to be quite different.—Ed.]

rufous brown. Thighs pale brown; legs and feet pale yellow, claws dusky towards the tips; bill yellow. Total length 350 mm., wing 135, bill 20, tarsus 35, tail 110, first primary 25.

In a second example, apparently not fully adult, the guttural gorget blends with the colour of the breast. The whole bird is paler and duller, and the markings of the under tail-coverts and præanal feathers are more pronounced. Bill orange; legs and feet gamboge-yellow. First primary 15 mm.

Hab. Mount Victoria.

56. Calornis metallica, Temm.
St. Aignan.

57. Manucodia comrei, Sclat.

58. Manucodia chalybeata, Penn.

59. Phonygama hunsteini, Sharpe.

60. Phonygama purpureoviolaceus, Meyer.
Goodwin Spur, 5000 feet.

61. Parotia sexpennis, Bodd.
Mount Belford, 3600 to 7000 feet.

62. Lophorhina superba, Penn.
Goodwin Spur, 5000 to 7000 feet.

63. Epimachus meyeri, Finsch.

In the collection are four adult and two young males of an *Epimachus*. The young examples correspond so closely with the type of *E. meyeri*, except in a greater length of bill, that I can hardly doubt the correctness of the opinion entertained by the collectors that these are males of the species named. If so, a description of the male has been given by Dr. Ramsay under the name of *E. macleayanæ*.

Hab. Musgrave Range, 6000 to 9000 feet.

64. Astrarchia stephaniæ, Finsch & Meyer.

Female. Above blackish brown, tinged with rufous brown, except on the head, wings, and tail. Head, face, ear-coverts, and chin nearly black. Throat and upper breast blackish

brown, the latter circumscribed. Remainder of lower surface, subcaudals, and under wing-coverts with alternate bars of blackish brown and buffy yellow, the latter broader. Base of shafts of middle tail-feathers white. Bill, legs, and feet black. Length 510 mm., tail 340, wing 153, bill 28, tarsus 37. The two middle tail-feathers concave on the upper surface of the apical half.

Hab. Mount Knutsford, at 8000 feet.

65. PARADISEA RAGGIANA, Sclat.
Passim, to 3000 feet.

66. PARADISEA DECORA, Salvin & Godm.
Ferguson Island only, according to collectors.

67. DIPHYLLODES MAGNIFICA, Penn.
Mount Knutsford, 3000 to 4000 feet.

68. CICINNURUS REGIUS, Linn.
Passim, to 2000 feet.

69. PTILORHIS MAGNIFICA, Vieill.
Mount Kowald, 2500 feet.

70. AMBLYORNIS SUBALARIS, Sharpe.
Musgrave Range, 6000 to 9000 feet.

71. AMBLYORNIS MACGREGORIÆ, n. sp. (*Op. cit.* p. 113.)
Adult male. Upper surface brown; back, rump, and upper tail-coverts olive-brown; sides of the neck olive-brown, with or without a fulvous tinge; ear-coverts, supraciliaries, loreal and frontal regions rufous brown; crest silky orange-red, the central feathers moderately, the laterals largely, tipped with olive-brown. Wing-coverts and wings externally as the back. Lower surface pale fulvous olive-brown, with a silky sheen, little or no paler on the lower abdomen; thighs brown. Edge of the wing and axillaries deep isabel; lower surface of primaries brownish grey, with a strong yellow sheen, not extending to the inner webs and tips; base of the inner webs dull yellow; under wing-coverts pale isabel. Tail brown, yellowish on the lower surface of the outer web, under surface of shafts

of quills and rectrices yellow. Legs and feet black. Bill brownish black, the mandible slightly paler. Total length of skins 245–255 mm., wing 142–148, culmen 20, tarsus 37.

Adult female. Upper surface olive-brown, slightly tinged with fulvous on the back and wing-coverts, more deeply on the nape and head, of which the feathers are lengthened and form a dense cope, extending on the nape. Wings and tail as in the male. Lores, sides of face, and ear-coverts dull brown, the last with pale shaft-streaks. Lower surface pale rufous brown, more or less tinged with olive-brown. Axillaries and under wing-coverts pale isabel, as in the male of *A. subalaris*; under surface of wings ashy brown, faintly tinged with yellow towards the tips of the quills, which are edged with pale dull yellow towards the base of the inner webs. Throat with narrow pale shaft-streaks. Thighs brown. Tail above brown, beneath brown faintly washed with dull yellow. Legs and feet black; maxilla dark fuscous; mandible paler, especially on under surface.

Hab. Musgrave Range, 7000 to 9000 feet; two males, three females.

Dedicated to Lady Macgregor. A handsome species with a horizontal crest radiating from the sinciput over the shoulders or middle of the back. Chin and throat without shaft-streaks. Axillaries deep isabel. Culmen 20 mm., wing 140–148. Female with the plumes of the sides and back of the head long and dense.

Nothing in the history of the Bower-birds, so far as we know it, is of greater interest than the specific modifications developed in that strange instinct whence they derive their popular name. From its rudimentary indications in *Scenopæus*, which merely deposits and rearranges a few leaves or twigs on the bared ground, to the elaborate structure of *Amblyornis inornata*, continuous steps of progress in the art of bower-building are recognizable. The general plan of these highly artificial constructions, their deviations from it, their materials and garniture, the methods of work adopted by the birds, their sexual shares in the labour, and the comparative permanence of its results—all these are well worth the inves-

tigation of the field naturalist; still more so the development of the instinct considered as a psychical manifestation.

The bower of *A. macgregoriæ* departs widely from the ordinary plan of a more or less completely roofed gallery or tunnel, through which the birds run to and fro. Around a young tree growing on the slope of a bank or ridge, a circular mass of sticks, intermingled with moss, and 45 inches in diameter, is built with perpendicular sides to a height varying from 9 inches to 2 feet, the moss being used so copiously that externally it alone is visible. On the upper surface a circular channel, 9 inches in depth, is left between the tree and the outer edge of the pile. The outer wall of the channel is 9 inches in breadth; so also is its inner wall, or the raised boss from the centre of which the tree protrudes. All round the tree itself to a considerable height above the platform are fixed short sticks, interlaced at one end, protruding at the other, as though to form a protection against the approach of an enemy from above. The depressed channel of the upper surface is the playground of the bird; in it several individuals of both sexes may be seen pursuing each other round and round. Mr. Kowald, who saw one of these bowers being built, states that all the materials are selected and conveyed by the males to females, who alone are the architects. Mr. Kowald is strongly of opinion that the increase of the bower in height is almost constantly in progress, and that each is used by the same birds for years in succession.

CNEMOPHILUS, n. g. (PTILINORHYNCHIDÆ).

Bill shorter than head, broader than high; culmen rounded, curved towards the tip; edge of maxilla notched at the tip; nostril basal, oval, almost concealed by elongated nasal plumes directed forward; basal profile of mandible straight. Wing short, rounded, reaching to the tarsus; primaries longer than secondaries by half the length of the hallux without claw, first primary two thirds of the second in length; tip of wing formed by the 4th, 5th, 6th, and 7th quills. Tarsus moderate in length, stout; scutellation entire fore

and aft. Feet strong, hallux equalling the middle toe without claw; laterals unequal.

72. Cnemophilus macgregorii, sp. nov. (*Op. cit.* p. 113.)
Loreal, frontal, and nasal plumes elongate, and forming a fronto-nasal crest; from its frontal end a compressed backwardly curved crest of four feathers reaching the occiput; feathers of head parted mesially, forming a groove for reception of the crest. Lower part of fronto-nasal crest chestnut-black, upper part, front, and over fore part of orbit fiery orange-red. Head, neck, and upper back golden yellow, with a strong silky sheen; frontal crest golden brown; lower back, rump, and supracaudals passing from the golden yellow of the mantle to brownish yellow. Wings and tail cinnamon-brown; under surface of wings cinnamon-brown, much paler on edges of quills; under wing-coverts pale brown, varied with black; all the lower surface, cheeks, a narrow line over the eye, ear-coverts, and thighs black. Legs and feet dark brown. Bill dark brown, with the tip paler. Total length to end of wing 180 mm., wing 100, bill 18, tarsus 37.

Hab. Mount Knutsford, at 11,000 feet. One male.

Of the habits of this bird we have no information; it was shot by one of the party at some distance from their camp; no other was seen. The systematic place of the genus seems to be between *Amblyornis* and *Xanthomelus*.

73. Ælurœdus stonei, Sharpe.
Mount Belford, at 4000 feet.

74. Ptilopus superbus, Temm.
Sudest Island.

75. Ptilopus bellus, Sclat.
Mainland, *passim* to 4000 feet.

76. Ptilopus eugeniæ, Gould.
Ferguson Island.

77. Ptilopus rivolii, Prév.
St. Aignan, East Island.

78. Macropygia nigrirostris, Salvad.
St. Aignan, Rossel Island.

Adult female. On further acquaintance this will probably appear to be a distinct species. It has a wash of grey on the head, a rather strong green lustre on the neck; the bars on the tail are quite faint, and the subapical band of the external remix is lead-grey.

79. Gymnophaps albertisi, Salvad.
Cæsar Spur.

80. Ianthœnas albigularis, Bp.
Mount Gleeson, at 1600 feet.

81. Tringoides hypoleucos, Linn.
Sudest Island.

82. Esacus magnirostris, Geoff.
Ferguson Island.

VI.—*On some Birds from South-eastern China, with Descriptions of two new Species.* By Henry H. Slater.

(Plate I.)

I have been favoured by Mr. J. D. de La Touche with a small parcel of Chinese birds from the vicinity of Swatow and Foochow for examination. All of these are of much interest, and two of them apparently belong to undescribed species, whilst one or two others call for special notice.

1. Siphia rubeculoides *sive* strophiata.

Two females, shot at Tai-Yang, near Swatow, on April 21, 1888. The females of the genus *Siphia* are apparently in many cases exactly similar. I have examined the large and varied series in the British Museum, and was unable to find any specimens which matched exactly the two under notice, though several females of *S. strophiata* and *S. rubeculoides* came very near them. They match one another, however, except that one of them has a single bright blue feather on the forehead. Mr. Sharpe is inclined to think that they should be (doubtfully) referred to *S. rubeculoides*. I am rather

more inclined to favour *S. strophiata*, which is, perhaps, more likely to occur near Swatow, as it has been recorded by Père David from Western China. But, as Mr. de La Touche observes that the bird is not uncommon at Swatow in April, and as these examples were shot towards the end of that month, it may subsequently be found to breed there, and may prove to be distinct from both the species of which the names are here suggested.

2. Iole holti, Swinhoe.

Mr. Seebohm enumerates (P. Z. S. 1890, p. 342) the three hitherto known examples of this bird. It may be well to mention that there are certainly two more, one of which is in Mr. Styan's possession and the other in my collection.

3. Hemixus canipensis, Seebohm (P. Z. S. 1890, p. 342).

Mr. de La Touche informs me that the example of this excellent species from which Mr. Seebohm took his description was, he has no doubt, one which was not "collected by Herr Baun near Foochow," but given to that gentleman by Mr. de La Touche. I may add that five other examples, all obtained by Mr. de La Touche, have passed through my hands, two of which are still in my possession.

4. Alcippe hueti, David. (See Seebohm, P. Z. S. 1890, p. 343.)

Mr. de La Touche has at different times submitted nine specimens of his own collecting to me for examination, six from near Foochow, three from near Swatow. I quite agree with Mr. Seebohm as to the distinctness of the continental Chinese birds from *A. nipalensis* and *A. morrisoniana*. The uniform pure grey head and neck, without the least trace of that brown which is invariably noticed in the other two species, is enough to characterize it. The absence of white bases to the loral feathers, however, is not to be depended on, as some of the Chinese specimens show nearly as much white there as the other two species. But whether the present bird ought to be called *A. hueti*, David, seems very doubtful. Père David, in his description of that bird (Ann. des Sci. Nat. xix. art. 9, p. 4, 1874), mentions as the dis-



J. G. Keulemans del. et lith.

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ÆTHOPYGA LATOUCHII, ♂, ♀.

tinctive feature of it "les longs sourcils noirs qui vont du dessus des yeux jusque derrière le cou." I cannot find a trace of these in any of the birds I have examined, and think that Mr. Seebohm should re-name the south-eastern bird.

5. ÆTHOPYGA LATOUCHII, sp. n. (Plate I.)

Æ. christinæ consobrina; dorso, tamen, et alis multo viridioribus et rostro breviore faciliter distinguenda.

Five examples, two males and three females, obtained at Chiong Pô, in the hills west of Swatow. This bird has a close affinity to the Hainan bird, *Æ. christinæ*, Swinhoe, but is separable at the first glance by its brighter tints and shorter bill. In this last respect it approximates to *Æ. bella*, Tweedd., from North Mindanao.

	Culmen.
Æ. christinæ, ♂ . . .	0·7 inch.
Æ. latouchii, ♂ . . .	0·53 ,,
Æ. bella, ♂	0·55 ,,

The two central tail-feathers are not narrowed at their tips so abruptly, nor to such fine points, as those of *Æ. christinæ*, in which it also resembles *Æ. bella*; indeed, the three species, with *Æ. shelleyi*, form a natural group of the genus *Æthopyga*, the present one being intermediate and about equally distinct from the others. It also differs from the Hainan species in having the back, from the metallic green nape to the bright-yellow rump, olive-green, instead of velvety black (with the faintest green tinge); the deep maroon throat and fore neck of *Æ. christinæ* become almost crimson in *Æ. latouchii*, and in the latter the underparts are of a much brighter greenish yellow. Measurements—culmen 0·53 inch, wing 2·05, tail 1·85 (the two central feathers narrowed into a sooty black, not metallic, point, 0·5 long, 0·03 broad), tarsus 0·5.

Female. Head and face greyish green; back, wing-coverts, rump, and two central tail-feathers olive-green; remiges margined with the same, rather browner; underparts light greenish white, rather paler on the flanks; no trace of a terminal point to the two central tail-feathers, rest of tail black, graduated, with a white tip (as in the male) to each

feather. Wing 2 inches, other measurements as in the male.

I have named this bird after Mr. de La Touche, to whose gun we already owe, and to whose pen we shall before long owe, much information as to the distribution of birds in the Chinese Empire.

6. Hirundo nipalensis.

The oriental red-rumped Swallows are confessedly a very puzzling group, and even Mr. Sharpe expresses his views in the B. M. Cat., vol. x., with some hesitation. Mr. de La Touche has sent me fifteen specimens, which could, perhaps, be separated into two quasi-species, but which appear only to differ from one another as *H. rustica* differs in its spring and autumn dress, a view confirmed by the dates on the labels. Mr. Seebohm's latest utterances in the 'Birds of the Japanese Empire' certainly simplify matters by restricting the number of uncertain species, but the distinctions even there seem so artificial (the wing-measurements and the more or less coarse striations of the underparts) that it appears impossible but that they should be still further restricted ultimately. However, Mr. de La Touche's specimens may be set down as *H. nipalensis*, the smaller of the two races with coarsely striated underparts. Not one is long enough in the wing to be called *H. striolatus*, of which Mr. Seebohm puts the minimum wing-measurement at 4·9 inches. Still, all the younger examples of even *H. striolatus* will be below that.

7. Gallinula (Amaurornis) coccineipes, sp. n.

Much resembling our Waterhen (*G. chloropus*) in winter dress at first glance. But it is a smaller bird—has no trace whatever of a bare frontal plaque—no whitish under tail-coverts—none of the characteristic white flank-blotches of *G. chloropus*.

It may be succinctly described:—Crown, back of neck, back, wings (above and below), tail, flanks, and under tail-coverts bistre-brown (in winter, more olive in summer); rectrices and remiges a little darker; throat, lores, cheeks,

ear-coverts, fore neck, centre of chest, belly, and thighs ashy grey, whiter on the throat; bill greenish; irides red; legs and feet carmine. I take the description from a female shot in December 1887 and a male in April 1888, both near Swatow. There is another specimen in the Museum at Sikawei, another in the Shanghai Museum. Culmen, ♂ 1·2 inch, ♀ 1·03; wing, ♂ 5·2, ♀ 4·75; tail, ♂ ♀ 2·5; tarsus ♂ 2·1, ♀ 2·0.

G. olivacea, Meyer, with which the present species might be confused, is a good deal larger bird, has reddish under tail-coverts, no trace of white on the throat at any season of the year, and has greenish-brown feet and legs.

I have to thank Mr. Sharpe for the facilities for comparison which he has readily afforded me, and Mr. Seebohm, who has sent me valuable specimens by post and has given up to me a morning of his time; also Mr. de La Touche, to whom I am greatly indebted in many ways.

VII.—*Description of an apparently new Species of the Genus* Siphia *from Borneo.* By A. H. Everett, C.M.Z.S.

A single specimen of a fine new Flycatcher of the genus *Siphia* was obtained by my native hunter on Mount Penrisen, in Sarawak, in December 1889, and is now in the collection of the British Museum. Both Count Salvadori and Mr. Sharpe concur in believing the bird to be new. Neither the sex nor the elevation at which the specimen was obtained can be stated, but it is probably a male and restricted to the highlands.

I propose to call it

Siphia nigrogularis, sp. n.

Adult. General colour above dark blue, dull on the crown, brighter on the back and scapulars, and passing into turquoise-blue on the rump and upper tail-coverts; forehead bright turquoise-blue, which extends backwards over the eye; lores, cheeks, ear-coverts, sides of the neck, and sides of the breast black, more or less distinctly washed with dark blue; chin

and upper throat dull black; lower throat pale orange-buff, which merges into bright orange-rufous on the breast; sides of the body and flanks pale orange-rufous; the centre of the abdomen white, with concealed black bases to the feathers; lower tail-coverts white, very faintly tinged with buff; thigh-plumes black, edged with white; under wing-coverts orange-buff; marginal coverts bright cobalt-blue, with black bases; greater coverts black, margined externally with dark blue; median and lesser coverts also black, tipped with a brighter shade of blue; quills black, the external margins dark blue, except in the first two primaries, which are wholly black; tail-feathers black, the two exterior ones entirely so, the remainder washed with dark blue on their outer edges. Bill black; legs (in the dry skin) light brown. Total length 5·25 inches, tail 2·15, wing 2·9, tarsus 0·65, culmen 0·6.

Hab. Penrisen Mountain, Sarawak, Borneo.

VIII.—*Descriptions of two new Species of Flycatchers from the Island of Negros, Philippines.* By E. L. Moseley.

(Plate II.)

The specimens upon which these species are based were obtained on a mountain-trip in the island of Negros during my recent expedition with Professor Steere to the Philippine Archipelago. There was no human habitation within five miles of the locality where I shot them, the country being too rugged for inhabitants. We had constantly to use our hands in getting up or down the sides of the valley in which we swung our hammocks under a temporary roof for two nights. The valley seems to be the crater of an extinct volcano, the bottom of which is occupied by a deep lake of clear water, but without outlet and without fish, though containing many other forms of life. So steep are the banks that it is impossible to go from one spot to another without ascending to a height of several hundred feet. Were it not for the dense vegetation on the slopes of the valley, it would be unsafe to descend into it. From barometrical observations I determined the



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FIG. 1. CRYPTOLOPHA NIGRORUM.
„ 2. ABRORNIS OLIVACEA.

height of the lake to be a little less than 3000 feet, while the highest point reached in getting to it is about 500 feet higher. It lies due west of a point on the south-eastern coast of Negros between the towns of Dumaguete and Sibulan, and, measured in a straight line, about twelve miles distant.

(1) Cryptolopha nigrorum, sp. nov. (Plate II. fig. 1.)

Under surface light olive-yellow, clearest on abdomen and crissum, the flanks and sides of body washed with dusky olive-green; chin, throat, cheeks, and ear-coverts finely streaked with white shaft-lines; upper surface olive-green, dusky on head, clearer on interscapulars, dorsum, and uropygium; superciliary line extending from forehead to cervix pale olive-yellow; lores and postoculars dark brown; remiges and rectrices brown, broadly edged on the outer webs with olive-green and on the inner webs with whitish; wing-coverts brown, broadly edged with olive-green; greater coverts tipped with pale yellow, forming a wing-bar; axillaries and lining and edge of wing pale yellow.

Total length 3·7 inches, culmen 0·45, wing 2·05, tail 1·35, tarsus 0·65.

Hab. Lake Danao, Southern Negros, Philippines.

(2) Abrornis olivacea, sp. nov. (Plate II. fig. 2.)

♂. Above olive-green, veiled on head and neck with ash; below whitish, streaked with pale greenish yellow; remiges brown, olive-green on the outer webs and whitish on the inner webs; first four primaries whitish also on the outer webs; rectrices olive-brown, becoming olive-green on the outer margins, inner webs narrowly edged with whitish; superciliary line extending to occiput, pale greenish yellow; axillaries and edge of wing light yellow.

♀. Similar, but with more yellow on the throat and less ashy on the head.

Total length 4·7 inches, culmen 0·55, wing 2·4, tail 1·75, tarsus 0·75.

Hab. Islands of Samar and Negros, in the Philippines.

IX.—*On a rare Species of Lorikeet in the Rothschild Collection.* By T. Salvadori, C.M.Z.S.

(Plate III.)

One of the most obscure and less-known Lorikeets is, no doubt, *Loriculus bonapartei*.

It was described by De Souancé in the 'Revue et Magasin de Zoologie' for 1856, p. 222, as having been obtained from the Sooloo Islands; he says that the type-specimens had been collected during the "Voyage au Pôle Sud," but that Hombron and Jacquinot had omitted to mention them in their account of the birds collected during that celebrated expedition, probably having mistaken them for some other well-known species.

De Souancé's description of *L. bonapartei* runs as follows:—"Vert; tout le dessus de la tête rouge écarlate sur le front, passant à l'orangé sur l'occiput; croupion rouge; chez le mâle, une tache rouge allongée, comme chez le *L. philippensis*, couvre une grande partie de la poitrine; chez la femelle, ce plastron n'existe pas, mais elle a les lorums et les joues bleus; le bec très-allongé, mais noir. Cet oiseau, ainsi qu'on peut le voir, a le rouge de la tête disposé comme chez le *L. indicus*; par la tache rouge de la poitrine du mâle et la coloration bleue des lorums et des joues de la femelle, il ressemble à le *L. philippensis*, mais il s'éloigne de ces deux espèces par son bec noir."

Dr. Finsch, in his work 'Die Papageien,' vol. ii. p. 703, only refers to what De Souancé wrote of the present species, as he never had the opportunity of seeing a specimen; also Dr. Reichenow, in his very useful "Conspectus Psittacorum," published in the 'Journal für Ornithologie' for 1881, does not add anything new to what had been already written on the subject.

This was all we knew about this species when, during the Expedition of the 'Marchesa' in 1883, five specimens of the Sooloo Lorikeet were collected; these have been studied by Dr. Guillemard, who, in the 'Proceedings of the Zoological Society of London' for 1885, p. 252, properly named them

L. bonapartei, but wrongly attributed to the same species the bird from the Philippines, which had been described by Finsch under the name of *Coryllis hartlaubi*, and which I now identify with *L. apicalis*, Souancé.

Dr. Guillemard's identification of *L. hartlaubi* with *L. bonapartei* was a very startling one, especially as the bird from the Sooloo Islands had been described by De Souancé as having a *black* bill, and the bird from the Philippines is well known to have the bill *red*! But Dr. Guillemard has the following remarks about the bill of the Sooloo birds:—"It is worthy of note that in the five Sulu birds under consideration the colour of the beak is different in nearly every case. In two birds it is noted as 'red,' while in the remaining three it is 'brown-black,' 'brownish,' and 'very dark yellow.' Yet no one bird appears more adult than another. It is curious that in all the Sulu birds the beaks in the dried skins are black."

These statements appear to me to be very strange, as in no other species of *Loriculus* which has the bill *red* when alive does it turn black after death, except in the case of young Parrots, the bills of which get a brownish tinge, as often happens also with other birds; neither do I know of any species with the bill *black* in dried skins, in which it was red, or any other colour, when alive.

Wishing to make the Sooloo birds out clearly, I obtained from the Hon. Walter Rothschild, to whom I have to return my best thanks, four out of the five specimens collected during the 'Marchesa' Expedition; the missing one is that which Dr. Guillemard mentions as having the bill "very dark yellow."

As a matter of fact, all the four specimens examined by me have the bill entirely horny black, and it appears as if it could not have been any other colour when the birds were alive. I am quite at a loss to explain how it is that two of them are noted on the label as having a red bill! Is that a mistake, or do the labels of the two birds belong to some other specimens, and have they been attached to the two Lorikeets by accident? I also notice that these two birds,

which were obtained by Mr. Powell, a companion of Dr. Guillemard's, have on their labels the total length given as 165 millimetres, while I find that they do not measure more than 150 millimetres. From this it would appear that my supposition of the labels having been wrongly attached is not improbable. That the Sooloo bird has a black bill when alive I have been assured by Mr. Everett, who had seen a living cage-bird, brought over to the Philippines while he was staying there.

After all this, and in the face of such conflicting evidence, I must stick to the facts that the bill of the specimens described by De Souancé was black, that it is black in each of the four specimens examined by me, and black it is stated to be by Mr. Everett in the living bird*.

The Sooloo bird can be distinguished from the Philippine *Loriculus apicalis* not only by the black bill, but also by another character, and a very conspicuous one: the Sooloo bird has the tail above dark green, with no blue tinge whatever towards the tips of the feathers, while in *L. hartlaubi*, or more correctly *L. apicalis*, the tail-feathers always show some traces of blue towards their tips. Also the red gular patch is a little different in the two birds, being darker in the Sooloo bird than in the other.

The accompanying figures will make the bird under consideration easily recognizable. I add the synonymy, a Latin diagnosis, and a full description of

LORICULUS BONAPARTEI. (Plate III.)

Loriculus bonapartei, Souancé, Rev. et Mag. de Zool. 1856, p. 222; G. R. Gr. List Psitt. Brit. Mus. p. 56 (1859);

* Since this paper was written, I have received from the Hon. Walter Rothschild three additional specimens of *L. bonapartei*, one male and two females; these specimens were collected by Dr. Platen in the Sooloo Islands, but are not mentioned in the recent article on the birds collected in those islands by Dr. Platen, published in the 'Journal für Ornithologie,' 1890, pp. 137–144. In these birds the bill is black, and it is described as '*schwarz*' on the labels by Dr. Platen. I think that this fact shows conclusively that some mistake happened when two of Guillemard's specimens were labelled as having a red bill.



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LORICULUS BONAPARTEI

Wall. P. Z. S. 1864, pp. 288, 294; Gieb. Thes. Orn. ii. p. 497 (1875); Meyer, Rowl. Orn. Misc. ii. p. 232, no. 5 (1877); Tweedd. P. Z. S. 1877, p. 820; id. Orn. Works, p. 546 (1881); Guillem. P. Z. S. 1885, p. 252 (part.).

Licmetulus bonapartii, Bp. Naumannia, 1856, Consp. Psitt. no. 253; G. R. Gr. Hand-list, ii. p. 152, no. 8183 (1810).

Coryllis bonapartei, Finsch, Die Papag. ii. p. 703 (1868); Rchnw. Journ. f. Orn. 1881, p. 321 (Consp. Psitt. p. 119); id. Vogelbild. Nachtr. 54 (1883).

Loriculus L. apicali, Souancé, simillimus, sed rostro nigro, cauda superne saturate viridi, minime apicem versus cæruleo tincta, et colore rubro gulæ paullo saturatiore, facile distinguendus.

Adult male. Green; underparts a little lighter; head above red, scarlet on the forehead, shading off into a rich orange on the occiput and nape; rump and upper tail-coverts scarlet; a large patch on the throat also red; outer webs of the primaries and tail-feathers above dark green, the latter tipped with lighter green; quills underneath on the inner webs and tail-feathers underneath verditer-blue; bill horny black; feet in the dried skins dusky, nearly black. Total length about 6 inches, wing 3·7, tail 1·95, bill 0·6, tarsus 0·42.

Female. No gular red patch, lores and cheeks blue.

I may conclude with the remark that although this bird, on account of the colour of its bill, belongs to the section of the black-billed *Loriculi*, still its affinities seem to be with the red-billed *Loriculi*, having, like these, a rather long bill, and the exact style of plumage of the red-billed *L. apicalis*. The blue cheeks of the female also betray its real affinities with *L. apicalis* and the other Philippine species.

X.—*On the Periods occupied by Birds in the Incubation of their Eggs.* By William Evans, F.R.S.E.

Probably no point in the life-histories of the different species of birds has received less attention than the period of incubation, a circumstance all the more surprising when we consider the importance of the subject and the great activity which has been manifested during recent years in the elucidation of ornithological questions.

In the spring of 1887 I had occasion to seek information regarding the periods of incubation in the case of a number of our native birds, and was surprised to find how little that was reliable I was able to cull from the standard works on British ornithology. It then occurred to me that some useful experiments might readily be made by means of an incubator; and as a preliminary step in this direction I had a few eggs placed in a home-made machine belonging to a friend. The results, though disappointing as regards the number of eggs hatched, clearly foreshadowed a series of most interesting facts from experiments made under better conditions. Accordingly, at the commencement of the breeding-season of 1888, I purchased one of Hearson's self-regulating incubators, and kept it in operation as long as fresh eggs could be procured. It was again kept going during the season of 1889 and for a short time in 1890. Eggs of all sizes, from those of the Goldcrest to that of the Solan Goose, were experimented on. Taken all over, about 50 per cent. of them were hatched, the number of failures being greatest among the Passeres and least among the Gallinæ.

In the selection of eggs one must be guided greatly by experience and a knowledge of the nesting-habits of the different groups, as many birds commence to incubate before the full complement has been laid; but a good general rule is to make use only of incomplete clutches.

Having only one incubator, new eggs were continually being introduced as others hatched or became addled, and on this account it was deemed best to fix upon a temperature at the beginning of each season and maintain it as steadily as possible throughout. Guided by the usual practice among

poultry-rearers, I made the preliminary experiments at an average temperature of about 105° Fahr.; but believing this to be on the high side as regards the majority of our native birds, I reduced it in 1888 to 104°, and in 1889 still further to 102°·5, in consequence of temperatures obtained by placing a small thermometer under a Domestic Hen, a Dove, and a Redpoll. The first two were sitting on eggs and gave 102° and 101°·5 to 102° respectively. The Redpoll was placed on the thermometer lying on a sheet of cotton, and held there for fully twenty minutes, with the result that the mercury rapidly rose to 103°·75, but soon fell again to 103°, at which it remained steady during the last ten minutes. In this connection the following statement by M. Georges Claraz (P. Z. S. 1885, p. 325) will be read with interest:—"Pour la *Rhea americana* . . . . la température nécessaire est de 103° Fahr." Again, Mosenthal and Harting, in their book on 'Ostriches and Ostrich Farming,' say (p. 217) "104° is the natural heat of the Ostrich mother," and recommend for the artificial hatching of Ostrich eggs "102° Fahr. when first put in, to be gradually reduced to 100° at the end of two weeks, then in two weeks more to 98°." The temperature in the mound of a British Turkey has been stated at 89°*.

The eggs in the incubator were looked at and turned twice a day—morning and evening—and the drawer left open from 15 to 20 minutes on each occasion.

From the outset it was evident that either several incubators would have to be used, or some other method of observation employed in conjunction with that already in use, if substantial results were to be obtained within a reasonable time. The only other courses were to watch the nests while the parents themselves incubated the eggs, or to place the eggs under domestic birds—Hen, Dove, or Canary, for instance, according to size. For several reasons I thought it better to avail myself, as far as possible, of both of these additional methods rather than to use more incubators. For valuable co-operation in watching nests of the Passeres, I am greatly indebted to my friend Mr. Bruce Campbell.

* Cassell's Birds, iii. p. 271.

The results of these experiments and observations will be found in the second, third, and fourth columns of the annexed Table. Column 4, showing under each species the number of eggs hatched, has been added so that, should the results be combined or compared with those of other observations, they may have no more than their proper weight assigned to them.

The number of species included in this part of the Table is seventy-five. Eggs of the Bearded Tit, Swift, Green Woodpecker, Kingfisher, Tawny Owl, Sparrow-Hawk, Ptarmigan, Water Rail, Redshank, Great Crested Grebe, and a few others were also tried, but without success. I should mention, however, that in each of these cases the experiment depended on a single egg, and that all of them had been transmitted by parcel-post from a distance, the rough handling thus encountered having, doubtless, at the outset destroyed the vitality of the greater number, if not, indeed, of all of them. To ensure success the eggs should be gathered as near home, carried with as little motion, and placed in the incubator with as little delay as possible. If they must travel a distance they cannot be too carefully packed. An excellent plan is to roll each egg in the centre of a thick ball of dry moss, and then pack them securely, in an upright position*, in a box of ample size. Above all avoid the use of a hammer in fixing the lid. Six eggs of the Red-legged Partridge, packed in this fashion, and kindly sent by Lord Walsingham, all produced healthy chicks. The thick-shelled eggs of the gallinaceous birds appear, however, as a rule, to withstand the injurious effects of transit better than any others.

Differences of opinion doubtless exist as to how far results obtained by artificial means can be relied on as exponents of the duration of incubation under natural and normal conditions. For my own part, I have no hesitation in accepting them as substantially correct. No doubt individual cases may differ somewhat from the natural average, but not more so, I think, than is frequently the case among eggs naturally hatched. The extent to which development may be ac-

* Wright, in his 'Book of Poultry' (p. 42), strongly recommends the packing of the eggs with the large end down.

celerated or retarded without injuring the embryo is an interesting question, which I have not, so far, been able to investigate; but I imagine that, as regards the great majority of species, it is probably confined within comparatively narrow limits, say from one to two days either way. It is but natural to suppose that the limits of variation in this respect will be, to some extent at least, proportional to the whole period of incubation, so that in the case of species having a very long period—the Swan or the Ostrich, for instance—the variation in either direction may be expected to amount to several days. Newly laid Hens' eggs hatched some hours, or even a day, before those kept, say, a week.

Another point well worthy of investigation is the length of time eggs at different stages of incubation may be exposed to an insufficient temperature without destroying their vitality. Out of curiosity, more than anything else, I had a number of Sparrows', Blackbirds', Rooks', and Lapwings' eggs taken from the nests at different stages of development, and placed in the incubator after the lapse of various intervals up to fourteen or fifteen hours, and was surprised to find how many of them produced young birds in due course. The experiments were not sufficiently accurate or extensive to afford a basis for any precise conclusions, but in a general way they seem to point to this—that the eggs are least susceptible to harm before the blood-vessels have been formed and circulation set in; that the most critical time is immediately after circulation has been established; and that thereafter the power to resist the effects of exposure gradually increases as incubation progresses. I have placed in the incubator, after having carried them in my pocket for over twelve hours, eggs that had not been sat on more than a couple of days, and also others in which incubation was far advanced, and have found them hatch as if they had never been disturbed.

The literature of this subject is very scattered and fragmentary. The most comprehensive tabular statement I know of is that given by Tiedemann in his 'Anatomie und Naturgeschichte der Vögel' (vol. ii. pp. 136–139), published so long ago as 1814. For the knowledge of this work, as well as of those of Thienemann, I am indebted to Professor

Newton, and through him to Dr. Gadow. Tiedemann's volume and the earlier of Thienemann's two I have not seen, and the references to these works are based on extracts (rendered in English) which Professor Newton has very kindly made for me. The Professor points out that Tiedemann gives no scientific names, but merely the German vernacular; and that while he has done his best to render them correctly by the help of Naumann, he cannot guarantee that he has in every instance given the right equivalent. I am further indebted to Professor Newton for a number of references to Naumann's great work on the birds of Germany, which is doubtless the origin of most of the periods given by subsequent authors. Mr. Sclater's record of the duration of incubation in the case of birds which have bred in the gardens of the Zoological Society, contained in the Society's 'Proceedings' for 1859 (p. 205), and a very similar list given in the second volume of Owen's 'Anatomy of Vertebrates' (p. 257), supply much valuable information regarding non-European species. In addition to these, isolated statements are to be found in almost every work in which the habits of birds find a place. To have exhausted anything like the whole of the possible sources of information was an impossibility in the time at my disposal. Still I have been able to consult a goodly number of volumes, and the bulk of the material they have yielded (no small quantity) will be found in the right-hand side of the Table. No doubt much of it cannot be relied on, while not a little is in all probability mere repetition; and it is therefore not without considerable hesitation that I reproduce it so fully. Looking, however, to the present position of the subject, there is, it seems to me, much to be said for the course I have adopted.

A list of the works quoted will be found at the end of the paper. When Thienemann is quoted, the reference is to his 'Fortpflanzungsgeschichte,' unless otherwise stated.

The arrangement and nomenclature adopted in the Table are based on the 'B. O. U. List of British Birds' and Sclater's 'List of Animals in the Zoological Gardens' (1883). In the case of most of the American birds the A. O. U. List has been followed.

Table of Periods of Incubation.

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Turdus viscivorus ..... (Missel Thrush.)	15th day.	Incubator.	1	15 days. About 16 days.	Tiedemann's Table. Neville Wood, p. 10.
Turdus musicus..... (Song Thrush.)	15th day; exact time, in one case, 14 days 8 hours.	Incubator.	4	16 days. 17 to 18 days. 14 to 15 days.	Tiedemann's Table. Syme, p. 25. Thienemann, p. 268.
	13 to 14 days from laying of last egg.	4 nests watched.		13 days. About 13 days. About a fortnight.	White's 'Selborne' (Edit.), p. 288. Yarrell, i. p. 266. Saunders, p. 4.
Turdus merula ..... (Blackbird.)	14th and 15th days. 13 to 14 days from laying of last egg.	Incubator. 4 nests watched.	3	About 14 days. 17 to 18 days. 13 days.	Montagu, i. Syme, p. 25. Hepburn in Macgillivray, ii. p. 86.
Ruticilla phœnicurus .... (Redstart.)	.....	.....	..	13 days.	Tiedemann's Table.
Ruticilla titys .. .. (Black Redstart.)	.....	.....	..	13 days.	Naumann, iii. p. 536.
Erithacus rubecula ..... (Redbreast.)	14th day. 12 to 14 (mostly 13) days from laying of last egg.	Incubator. 4 nests watched.	2	13 days.	Tiedemann's Table.
Daulias luscinia ..... (Nightingale.)	.....	.....	..	A fortnight. 14 days. 12 days.	Bechstein, p. 212. Tiedemann's Table. Bree, 'Zoologist,' 1849, p. 2418.

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Sylvia cinerea ..... (Whitethroat.)	13th day (1st half of). 11 to 13 days from laying of last egg.	Incubator. 5 nests watched.	1	14 days. 10 days.	Tiedemann's Table. Bree, 'Field,' June 1871.
Sylvia curruca ..... (Lesser Whitethroat.)	.....	.....	..	12 to 14 days. 11 days.	Neville Wood, p. 116. Bree, 'Field,' June 1871.
Sylvia atricapilla ..... (Blackcap.)	.....	.....	..	14 days.	Tiedemann's Table.
Sylvia hortensis..... (Garden Warbler.)	.....	.....	..	15 days. Within a fortnight.	Bechstein, p. 226. Cassell's Birds, ii. p. 242.
Regulus cristatus ..... (Goldcrest.)	12th day. 13th day.	Incubator. For a time in Hedge Sparrow's nest, then removed to Willow Wren's.	2 1		
Phylloscopus rufus ..... (Chiffchaff.)	.....	.....	..	13 days.	Naumann, iii. p. 591.
Phylloscopus trochilus .... (Willow Wren.)	13th day (end of). 13, 13, 14, and 16 days from laying of last egg.	Incubator. 4 nests watched.	1		
Acrocephalus palustris .... (Marsh Warbler.)	.....	.....	..	13 days.	Brehm, quoted in 'Zoologist,' 1861, p. 7756.
Acrocephalus turdoides.... (Great Reed Warbler.)	.....	.....	..	14 to 15 days.	Thienemann, p. 190.
Accentor modularis ..... (Hedge Sparrow.)	14th day. 12th and 13th days from laying of last egg.	Incubator. 5 nests watched; at least one addled egg in each.	1	12 to 13 days. 11 days.	Thienemann, p. 245. Macgillivray, ii. p. 257.

			1		
Prinia maculosa ..... (Capocier.)	.....	.....	..	14 days.	Thienemann, p. 225.
Mimus polyglottis ..... (Mocking-bird.)	.....	.....	..	14 days.	Wilson & Bonaparte, i. p. 165.
Cinclus aquaticus ..... (Dipper.)	15th day.	Incubator.	1	14 to 16 days.	Tiedemann's Table.
	15 days from laying of last egg.	Nest watched.			
Panurus biarmicus ..... (Bearded Titmouse.)	.....	.....	..	14 days.	Tiedemann's Table.
Acredula rosea ..... (Long-tailed Titmouse.)	16 to 17 days from laying of last egg *.	Nest watched.	..	11 to 13 days.	Tiedemann's Table.
				13 days.	Cassell's Birds, ii. p. 307.
Parus ater ..... (Cole Titmouse.)	.....	.....	..	14 days.	Tiedemann's Table.
				About a fortnight.	Meyer, ii. p. 175.
Parus palustris ..... (Marsh Titmouse.)	.....	.....	..	About 13 days.	Meyer, ii. p. 171.
				"	Morris, i. p. 273.
Parus cæruleus ..... (Blue Titmouse.)	14th day.	Egg taken from nest when laid and replaced after bird had fairly commenced to incubate.	1		
	13 to 14 days from laying of last egg.	Nest watched.			
Sitta cæsia ..... (Nuthatch.)	.....	.....	..	13 to 14 days.	Thienemann, p. 142.
Troglodytes parvulus .... (Wren.)	13th day (end of).	Incubator.	3	11 to 13 days.	Tiedemann's Table.
	12 days 22 hours.	Canary.	1	10 days.	Owen's Table.
	14th day.	Willow Wren; kept 7 days before being placed in Willow Wren's nest.	1	About 10 days.	Yarrell, i. p. 464.
				13 days.	Cassell's Birds, ii. p. 271.
	14 to 16 (in one instance nearly 17) days from laying of last egg.	7 nests watched.			
Motacilla alba ..... (White Wagtail.)	.....	.....	..	14 days.	Tiedemann's Table.

* Not a good case, as the bird evidently did not sit in earnest for some days after laying the last egg. An anonymous writer in the 'Sporting Times' of 16th June, 1888, gives the period as 12 days, which is doubtless about right.

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Motacilla lugubris ..... (Pied Wagtail.)	13th day.	Canary.	1		
Anthus pratensis ..... (Meadow Pipit.)	13th and 14th days. 14th day from laying of last egg.	Incubator. Nest watched.	4	A fortnight. Generally 13 days.	Macgillivray, iii. p. 128. Cassell's Birds, ii. p. 175.
Anthus trivialis ..... (Tree Pipit.)	13th day from laying of last egg.	Nest watched.			
Icteria virens ..... (Yellow-breasted Chat.)	.....	.....	..	12 days.	Audubon, ii. p. 224.
Seiurus noveboracensis .... (Water-Thrush.)	.....	.....	..	14 days.	Audubon, i. p. 100.
Oriolus galbula ..... (Golden Oriole.)	.....	.....	..	15 days. 14 to 15 days.	Tiedemann's Table. Thienemann, p. 292.
Lanius excubitor ..... (Great Grey Shrike.)	.....	.....	..	15 to 16 days. 15 days. "	Tiedemann's Table. Audubon, ii. p. 534. Thienemann, p. 323.
Lanius minor..... (Lesser Grey Shrike.)	.....	.....	..	15 to 16 days. 15 days.	Tiedemann's Table. Saunders, p. 142.
Lanius collurio ..... (Red-backed Shrike.)	.....	.....	..	14 days. A fortnight.	Bechstein, p. 36. Saunders, p. 143.
Lanius pomeranus..... (Woodchat.)	.....	.....	..	15 days.	Bechstein, p. 34.
Vireo gilvus ..... (Warbling Vireo.)	.....	.....	..	12th day. 13 days.	Audubon, ii. p. 114. Thienemann, p. 299.
Muscicapa grisola..... (Spotted Flycatcher.)	13th day (middle of). 12½ to 13 days from laying of last egg.	Canary. Nest watched.	1	14 days. 13 days.	Tiedemann's Table. Thienemann, p. 301.

Muscicapa atricapilla .... (Pied Flycatcher.)	.....	.....	..	14 days.	Naumann, ii. p. 239.
Hirundo rustica ..... (Swallow.)	15 days, almost exactly.	Eggs taken from nest when laid, and replaced 4 or 5 days later, when the bird had fairly begun to incubate; removed to incubator two days before hatching.	2	12 days if weather fine; 17 days if cold or wet.	Cassell's Birds, ii. p. 107.
	15 to 16 days from laying of last egg.	2 nests watched.			
Hirundo erythrogaster .... (Barn Swallow.)	.....	.....	..	13 days.	Audubon, ii. p. 417.
Chelidon urbica ..... (Martin.)	.....	.....	..	13 days. " " " A fortnight.	Tiedemann's Table. Owen's Table. Yarrell, ii. p. 351. Muirhead, i. p. 142. Saunders, p. 158.
Cotile riparia..... (Sand Martin.)	.....	.....		12 or 13 days.	Naumann, vi. p. 108.
Zosterops cærulescens .... (Silver-eye.)	.....	.....	..	9 to 10 days.	Buller (*fide* Potts), i. p. 83.
Certhia familiaris..... (Tree-creeper.)	15 days from laying of last egg.	Nest watched.	..	14 days. 13 days.	Tiedemann's Table. Thienemann, p. 135.
Pyranga rubra ..... (Summer Tanager.)	.....	.....	..	12 days.	Audubon, i. p. 233.
Lagonosticta minima .... (Blood Finch.)	.....	.....	..	About a fortnight.	Cassell's Birds, i. p. 162.
Carduelis elegans ..... (Goldfinch.)	.....	.....	..	13 or 14 days.	Cassell's Birds, i. p. 130.
Chrysomitris spinus ..... (Siskin.)	.....	.....	..	13 or 14 days.	Naumann, v. p. 171.
Serinus hortulanus ..... (Serin.)	.....	.....	..	13 to 14 days. About 10 days.	Bechstein, p. 155. Cassell's Birds, i. p. 108.

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Serinus canarius ..... (Canary.)	13 to 14 days.	Canaries.	17 (4 sets)	13 days.	Bechstein, p. 163. Syme, p. 169.
Ligurinus chloris ..... (Greenfinch.)	14th day (1st half of).	Incubator.	1	13 to 15 days.	Cassell's Birds, i. p. 114.
Passer domesticus ..... (Sparrow.)	13th and 14th days.	Incubator.	3	14 days. 13 or 14 days (*Passer montanus* same).	Tiedemann's Table. Cassell's Birds, i. pp. 134, 137.
Fringilla cœlebs..... (Chaffinch.)	12th day (end of). 11 to 13 days from laying of last egg.	Incubator. 2 nests watched; 2 addled eggs in each.	1	14 days. ,, 13 days.	Tiedemann's Table. Thienemann, p. 413. Owen's Table.
Linota cannabina ..... (Linnet.)	14th day from laying of last egg.	Nest watched.	..	14 days. 13 days. 12 days.	Tiedemann's Table. Cassell's Birds, i. p. 123. Bree, 'Zoologist,' 1849, p. 2418.
Erythrospiza githaginea .. (Trumpeter Bullfinch.)	.....	.....	..	Within a fortnight.	Cassell's Birds, i. p. 102.
Pyrrhula europæa..... (Bullfinch.)	13th day (very end of).	Canary.	2	15 days. ,, ,,	Bechstein, p. 94. Tiedemann's Table. Owen's Table.
Loxia pityopsittacus..... (Parrot Crossbill.)	.....	.....	..	14 to 15 days.	Naumann, iv. p. 353.
Loxia curvirostra..... (Crossbill.)	.....	.....	..	14 days.	Tiedemann's Table.
Emberiza citrinella ..... (Yellow-Hammer.)	14th day (2nd half of). 12 to 13 days from laying of last egg.	Incubator. 3 nests watched; addled egg in two.	2	13 days. 14 days.	Tiedemann's Table. Saunders, p. 202.

Icterus galbula ..... (Baltimore Oriole.)	.....	.....	..	14 days.	Audubon, i. p. 68.
Molothrus ater * ..... (Cowbird.)	.....	.....	..	Nearly a fortnight.	Audubon, i. p. 497.
Sturnus vulgaris ..... (Starling.)	14th day.	For a time under Dove, and finally in incubator.	1	14 days. 17 to 18 days. About 16 days.	Tiedemann's Table. Syme, pp. 25 & 66. Neville Wood, p. 407.
	12 to 13 (in one instance little more than 11) days from laying of last egg.	4 nests watched; an addled egg in three.		About 16 days. "On this point observers differ: Naumann says 14 days, Herr H. C. Müller (in the Faroes) 18."	Yarrell, ii. p. 234 & footnote by Editor.
Nucifraga caryocatactes .. (Nutcracker.)	.....	.....	..	"Has been surmised to be 17 to 18 days."	Yarrell, ii. p. 335.
Garrulus glandarius ..... (Jay.)	.....	.....	..	16 days.	Tiedemann's Table.
Pica rustica ..... (Magpie.)	18th day (end of).	Incubator.	2	17 to 21 days' group.	Tiedemann's Table.
Cyanopolius cyanus ..... (Chinese Blue Magpie.)	.....	.....	..	About 18 days.	Sclater, P. Z. S. 1885, p. 2.
Corvus corone and *C. cornix* (Carrion and Hooded Crows.)	.....	.....	..	18 to 20 days.	Tiedemann's Table.
Corvus frugilegus ..... (Rook.)	17th & 18th days. 14 to 17 days from laying of last egg.	Incubator. 2 nests watched for me by Mr. Laidlaw; an addled egg in one.	4		
Corvus corax ..... (Raven.)	18 to 19 days from laying of last egg.	Nest watched for me by Mr. Harold Raeburn.	..	20 days. " 19 or 20 days. Some 20 days.	Tiedemann's Table. Owen's Table. Audubon, ii. p. 5. Yarrell, ii. p. 262.

* "Eggs deposited in nests of Warblers, Vireos, and Sparrows, and said to hatch sooner than those of most birds" (Coues, 'Key to North-American Birds,' 1872, p. 155).

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Alauda arvensis ..... (Sky Lark.)	14th day.	Incubator.	2	14 days. " 15 to 16 days. About a fortnight. 15 days. "13 days as nearly as I can ascertain." About 15 days. 11 days?	Bechstein, p. 176. Tiedemann's Table. Syme, pp. 25, 73. Neville Wood, p. 255. Owen's Table. Saxby, p. 89. Yarrell, i. p. 617. A. M. Laws, 'Zoologist,' 1890, p. 223.
Alauda arborea..... (Wood Lark.)	.....	.....	..	About 15 days.	Syme, p. 80.
Alauda cristata..... (Crested Lark.)	.....	.....	..	About a fortnight. A fortnight.	Cassell's Birds, i. p. 204. Saunders, p. 244.
Cypselus apus ..... (Swift.)	.....	.....	..	16 or 17 days. 18 days.	Meyer, i. p. 183. Saunders, p. 252.
Cypselus melba ..... (Alpine Swift.)	.....	.....	..	A little over 2 weeks. 18 to 21 days.	Naumann, vi. p. 121. Leo Zehntner*.
Florisuga atra ..... (Black Humming-bird.)	.....	.....	..	12 days.	Tiedemann's Table (*fide* Audebert, Hist. Nat. Colibris, p. 99).
Trochilus colubris..... (Ruby-throated Ditto.)	.....	.....	..	10 days.	Audubon, i. p. 251.

Caprimulgus europæus .... (Nightjar.)	15 days from laying.	Nest watched.	1	18 to 20 days. 18 days.	Tiedemann's Table. Gurney, 'Zoologist,' 1883, p. 429.
Chordeiles virginianus .... (Night Hawk).	.....	.....	..	A fortnight.	Audubon.
Picus martius ..... (Great Black Woodpecker.)	.....	.....	..	16 to 18 days. Towards 18 days.	Naumann, v. p. 266. Thienemann, p. 98.
Dendrocopus major ..... (Great Spotted Woodpecker.)	.....	.....	..	14 to 16 days. About a fortnight.	Naumann, v. p. 310. Saunders, p. 266.
Dendrocopus medius..... (Middle Spotted Woodpecker.)	.....	.....	..	15 days.	Naumann, v. p. 332.
Dendrocopus minor ..... (Lesser Spotted Woodpecker.)	.....	.....	..	14 days. "	Thienemann, p. 97. Morris, ii. p. 29.
Gecinus viridis ..... (Green Woodpecker.)	.....	.....	..	16 to 18 days.	Thienemann, p. 100.
Iynx torquilla ..... (Wryneck.)	.....	.....	..	14 days. "	Tiedemann's Table. Thienemann, p. 93.
Alcedo ispida..... (Kingfisher.)	.....	.....	..	14 days. 15 to 16 days.	Tiedemann's Table. Thienemann, p. 103.
Halcyon vagans..... (New-Zealand Kingfisher.)	.....	.....	..	19 days.	Buller (*fide* W. W. Smith), i. p. 126.
Ceryle alcyon..... (Belted Kingfisher.)	.....	.....	..	16 days. "	Audubon, i. p. 396. Owen's Table.
Coracias garrula ..... (Roller.)	.....	.....	..	18 or 20 days. 20 days. Not quite 3 weeks. About 3 weeks.	Bechstein, p. 45. Tiedemann's Table. Naumann, ii. p. 166. Yarrell, ii. p. 432.
Upupa epops..... (Hoopoe.)	.....	.....	..	16 days. " "	Tiedemann's Table. Naumann, v. p. 454. Yarrell, ii. p. 424.

* 'Beiträge zur Entwickelung von *Cypselus melba*.' Dissertation. Berlin, 1890. (Per Dr. Gadow.)

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Cuculus canorus ..... (Cuckoo.)	13 to 14 days by inference.	In Pipit's nest; hatched along with rightful occupants.	1	"An egg laid in a Hedge-Sparrow's nest, with 5 eggs hatched the same day as 2 of the latter."	Montagu, i. Introduction, p. vii.
				Same as foster-parent.	Selby, i. p. 398.
				A fortnight. Fully a day sooner than those of the Tit-lark.	Macgillivray, iii. pp. 128, 131.
				14 days.	Owen's Table.
Hapaloderma narina .... (Narina Trogon.)	.....	.....	..	20 days.	Cassell (*fide* Verreaux), iii. p. 101.
Cacatua cristata ..... (Great White-crested Cockatoo.)	.....	.....	..	21 days.	Greene, i. p. 8.
Cacatua goffini ..... (Goffin's Cockatoo.)	.....	.....	..	21 days.	Greene, i. p. 2.
Cacatua roseicapilla ..... (Roseate Cockatoo.)	.....	.....	..	About 21 days.	Greene, i. p. 22.
Licmetis tenuirostris .... (Slender-billed Cockatoo.)	.....	.....	..	About 21 days.	Greene, i. p. 28.
Calopsitta novæ-hollandiæ . (Cockateel.)	.....	.....	..	About the 20th day.	Kyngdon, 'Zoologist' (1872), p. 3240.
				21 days.	Greene, i. p. 34.
Trichoglossus novæ-hollandiæ..... (Swainson's Lorikeet.)	.....	.....	..	21 days.	Greene, i. p. 41.

Euphema pulchella ..... (Torquoisine Parrakeet.)	.....	.....	..	About 18 days.	Greene, i. p. 78.
Euphema splendida ..... (Splendid Grass Parrakeet.)	.....	.....	..	About 18 days.	Greene, i. p. 100.
Euphema bourkii ..... (Bourke's Parrakeet.)	.....	.....	..	About 17 days.	Greene (*fide* Groom), i. p. 108.
Melopsittacus undulatus .. (Waved Parrakeet.)	.....	.....	..	16 to 20 days. 18 to 20 days.	Brehm, i. 149. According to many observations by M. Braun*.
Cyanorhamphus novæ-zealandiæ ..... (New-Zealand Parrakeet.)	.....	.....	..	About 18 days.	Greene, ii. p. 14.
Psephotus hæmatonotus .. (Blood-rumped Parrakeet.)	.....	.....	..	About 17 days.	Greene (*fide* Dalton), ii. p. 31.
Lathamus discolor..... (Swift Parrakeet.)	.....	.....	..	21 days.	Greene (*fide* Rousse), ii. p. 36.
Ara ararauna ..... (Blue-and-Yellow Macaw.)	.....	.....	..	20 to 25 days. (25 eggs hatched.)	Greene (*fide* Lamouroux), ii. p. 77.
Asio otus ..... (Long-eared Owl.)	27th day.	Incubator.	1	21 to 24 days' group†. 3 weeks. About 20 days.	Tiedemann's Table. Cassell's Birds, ii. p. 98. Dresser, v. p. 255.
Syrnium aluco ..... (Tawny Owl.)	.....	.....	..	3 weeks.	Naumann, i. p. 480.
Nyctea scandiaca ..... (Snowy Owl.)	.....	.....	..	32 days. (In Mr. Fountaine's aviary.) 33 to 34 days, or 30 to 32, according to the assumptions made as to which of the 8 eggs laid were the 2 that did not hatch.	Gurney, Ibis, 1875, p. 518. Gurney, Ibis, 1880, p. 472.

* In 'Arbeiten des zoolog. Instituts zu Würzburg,' v. 1882, &c., as I am informed by Dr. Gadow.

† Tiedemann does not give the period for each species separately, but divides them more or less into groups.

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Bubo ignavus ..... (Eagle Owl.)	.....	.....	..	21 to 24 days' group. 36 days, reckoned from laying of first egg to hatching of first chick (34 days from laying to hatching of last egg).	Tiedemann's Table. Gurney, 'Zoologist,' 1849, p. 2566, 1850, p. 2849, and 1851, p. 3145, referring to 3 broods hatched in Mr. Fountaine's aviary.
Athene noctua ..... (Little Owl.)	.....	.....	..	14 to 16 days. 28 days.	Naumann, i. p. 499. Saunders (*fide* Meade-Waldo), p. 292.
Circus æruginosus ..... (Marsh Harrier.)	.....	.....	..	21 to 24 days' group.	Tiedemann's Table.
Circus cyaneus ..... (Hen Harrier.)	.....	.....	..	21 to 24 days' group. 3 weeks.	Tiedemann's Table. Saunders, p. 308.
Buteo vulgaris ..... (Buzzard.)	.....	.....	..	3 weeks. "	Seebohm (*fide* Dr. Holland), i. p. 119. Saunders, p. 312.
Aquila nævia or *clanga* .. (Spotted Eagle.)	.....	.....	..	"Said to sit 3 weeks."	Seebohm, i. p. 109.
Aquila chrysaetus ..... (Golden Eagle.)	.....	.....	.. ..	30 days. "About 21 days."	Owen's Table. Gray (*fide* Elwes), p. 4.
Aquila imperialis ..... (Imperial Eagle.)	.....	.....	..	5 weeks.	Cassell's Birds, ii. p. 12.
Circaëtus gallicus ..... (Short-toed Eagle.)	.....	.....	..	About 28 days.	Cassell's Birds, ii. p. 50.

Nisaetus fasciatus ..... (Bonelli's Eagle.)	.....	.....	..	40 days (from laying of first egg to hatching of both.)	Dresser, v. p. 581. Nest at Gibraltar observed by Col. Irby.
Accipiter nisus ..... (Sparrow-Hawk.)	.....	.....	..	18 to 19 days. 3 weeks.	Tiedemann's Table. Meyer, i. p. 31.
Milvus ictinus ..... (Kite.)	.....	.....	..	21 to 24 days' group.	Tiedemann's Table.
Pernis apivorus ..... (Honey Buzzard.)	.....	.....	..	3 weeks.	Seebohm, i. p. 71.
Falco peregrinus ..... (Peregrine Falcon.)	.....	.....	..	18 to 19 days. One month. 3 weeks.	Tiedemann's Table. Macgillivray, iii. p. 307. Meyer, i. p. 38.
Falco subbuteo ..... (Hobby.)	.....	.....	..	3 weeks.	Seebohm, i. p. 33.
Tinnunculus alaudarius .. (Kestrel.)	27 to 28 days from laying of last egg.	Nest watched for me by Rev. Julian Tuck. 3 eggs (out of 5) hatched.			
Serpentarius reptilivorus .. (Secretary Vulture.)	.....	.....	..	About 6 weeks.	Brehm, i. p. 606.
Cathartes atrata ..... (Black Vulture.)	.....	.....	..	32 days.	Audubon, ii. p. 42.
Cathartes californianus .. (Californian Vulture.)	.....	.....	..	29 to 31 days.	Audubon (*fide* Douglas), v. p. 242.
Phalacrocorax carbo ..... (Cormorant.)	.....	.....	..	28 to 29 days. (In Zool. Gardens.)	'Field,' April 22, 1882, and Yarrell, iv. p. 148.
Sula bassana ..... (Gannet.)	One hatched on 39th day; the other had a live chick in it on the 42nd day, which, however, died in the shell.	Domestic Hen.	2	43 days, and 45 days from date of laying. (In Booth's aviary.) 6 weeks at least.	Booth, pt. v. pp. 10, 12. Naumann, xi. p. 36.
Pelecanus, sp.? ..... (Pelican.)	.....	.....	..	30 days.	Tiedemann's Table.

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Ardea cinerea ..... (Heron.)	25 to 26 days.	Domestic Hen.	3	21 to 24 days' group. About 20 days. 28 days. 3 weeks. About 28 days.	Tiedemann's Table. Macgillivray, iv. p. 446. Owen's Table. Stevenson, ii. p. 139. Yarrell, iv. p. 164.
Ardea ludoviciana..... (Louisiana Heron.)	.....	.....	..	21 days.	Audubon, iii. p. 138.
Ardea occidentalis..... (Great White Heron.)	.....	.....	..	About 30 days.	Audubon (*fide* Egan), iii. p. 547.
Ardetta minuta..... (Little Bittern.)	.....	.....	..	16 or 17 days. Said to last 16 or 17 days.	Naumann, ix. p. 216. Yarrell, iv. p. 204.
Botaurus stellaris ..... (Bittern.)	.....	.....	..	23 days. 25 or 26 days. About 25 days. More than 3 weeks.	Tiedemann's Table. Selby, ii. p. 32. Yarrell, iv. p. 210. Saunders, p. 372.
Ciconia alba ..... (White Stork.)	.....	.....	..	23 days. 28 to 31 days. A month. 30 days. 31 days. A month.	Tiedemann's Table. Naumann, ix. p. 269. Selby, ii. p. 46. Macgillivray, iv. p. 483. Owen's Table. Yarrell, iv. p. 223.
Ibis æthiopica ..... (Sacred Ibis.)	.....	.....	..	About 21 days. (In Zool. Gardens.)	Sclater, Ibis, 1878, p. 449.
Phœnicopterus sp.? ..... (Flamingo.)	.....	.....	..	30 to 32 days.	Brehm, iii. p. 344.

Cereopsis novæ-hollandiæ .. (Cereopsis Goose.)	.....	.....	..	35 days.	Sclater, P. Z. S. 1859, p. 205.
Chenalopex ægyptiaca .... (Egyptian Goose).	.....	.....	..	27 to 28 days.	Cassell's Birds, iv. p. 139.
Anser cinereus ..... (Grey-lag Goose.)	.....	.....	..	28 days.	Tiedemann's Table.
				27 to 28 days.	Naumann, xi. p. 261.
Anser domesticus ..... (Domestic Goose.)	30th day (2nd half of).	Goose.	9		
	31st day.	Goose.	10		
	30th day (early on).	Hen.	2		
Anser brachyrhynchus .... (Pink-footed Goose.)	.....	.....	..	28 days.	Cecil Smith, 'Zoologist' (1872), p. 3243.
Bernicla canadensis ..... (Canada Goose.)	28 to 29 days.	Hen.	3	28 days.	Audubon, iii. p. 7.
Bernicla poliocephala .... (Ashy-headed Goose.)	.....	.....	..	30 days.	Sclater, P. Z. S. 1859, p. 205.
Bernicla sandvicensis .... (Sandwich-Island Goose.)	.....	.....	..	31 days.	Sclater, P. Z. S. 1859, p. 205.
Cygnus olor ..... (Mute Swan.)	.....	.....	..	5 weeks.	Bechstein, p. 303.
				35 days.	Tiedemann's Table.
				36 to 39 days.	Naumann, xi. p. 471.
				6 weeks.	Yarrell, iv. p. 325.
				"Usually 5 weeks, or about a week longer, should the weather be very cold."	Stevenson, iii. p. 70.
Cygnus musicus..... (Whooper.)	.....	.....	..	5 weeks.	Naumann, xi. p. 494.
				6 weeks.	Selby, ii. p. 280.
				42 days.	Yarrell, iv. p. 311.
Cygnus nigricollis..... (Black-necked Swan.)	.....	.....	..	35 days.	Sclater, P. Z. S. 1859, p. 205.
Cygnus atratus ..... (Black Swan.)	.....	.....	..	35 days.	Sclater, P. Z. S. 1859, p. 205.

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Tadorna cornuta ..... (Common Sheldrake.)	.....	.....	..	30 days.	Selby, ii. p. 290.
			..	,,	Owen's Table.
				4 weeks.	Dresser, vi. p. 460.
				From 3 to 4 weeks.	Seebohm, iii. p. 522.
				28 to 30 days.	Yarrell, iv. p. 355.
				26 days.	Cassell's Birds, iv. p. 148.
Tadorna casarca ..... (Ruddy Sheldrake.)	.....	.....	..	30 days.	Sclater, P. Z. S. 1859, p. 205.
Mareca penelope ..... (Wigeon.)	.....	.....	..	24 to 25 days.	Naumann, xi. p. 742.
Anas domesticus ..... (Domestic Duck.)	27th and early on 28th day.	Hen.	10		
Anas boscas ..... (Wild Duck.)	26th day (1st half of).	Incubator.	1	28 days.	Tiedemann's Table.
	26th day (1st half of).	Put under a brooding Wild Duck, in place of her own eggs.	12	4 weeks.	Macgillivray, v. p. 37.
	25th (end of) & 26th day.	Hen.	10		
	25th day (end of).	Hen.	2		
Dafila acuta ..... (Pintail.)	.....	.....	..	More than 3, less than 4 weeks.	Naumann, xi. p. 656.
				22 or 23 days.	Meyer, vi. p. 96.
Anas angustirostris ..... (Marbled Duck.)	.....	.....	..	25 to 27 days.	Dresser (*fide* M. Favier), vi. p. 480.
Querquedula circia ..... (Garganey.)	.....	.....	..	21 or 22 days.	Naumann, xi. p. 697.
				21 to 22 days.	Seebohm, iii. p. 553.
Querquedula crecca ..... (Common Teal.)	22nd day (end of).	Incubator.	3	"Seldom sits more than 3 weeks."	Seebohm, iii. p. 547.
			..		

Spatula clypeata ..... (Shoveller.)	.....	.....	..	28 days. 21 to 23 days.	Tiedem[illegible] Naumann, [illegible] p. 769.
Aix sponsa ..... (Wood Duck.) *Aix galericulata* ..... (Mandarin Duck.)	.....	.....	..	30 days. 25 days (Wood Duck)	Sclater, P. Z. S. 1859, p. 205. Cassell's Birds, iv. p. 155.
Fuligula cristata ..... (Tufted Duck.)	25th day. 5 on 27th and 1 on 28th day.	Hen. Call Duck *.	4 6		
Nyroca ferruginea ..... (White-eyed Duck.)	.....	.....	..	22 to 23 days. 30 days.	Naumann, xii. p. 60. Dresser (*fide* M. Favier), vi. p. 584.
Somateria mollissima .... (Eider Duck.)	28th day (1st half of). 27th day (end of).	Hen. Incubator.	1 1	28 days. A month. " About 4 weeks. About a month.	Tiedemann's Table. Selby, ii. p. 339. Saunders, p. 448. Saxby, p. 249. Seebohm, iii. p. 619.
Mergus merganser ..... (Goosander.)	.....	.....	..	28 days.	Tiedemann's Table.
Mergus serrator ..... (Red-breasted Merganser.)	.....	.....	..	26 to 28 days.	Tiedemann's Table.
Mergus cucullatus ..... (Hooded Merganser.)	.....	.....	..	31 days.	Owen's Table.
Columba palumbus ..... (Ring Dove.)	17th day (one in the 1st half and two in 2nd half).	Incubator.	3	19 to 20 days. 16 days. About 18 days. 16 to 18 days.	Tiedemann's Table. Owen's Table. Dresser, vii. p. 9. Yarrell, iii. p. 3.
Columba œnas ..... (Stock Dove.)	.....	.....	..	17 to 18 days. 16 to 17 days. 17 or 18 days.	Tiedemann's Table. Thienemann, p. 64. Yarrell, iii. p. 10.
Columba livia ..... (Rock Dove.)	.....	.....	..	16 to 18 days. 3 weeks.	Thienemann, p. 64. Macgillivray (*fide* Jas. Barclay), i. p. 278.
Ectopistes migratorius .... (Passenger Pigeon.)	.....	.....	..	16 days.	Yarrell, iii. p. 30.

* This Duck did not sit very well at first.

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Turtur communis ..... (Turtle Dove.)	.....	.....	..	16 to 17 days.	Tiedemann's Table.
				"	Thienemann, p. 59.
				A fortnight.	Yarrell, iii. p. 22.
				About a fortnight.	Saunders, p. 474.
Turtur risorius ..... (Collared Turtle Dove.)	15th day (2nd half) and early on 16th day.	Incubator.	2	A fortnight.	Bechstein, p. 288.
Ocyphaps lophotes ..... (Crested Pigeon.)	.....	.....	..	14 days.	Sclater, P. Z. S. 1859, p. 205.
Calænas nicobarica ..... (Nicobar Pigeon.)	.....	.....	..	28 days. (In Zool. Gardens.)	Bartlett, P. Z. S. 1866, p. 78.
Goura coronata ..... (Crowned Pigeon.)	.....	.....	..	28 days. (Ditto.)	Sclater, P. Z. S. 1859, p. 205.
					Owen's Table.
Pterocles alchata ..... (Pin-tailed Sand-Grouse.)	.....	.....	..	About 25 days. (In Zool. Gardens.)	Bartlett, P. Z. S. 1866, p. 78.
Syrrhaptes paradoxus .... (Pallas's Sand-Grouse.)	.....	.....	..	28 days. (Incubator at the Zool. Gardens, Amsterdam.)	F. E. Blaauw, Ibis, 1890, p. 466.
Tetrao urophasianus ..... (Sage Grouse.)	.....	.....	..	21 to 22 days.	Thienemann, p. 45.
Tetrao urogallus ..... (Capercaillie.)	26th day (2nd half of).	Hen.	1	28 days.	Tiedemann's Table.
	26th day (1st half of).	Hen.	8	"	Owen's Table.
	26th day.	Hen.	4	About 4 weeks.	Thienemann, p. 41.
				Said to be a month.	Dresser (*fide* Lloyd), vii. p. 231.
				About a month.	Yarrell, iii. p. 54.
				About 3 weeks.	Badminton Library, ii. p. 54.

Tetrao tetrix ..... (Black Grouse.)	25th day (2nd half of). 26th day from laying of last egg.	Hen. Nest watched.	3 ♂	1 to 24 days' group. 3 weeks. 27 days.	Tiede[illegible] Thiener[illegible] Badmint[illegible]ary, ii. p. 46.
Cupidonia cupido ..... (Prairie Hen.)	.....	.....	..	18 or 19 days.	Audubon, ii. p. 494.
Bonasa umbellus ..... (Ruffed Grouse.) *Bonasa betulina* ..... (Hazel Grouse.)	.....	.....	..	3 weeks.	Thienemann, p. 46.
Lagopus scoticus ..... (Red Grouse.)	24th day (1st half of).	Incubator.	1		
Lagopus albus ..... (Willow Ptarmigan.) *Lagopus rupestris* ..... (Rock Ptarmigan.)	.....	.....	..	24 days.	Thienemann, pp. 38, 39. (Tiedemann gives for the "Ptarmigan" 20 to 24 days.
Coturnix communis ..... (Quail.)	.....	.....	..	3 weeks. 21 to 24 days' group. 18 to 20 days. " About 3 weeks. "	Bechstein, p. 292. Tiedemann's Table. Thienemann, p. 34. Dresser, vii. p. 153. Yarrell, iii. p. 129. Saunders, p. 492.
Coturnix novæ-zealandiæ .. (New-Zealand Quail.)	.....	.....	..	21 days.	Buller (*fide* Potts), i. p. 228.
*Colinus virginianus** .... (Virginian Colin.)	.....	.....	..	Towards 4 weeks.	Thienemann, p. 33.
Callipepla californica .... (Californian Partridge.)	.....	.....	..	21 days. "	Sclater, P.Z.S. 1859, p. 205. Owen's Table.
*Perdix cinerea** ..... (Partridge.)	25th day (early on).	Incubator. Forsaken eggs,—had lain in nest some length of time.	2	3 weeks. "	Montagu, ii. Selby, i. p. 434.
	25th day. About 80 per cent. hatched during the 24th day.	Hen. Ditto. Hens. Seven Pheasant's eggs set with Partridge's under the same hen, hatched at the same time.	3 200 set, about 150 hatched.	21 to 24 days' group. 21 days. " " 24th or 25th day.	Tiedemann's Table. Thienemann, p. 30. Yarrell, iii. p. 107. Saunders, p. 488. Wright, p. 49.

* An anonymous writer in 'Shooting Times' of June 16th, 1888, gives 23 days as the period for these two species.

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Caccabis rufa ..... (Red-legged Partridge.)	23rd (very end of) and 24th day.	Incubator.	3	22 to 24 days.	Tiedemann's Table.
	24th day.	Hen.	3	23 days.	Thienemann, p. 29.
Caccabis petrosa ..... (Barbary Partridge.)	.....	.....	..	19 or 20 days.	Dresser (*fide* Loche), vii. p. 113.
				22 days.	Cassell (*fide* Bolle), iii. p. 210.
Lophophorus impeyanus .. (Himalayan Monaul.)	.....	.....	..	28 days.	Sclater, P. Z. S. 1859, p. 205.
				"	Owen's Table.
Crossoptilon mantchuricum. (Mantchurian Crossoptilon.)	.....	.....	..	28 or 30 days.	Misselbrook, P. Z. S. 1879, p. 118.
Phasianus colchicus ..... (Common Pheasant and its varieties.)	23rd day (very end of).	Incubator.	2	25 days.	Thienemann, p. 21.
	2 hatched 22nd day, 30 on 23rd, 103 on 24th, and 5 on 25th.	Hens. A number of other settings were noted, with similar results. Some Hens hatched their eggs a day before others; and newly laid eggs hatch quickest.	140	24th or 25th day.	Yarrell, iii. p. 98.
				"	Wright, p. 49.
				"I have hatched them at home at all times from 22 to 27 days, but in the woods they invariably turn out about the 24th day."	Tegetmeier, p. 68.
Phasianus wallichii ..... (Cheer Pheasant.)	.....	.....	..	28 days.	Sclater, P. Z. S. 1859, p. 205.

Thaumalea picta ..... (Gold Pheasant.)	22nd day (very end of).	Hen.	3	24 to 26 days. 23 days. 24th day.	Tied[illegible]n's Table. Thien[illegible]ann, p. 20. Teget[illegible]meier (*fide* Hewitt), p. 118.
Euplocamus nycthemerus .. (Silver Pheasant.)	26 days.	Hen.	Several.	26 to 28 days' group. 26 days.	Tiedemann's Table. Thienemann, p. 19.
Euplocamus horsfieldi .... (Purple Kaleege.)	.....	.....	..	24 days.	Sclater, P. Z. S. 1859, p. 205.
Euplocamus melanotis .... (Black-backed Kaleege.)	.....	.....	..	24 days.	Sclater, P. Z. S. 1859, p. 205.
Euplocamus albo-cristatus . (White-crested Kaleege.)	.....	.....	..	26 days.	Sclater, P. Z. S. 1859, p. 205.
Gallus domesticus	20th and 21st day.	Incubator.	11		
(Domestic Hen, Dorking var.)	20th and (mostly) 21st day.	Hen. These and the above were taken at random from the same lot of eggs and set at the same time. Those in the incubator hatched on the average 5 or 6 hours in advance of those under the hen.	12		
Gallus domesticus ..... (Bantam.)	21st day (1st half of).	Bantam.	4		
Gallus varius ..... (Fork-tailed Jungle-fowl.)	.....	.....	..	3 weeks.	Thienemann, p. 19.
Ceriornis satyra ..... (Horned Tragopan.)	.....	.....	..	28 days.	Misselbrook, P. Z. S. 1879, pp. 117, 118.
Ceriornis temminckii .... (Temminck's Tragopan.)					
Pavo cristatus ..... (Peafowl.)	.....	.....	..	28 days. " 28 to 30 days; and 28 days.	Tiedemann's Table. Thienemann, p. 13. Wright, pp. 49 & 530.
Polyplectron chinquis .... (Peacock Pheasant.)	.....	.....	..	21 days.	Misselbrook, P. Z. S. 1879, p. 117.

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Argus giganteus ..... (Argus Pheasant.)	.....	.....	..	24 days under parent; the same under Bantam Hen.	Misselbrook, P. Z. S. 1879, pp. 115, 116.
Meleagris gallo-pavo .... (North-American Turkey.)	.....	.....	..	26 to 28 days. "	Tiedemann's Table. Thienemann, p. 14.
				31 days; hatched at Ardlamont.	J. Gilmour, Proc. Nat. Hist. Soc. Glasgow, ii. p. 15.
Meleagris gallo-pavo .... (Domestic var.)	28th day.	Turkey.	8		
	28th and early on 29th day.	Large Hen.	11		
	28th day (2nd half of).	Bantam.	4		
Numida meleagris ..... (Guinea-fowl.)	.....	.....	..	25 days. "	Tiedemann's Table. Thienemann, p. 16.
Rallus crepitans ..... (Clapper Rail.)	.....	.....	..	14 days.	Audubon, iii. p. 34.
Porzana maruetta ..... (Spotted Crake.)	.....	.....	..	3 weeks.	Naumann, ix. p. 543.
Porzana parva ..... (Little Crake.)	.....	.....	..	21 to 24 days' group.	Tiedemann's Table.
Crex pratensis ..... (Corn Crake.)	.....	.....	..	21 to 24 days' group. 3 weeks.	Tiedemann's Table. Cassell's Birds, iv. p. 102.
Gallinula chloropus ..... (Moorhen.)	21st day (beginning of).	Incubator.	1	21 to 24 days' group.	Tiedemann's Table.
	1 end of 19th, rest on the 20th day.	Hen.	4	About 3 weeks. About 21 days.	Montagu, i. Macgillivray (*fide* Harley), iv. p. 552.
	20th day (2nd half of).	Hen.	2		
	21st day (early on).	Hen.	1	3 weeks.	Selby, ii. p. 190.
	20 to 21 days from laying of last egg.	Nest watched.		" 20 to 21 days.	Yarrell, iii. p. 167. Dresser, vii. p. 319.

Fulica atra ..... (Coot.)	22nd day (2nd half of). 21st day (end of). During 23rd day from laying of last egg.	Two Hens (3 each). Hen. Nest watched.	6 1	20 days.	Tiedemann's Table.
Grus communis..... (Crane.)	.....	.....	..	28 days.	Tiedemann's Table.
Grus viridirostris ..... (Mantchurian Crane.)	.....	.....	..	30 days.	Bartlett, P. Z. S. 1861, p. 369.
Eurypyga helias ..... (Sun Bittern.)	.....	.....	..	27 days.	Bartlett, P. Z. S. 1866, p. 77.
Otis tarda ..... (Great Bustard.)	.....	.....	..	About 4 weeks. 28 days. 4 weeks. About 30 days. 30 days. Rather more than 3 weeks. 25 days.	Montagu, i. Tiedemann's Table. Selby, i. p. 443. Macgillivray, iv. p. 33. Dresser, vii. p. 379. Yarrell, iii. p. 211; Saunders, p. 510. Yarrell, iii. p. 213 (*fide* Dr. Althammer).
Œdicnemus scolopax .... (Stone Curlew.)	.....	.....	..	16 or 17 days. A month.	Naumann, vii. p. 118. Macgillivray (*fide* V. Bomare), iv. p. 81.
Charadrius pluvialis..... (Golden Plover.)	27th day.	Incubator.	1	20 days. 16 to 17 days. 18 days?	Tiedemann's Table. Naumann, vii. p. 157. Saxby, p. 160.
Ægialitis hiaticula ..... (Ringed Plover.)	22nd and 23rd days, and one lingered till 25th day. 21st day from finding of nest with 4 eggs.	Incubator. Nest watched.	3	14 to 16 days' group.	Tiedemann's Table.
Eudromias morinellus .... (Dotterel.)	.....	.....	..	"I am inclined to think it rarely lasts much longer than 18 or 20 days." 20 days. 3 weeks.	Heysham, *vide* Macgillivray, iv. p. 109; Yarrell, iii. p. 249, &c. Owen's Table. Gould, quoting Latham's 'General History of Birds.'

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Vanellus vulgaris ..... (Lapwing.)	2 hatched on 25th, 1 on 26th (exact time 25 days 16 hours), and 2 on 27th day.	Incubator.	6	16 days. "	Tiedemann's Table. Naumann, vii. p. 293.
	During 26th day from laying of last egg.	Nest watched.			
Hæmatopus ostralegus .... (Oyster-catcher.)	23 to 24 days from time when the nests were discovered, each then containing the full complement of 3 eggs.	2 nests watched for me by Col. Duthie, who is confident the last egg in each case could not have been laid many hours previous to his finding the nest.	..	21 to 24 days' group. About 3 weeks. "	Tiedemann's Table. Yarrell, iii. p. 296. Saunders, p. 544.
Recurvirostra avocetta .... (Avocet.)	.....	.....	..	17 or 18 days.	Naumann, viii. p. 232.
Scolopax rusticola..... (Woodcock.)	20th day from laying of last egg.	Nest watched.	..	16 to 18 days. 17 days. 21 days at least (bird flushed off 4 eggs 28th April, hatched 19th May).	Tiedemann's Table. Naumann, viii. p. 393. Stevenson, 'Zoologist,' 1859, p. 6602, and 'Birds of Norfolk,' ii. p. 289.
Gallinago major ..... (Great Snipe.)	.....	.....	..	16 to 18 days. 17 or 18 days. 18 days.	Tiedemann's Table. Naumann, viii. p. 307. Yarrell, iii. p. 339.
		.....	..	17 to 18 days.	Dresser, vii. p. 638.
Gallinago cœlestis ..... (Common Snipe.)	20th day from laying of last egg.	Nest watched.	..	16 to 18 days. Rather more than a fortnight.	Tiedemann's Table. Yarrell, iii. p. 345.

Tringa alpina ..... (Dunlin.)	22nd day (early on). 21 days from finding of nest with 4 eggs.	Incubator. Nest watched.	1		
Machetes pugnax ..... (Ruff.)	.....	.....	..	16 days. 17 to 19 days.	Tiedemann's Table. Cassell's Birds, iv. p. 42.
Totanus hypoleucus ..... (Common Sandpiper.)	22nd day.	Incubator.	2	2 weeks.	Naumann, viii. p. 30.
Totanus ochropus ..... (Green Sandpiper.)	.....	.....	..	21 to 24 days' group.	Tiedemann's Table.
Totanus calidris ..... (Redshank.)	.....	.....	..	14 to 16 days. About 16 days. "	Naumann, viii. p. 118. Yarrell, iii. p. 471. Saunders, p. 602.
Numenius arquata ..... (Curlew.)	30th day (early on).	Incubator.	2	21 to 24 days' group.	Tiedemann's Table.
Sterna fluviatilis ..... (Common Tern.)	One late on 22nd, the others on 23rd day.	Incubator.	3	14 to 16 days.	Tiedemann's Table.
Sterna arctica ..... (Arctic Tern.)	.....	.....	..	15 or 16 days.	Naumann, x. p. 140.
Sterna minuta ..... (Little Tern.)	.....	.....	..	14 to 16 days. A fortnight.	Tiedemann's Table. Meyer, vii. p. 97.
Sterna caspia ..... (Caspian Tern.)	.....	.....	..	About 20 days.	Meyer, vii. p. 73.
Hydrochelidon nigra .... (Black Tern.)	.....	.....	..	15 or 16 days.	Naumann, x. p. 211.
Rissa tridactyla..... (Kittiwake.)	26th day.	Incubator.	1		
Larus glaucus ..... (Glaucous Gull.)	.....	.....	..	4 weeks.	Naumann, x. p. 365.
Larus argentatus ..... (Herring Gull.)	26th day.	Hen.	1		
Larus ridibundus ..... (Black-headed Gull.)	2 out on 22nd, 4 on 23rd, and 1 on 24th day. 23 to 24 days from laying of ast egg.	Incubator. Nest watched.	7	14 to 16 days. About 17 days. 3 weeks.	Tiedemann s Table. Yarrell, iii. p. 602. Plot, as quoted in Yarrell, iii. p. 590.

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Stercorarius catarrhactes .. (Great Skua.)	.....	.....	..	About 4 weeks.	Cassell's Birds, iv. p. 201.
Procellaria pelagica ..... (Storm Petrel.)	Probably about 24 or 25 days.	Nest watched for me by an intelligent man in Shetland. The egg was laid on 8th July, and frequently visited till 2nd August, when the bird was supposed to have forsaken it. On being broken it contained a live chick on point of hatching.	1		
Fulmarus glacialis ..... (Fulmar.)	.....	.....	..	About a month? 56 to 60 days.	Macgillivray, v. p. 432. Thienemann's 'Systematische Darstellung' (Introd. p. xii).
Diomedea melanophrys .. (Black-eyebrowed Albatross.)	.....	.....	..	60 days.	W. Dougall in 'Southern Times,' as quoted by Buller, ii. p. 200.
Colymbus arcticus..... (Black-throated Diver.)	.....	.....	..	28 days.	Tiedemann's Table.
Podiceps cristatus..... (Great Crested Grebe.)	.....	.....	..	21 to 24 days' group.	Tiedemann's Table.

Podiceps nigricollis ..... (Eared Grebe.)	.....	.....	..	About 24 days. 21 to 24 days' group. 3 weeks. 3 weeks.	A. Graham in Walker's MS. Tiedemann's Table. Meyer, vii. p. 18. Seebohm, iii. p. 466.
Podiceps minor ..... (Little Grebe.)	.....	.....	..	21 to 24 days' group. 20 or 21 days.	Tiedemann's Table. Cassell's Birds, iv. p. 245.
Alca torda ..... (Razorbill.)	30th day.	Incubator. May not have been an absolutely fresh egg.	1	About 4 weeks. About a month.	Macgillivray, v. p. 355. Seebohm, iii. p. 377.
Lomvia troile ..... (Guillemot.)	30th and 33rd days. 31st day (end of).	Incubator. Hen.	2 1	28 days. A month. Appears to last a month. 30 days. Fully 30 days? Nearly a month.	Tiedemann's Table. Selby, ii. p. 421. Macgillivray, v. p. 321. Owen's Table. Saxby, p. 290. Yarrell, iv. p. 70.
Uria grylle ..... (Black Guillemot.)	.....	.....	..	24 days.	Cassell's Birds, iv. p. 251.
Fratercula arctica ..... (Puffin.)	36th day.	Incubator.	1	A month. " "Some observers say 5 weeks." 30 days. About a month.	Selby, ii. p. 440. Yarrell, iv. p. 92. Cassell's Birds, iv. p. 263. Owen's Table. Seebohm, iii. p. 367.
Eudyptes chrysocome..... (Tufted Penguin.)	.....	.....	..	About 6 weeks. *Probable time, according to Studer, 30 to 35 days.	Thomson's Voyage of the 'Challenger,' p. 167 (quoted by Buller). Zeitschrift für wissenschaftliche Zoologie, xxx. pp. 421–436.
Rhynchotus rufescens .... (Rufous Tinamou.)	.....	.....	..	21 days (hatched in Zool. Soc. Gardens).	Bartlett, P. Z. S. 1868, p. 115.
Apteryx australis ..... (Kiwi.)	.....	.....	..	6 weeks (according to a native).	Gould, as quoted in Cassell's Birds, iii. p. 310.

* Dr. Gadow, who sends me this reference, thinks that the period is more likely to be 35 to 40 days.

TABLE (*continued*).

Species.	Author's Observations.			Previous Statements.	
	Period.	Means employed.	Number of Eggs hatched.	Period.	Reference.
Casuarius galeatus? ..... (Cassowary.)	.....	.....	..	9 weeks.	Thienemann, p. 2.
Casuarius bennetti..... (Mooruk.)	.....	.....	..	7 weeks.	Sclater, P. Z. S. 1863, p. 234.
				48 days.	Owen's Table.
				52 days.	Mosenthal & Harting, p. 130.
Dromæus novæ-hollandiæ.. (Emu.)	.....	.....	..	56 days (hatched in incubator at the Zool. Soc. Gardens).	Sclater, P. Z. S. 1859, p. 205, 1863, p. 234.
				58 days; hatched by male bird in Dumfriesshire.	Gibson, Proc. R. Phys. Soc. iv. p. 210.
				"Fully 9 weeks elapsed before the eggs on which the bird sat were hatched."	Mosenthal & Harting, pp. 160, 173.
				"The normal period of incubation is about 60 days."	
Struthio camelus ..... (Ostrich.)	.....	.....	..	36 to 40 days.	Tiedemann's Table (quoting from Lichtenstein's 'Reise,' ii. p. 42).
				1 out in 39 days, 4 others shortly afterwards (in Italy); 44 days (in France).	'Zoologist,' 1861, pp. 7316, 7758.

				45 days. "This, however, would appear to have been before the expiration of the usual period of incubation, which, according to the observations of Mr. Hardy, of Algiers, lasts usually from 56 to 60 days."	Sclater, P. Z. S. 1863, p. 233.
				50 to 60 days.	Owen, p. 256.
				42 days. From experience at an Ostrich farm in Cape Colony where incubators were used.	Mosenthal & Harting, p. 215.
Rhea americana ..... (Common Rhea.)	.....	.....	..	5 weeks.	Thienemann, p. 4.
				35 days (hatched in incubator at the Zool. Soc. Gardens).	Sclater, P. Z. S. 1859, p. 205, 1863, p. 234.
				30 to 31 days.	Owen's Table.
				"46th day from the cock commencing to sit."	Claraz, P. Z. S. 1885, p. 324.
				"The male bird sat for 40 days exactly."	Mosenthal & Harting, pp. 18, 83, 92.
				35 days in the incubator, "which is somewhat less than the time occupied when hatched in the natural way."	

A glance at the Table reveals a host of discrepancies, many of which it is impossible, in the present state of our knowledge, to reconcile or account for. Regarding the periods obtained by observation of the nests, an obvious source of error lies in the difficulty of determining when the birds really begin to sit. A very natural point to reckon from is the date of laying of the last egg; but this frequently leads to serious error, as many species habitually, and others occasionally, sit before the last egg has been laid; while others, again, either do not sit at all, or only partially, for some time afterwards. As examples of the extent of the error involved in this way of reckoning, I would point to the cases in my own experience of the Long-tailed Tit and the Starling, the former not hatching for fully 16 days from the laying of the last egg, while the latter were out, in one instance, in little more than 11. Neither is it safe to count to the hatching of the last of the young, unless each egg be numbered when laid, as the last laid egg is often unfertile. By means of the incubator all these difficulties are overcome.

It seems quite unnecessary for me to discuss in detail the contents of the Table, but a few remarks upon each of the Orders may not be deemed out of place.

In the Order *Passeres*—among the European species, at any rate—we may take it as well-nigh certain that the normal period ranges from about 12 days in the case of the smallest (the Goldcrests), to 19 or 20 days in the case of the largest (the Raven). 13 to 14 days is a very common period among the great majority of the smaller members of the Order; and even the Thrushes require no more than from 14 to 15 days, a remarkably short period when we consider the size of their eggs as compared, for example, with those of the Wren, which I have shown require about 13 days. The Starling is another example of very rapid development. Owen gives 10 days as the time for the Wren; but this is not borne out by my observations. The shortest period I have seen recorded is that of the tiny New-Zealand *Zosterops cærulescens*, namely, 9 to 10 days, as given by Buller on the authority of Mr. Potts, evidently a careful and systematic observer. The *Corvidæ* stand quite alone in the

Order, having a decidedly longer period than any of their neighbours.

The *Picariæ* do not appear to differ to any marked extent from the *Passeres* in the duration of incubation. Should the data now brought together be confirmed by future observations, the Picarian periods will be slightly the longer of the two, when measured with due regard to the size of the eggs. Such tiny creatures as the Ruby-throated and the Black Humming-bird do not, according to Audubon and Audebert, take less than 10 to 12 days, and the larger forms of Woodpecker and Kingfisher, and the Roller, take from 18 to 20.

If the information as to the Parrots (*Psittaci*) be correct, they hatch in less time than I should have expected in view of their reputed longevity, for I believe there is an intimate connection between the period of incubation and the average lifetime of the bird.

Though the statements regarding the Owls (*Striges*) are rather conflicting, the weight of evidence is all in favour of a long period of incubation, an egg of the Long-eared Owl, which is scarcely bigger than that of the Ring Dove, taking fully 26 days to hatch in the incubator*. The Eagle Owl and the Snowy Owl may be held to take about 32 or 33 days.

The Diurnal Birds of Prey (the *Accipitres*) are, undoubtedly, also a long-period race, notwithstanding some of the records quoted. For instance, Tiedemann's statement that the Peregrine hatches in 18 to 19 days must be set aside as erroneous, and so likewise must Elwes's 21 days for the Golden Eagle. In all probability the former bird sits not less than 4 weeks, and the latter nearer 5. I regret that I failed to hatch any Hawks' eggs in the incubator, but the Rev. Julian Tuck's observations on the Kestrel, made at my special request, on a nest in the tower of the church at Bury St. Edmunds in the spring of 1889, proves the time in that species to be little, if at all, short of 4 weeks.

Among the *Steganopodes* the Solan Goose has a remarkably

* Several other eggs of this Owl were hatched, but, not being perfectly fresh when obtained, have not been entered in the Table, though the periods were quite in keeping with the one above mentioned.

long period, six weeks or thereabout. The great difference between the Cormorant's period and that of the Gannet is worthy of notice in connection with the fact that the former lays from 3 to 5 eggs, while the latter only lays 1.

The statements regarding the *Herodiones* are very conflicting, but I think we may hold their periods of incubation to be much on a par with those of the *Anseres*. Taking the Common Heron as a typical example of the Order, we have a period apparently identical with that of the Wild Duck, namely, 25 to 26 days, and their eggs may be said to be much about the same size. According to Naumann the Little Bittern takes from 16 to 17 days only, and we have the Stork set down at 30 days by Macgillivray.

In the case of the *Anseres* we are on much surer ground, the duration of incubation passing very naturally from 3 weeks in the smaller Ducks to about 30 days in the typical Geese, and on to 35 to 40 days in the Swans. A very common opinion in regard to the Ducks is that they all sit 28 days; but I think my experiments prove that the eggs of the Common Wild Duck hatch in from 25 to 26 days, and those of the Teal in from 21 to 22. The Flamingos are probably very similar to the Geese in this respect.

Judging by the time our own Common Pigeons—wild and tame—take to hatch (15 to 17 days), I had come to look on the *Columbæ* as a short-period group, and consequently was much surprised to find that the Nicobar and the Crowned Pigeons in the Zoological Society's Gardens took no less than 28 days to bring out their young.

It is gratifying to be able to include in my list two species of the limited Order *Pterocles*, namely the Pin-tailed and the Pallas's Sand-Grouse. The periods given, 25 and 28 days respectively, do not bear out a statement I have somewhere seen, to the effect that the duration of incubation in the case of *Syrrhaptes paradoxus* is unusually short.

The *Gallinæ* present less variation than we might expect when their great diversity of size is considered. The Quails require about 3 weeks, and a week more suffices for a Turkey. It seems strange that the period of incubation in the case

of the Common Partridge should have been so persistently stated by authors to be 21 days instead of about 24.

The *Fulicariæ* and *Alectorides* do not seem to call for any special remarks. The *Limicolæ*, however, deserve a few words. According to our present information the period ranges from about 20 days in the case of the Snipes to 29 in the Curlew. It is more protracted among the Plovers and Sandpipers—the Ring Plover and Dunlin, for example, taking fully 3 weeks—than one would expect if the size of the birds alone be considered; but we must bear in mind the disproportionately large eggs they lay. Respecting this group, little or no reliance can be placed on Tiedemann's Table; and Naumann and others are undoubtedly in error in stating that species such as the Redshank hatch in from 14 to 16 days. Neither do I believe in the duration of incubation (about 18 days) assigned by Saxby to the Golden Plover. In the case he cites, the fact that the egg he broke appeared fresh is no proof that the other three eggs in the nest were fresh. It was most probably an unfertile egg. I was once misled in this very way with regard to the eggs in a Lark's nest. I should mention that many of the *Limicolæ* remain in the egg from 2 to 3 days after chipping.

Size for size, the eggs of the *Gaviæ* probably require periods much like those of the *Limicolæ*. Tiedemann greatly understates them, and Yarrell's 17 days for the Black-headed Gull is about a week short of the actual time.

Our information regarding the *Tubinares* is too meagre to justify anything but the very general assumption that incubation is with them a much protracted process, probably well over 3 weeks in the case of the small Petrels—whose eggs are no bigger than Thrushes'—and extending, according to Mr. W. Dougall, who spent a considerable time in Auckland Island, to 60 days in the case of one of the Albatrosses, and that not the largest. Thienemann's statement that the Fulmar requires from 56 to 60 days can scarcely be credited. Macgillivray tells us that when his son visited St. Kilda on 30th June, 1840, the Fulmars' second eggs were just hatching, the first nests having "all been robbed about a month before."

The *Pygopodes*, particularly the *Alcidæ*, which lay a single large egg, sit for a lengthened period—30 to 33 days in the case of the Common Guillemot and Razorbill, and even more in the case of the Puffin, unless the egg hatched in my incubator took an abnormally long time.

I have only seen two statements regarding the period among the *Impennes*, namely, Sir Wyville Thomson's, that the Tufted Penguin takes about 6 weeks; and that of Prof. Studer, which Dr. Gadow looks upon as an under-estimate.

A solitary instance exhausts my information concerning the *Crypturi*. According to Mr. Bartlett, the Rufous Tinamou hatched its eggs in the Zoological Society's Gardens in 21 days, which is about the same time as the typical *Gallinæ* take.

The *Casuarii* are a very long-period race, longer relatively than the *Struthiones*—the Emu, for instance, requiring about 2 months' incubation, the Rhea taking from 1 to 2 weeks less; but the time seems very elastic in these two Orders. It would appear that by artificial incubation Ostrich eggs may be hatched in from 40 to 45 days, whereas in the natural state they take fron 55 to 60 days.

Unfortunately I am unable to cite a reliable record of the period of incubation among the *Apteryges*. That it is of long duration may be inferred from the fact that an Apteryx in the Zoological Gardens, London, sat on an egg the unprecedented time of within a few days of 4 months, the egg, however, proving unfertile (Bartlett, P. Z. S. 1868, p. 329).

To sum up: while in a broad sense it may be said that the larger the egg the longer the period of incubation, it is evident that such a rule cannot be applied with any certainty unless the eggs compared belong to birds possessing a considerable amount of affinity. Consequently, before we venture to predict of any two eggs, not very dissimilar in size, that the one will have a shorter period than the other, we must take into consideration the Order, or perhaps even the Family, to which each belongs, as well as their relative size. If size alone were relied on, we should conclude, for instance, that a Partridge's egg would hatch in less time than

a Raven's, instead of taking about four days longer; and that a Long-eared Owl's would take almost exactly the same time as a Ring Dove's, instead of half as long again.

Tiedemann, after remarking that "the duration of incubation differs much," makes the following statement:—"In general one finds that it is in proportion to the degree of development which the embryo reaches in the egg, so that birds whose embryo leaves the egg little developed and formed, incubate a shorter time than those whose embryo is hatched much developed. To those whose embryo leaves the egg little developed belong the Birds of Prey, the *Passeres* (Singvögel), and the *Picariæ* (Klettervögel)." The inclusion of the Birds of Prey in the group is unfortunate for the theory, for instead of having a short period of incubation, as Tiedemann supposed, they undoubtedly have a long one. The rule, no doubt, applies in many cases, but clearly not in all, for the Diurnal Birds of Prey, the Owls, and the Gannets, for example, all incubate for more or less protracted periods, yet their young are particularly helpless when hatched.

In conclusion, I must acknowledge the great obligations I am under to many friends (too numerous to particularize here) for invaluable assistance rendered in a variety of ways. To one and all I now return my sincerest thanks.

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* Morris seems to have taken his data from Meyer, who again probably followed Naumann.

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XI.—*On the Fijian Species of the Genus* Pachycephala.

By Henry Seebohm.

The acquisition of the Layard Collection of Polynesian Birds, which I have been studying for the last few months, enables me to correct some of the inaccuracies and to supply some of the deficiencies which appear in the Catalogue of the Shrikes in the National Collection (Gadow, Cat. Birds Brit. Mus. viii. pp. 185–226).

I propose to confine myself in the present paper to the species of the genus *Pachycephala* which inhabit the Fiji Islands. My friend Dr. Gadow reduces them to three species; but it seems to me that he ought to have recognized six species, with a possible seventh, which neither of us has seen. This mysterious species has been named *Pachycephala intermedia* (Layard, Ibis, 1876, p. 154). It is said to come from the north-east coast of Viti Levu, to have light yellow underparts, with a perfect though narrow black ring round the neck. It may be rash to express an opinion without having seen an example of this bird, but I am inclined to agree with Dr. Gadow that the description may refer to an abraded and faded example of *P. torquata*, a species only known from Taviuni. The narrow pectoral band is characteristic of *P. kandavensis*; but this species has a white throat, and is only known from Kandavu, so that the hypothesis that the types (which cannot be found) might have been stained examples of that species, is scarcely so tenable as that suggested by Dr. Gadow. *A priori* it must be admitted that it would be very remarkable for two such closely allied species as *P. graeffii* and *P. intermedia* to be both found on the same

island, especially as we have examples of the former from the Rewa River, on the same side of the island as the alleged locality of the latter; but, on the other hand, it cannot be denied that in every other case where the Doctor has differed in opinion from the Consul, a careful examination of the facts has proved that the Consul is right and the Doctor is wrong.

If we regard *Pachycephala intermedia* as an apocryphal species, there still remain six others which inhabit the Fiji Islands, but no two of them have ever been found on the same island. Their distribution is as follows :—

P. graeffii.....Viti Levu.
P. aurantiiventris .....Vanua Levu.
P. neglecta .....Ovalau.
P. torquata .....Taviuni.
P. kandavensis.....Kandavu.
P. vitiensis .....Ngau.

In all these species the crown is black, the back is olive-green, and the lower breast and belly are yellow. The principal characters in which they vary are :—(*a*) the colour of the tail-feathers, which are olive in some species and nearly black in others; (*b*) in the colour of the throat, which is white in some species and yellow in others; (*c*) in the black pectoral collar below the throat, which is conplete in some species, nearly complete in others, and nearly or quite obsolete in others; (*d*) in the yellow supraloral stripe, which is very large and conspicuous in some species, and obsolete or nearly so in others; and (*e*) in the tint of the yellow of the underparts, which is lemon-yellow in some species and orange-yellow in others. These characters serve to diagnose the males of these six species as follows :—

Yellow of underparts suffused with orange.
- *graeffii* ..... A very conspicuous yellow supraloral patch.
- *aurantiiventris*.. A very conspicuous yellow supraloral patch.
- *torquata*.
- *neglecta*.

Throat white .....
- *vitiensis*.
- *kandavensis* .... Tail olive.

Pachycephala neglecta, as its position implies, is somewhat intermediate between the three first and two last-mentioned species. In the two first the black pectoral collar is almost obsolete; in *P. torquata* and in *P. vitiensis* it is quite complete and very broad; in *P. neglecta* it is not quite complete; and in *P. kandavensis*, though it is complete, it is rather narrow. In the two first mentioned species the yellow supraloral patch is very conspicuous; in *P. neglecta* there are sometimes traces of it; but in *P. torquata* and in the two last I have never found any trace of it.

The males of these six species are easily determined by the characters above given, but the females and immature of both sexes are somewhat puzzling. The latter may be sorted into two groups—those with uniform chestnut or dark buff underparts, and those with greyish or brownish-white underparts streaked and barred with grey or brown. There are examples of most species in the uniform plumage moulting direct into the adult male plumage, but among the specimens of *P. neglecta* in the British Museum there is one in which the streaked and barred underparts appear to be moulting into the uniform yellow of the adult male plumage. Before the females and young can be correctly diagnosed a much larger series must be obtained.

PACHYCEPHALA GRAEFFII.

The Viti-Levu Bush Shrike was discovered on Viti Levu by Dr. Gräffe (Hartlaub, Ibis, 1866, p. 172), and the types were in the Godeffroy Museum in Hamburg.

There is no example in the Layard Collection, but there are two in the Tristram Collection procured on the Rewa River in Viti Levu by Mr. Victor Williamson, and there are three examples in the British Museum, originally sent by Kleinschmidt to the Godeffroy Museum.

The other four skins in the British Museum referred to this species by Dr. Gadow obviously belong to other species: *d* is an example of *P. kandavensis*, *e* ought to have been recognized as distinct under the name of *P. neglecta*, whilst *f* and *g* may fairly be regarded as also distinct under the name of *P. aurantiiventris*, which I propose for them in this

paper. These corrections involve the removal of all the five references to Layard from the synonymy, of which the last but one is from the Proc. Zool. Soc. and not from the 'Ibis' as quoted by Dr. Gadow.

Male. Yellow supraloral patch very conspicuous; rectrices nearly black; underparts lemon-yellow; black pectoral band almost obsolete.

PACHYCEPHALA AURANTIIVENTRIS, sp. nov.

The Vanua-Levu Bush Shrike was discovered by Mr. Layard at Bua in Vanua Levu, but was not regarded by him as distinct from the Viti-Levu species *Pachycephala graeffii*. It appears to be undescribed. It differs from its near ally in having the underparts orange-yellow, instead of lemon-yellow. The types are in the Layard Collection; there are two examples in the British Museum obtained by Dr. Smith (referred by Dr. Gadow (*op. cit.* p. 202) to *P. graeffii*), and there are four examples in the Tristram Collection.

Male. Yellow supraloral patch very conspicuous; rectrices nearly black; underparts orange-yellow; black pectoral band almost obsolete.

PACHYCEPHALA NEGLECTA.

The Ovalau Bush Shrike was discovered on Ovalau by Mr. Layard (Layard, Proc. Zool. Soc. 1879, p. 147) and the types are in the Layard Collection.

It was, like the last-named species, referred by Dr. Gadow to *P. graeffii*, an allied species from Viti Levu, from which it differs in having a very much more complete black pectoral band, and a very much less conspicuous supraloral patch. There are two examples in the British Museum, four in the Layard Collection, and one in the Tristram Collection.

Male. Yellow supraloral patch almost or quite absent; rectrices nearly black; underparts lemon-yellow; black pectoral band not quite meeting in the centre.

PACHYCEPHALA TORQUATA.

The Taviuni Bush Shrike was discovered on Taviuni by Lieutenant Liardet (Layard, Proc. Zool. Soc. 1875, p. 150), and the types are in the Layard Collection.

Dr. Gadow has described this species as having a tail as long or longer than the wing. This is a clerical error. The dimensions of the tail given as 3·85, 3·9, 3·8 inches should read 2·85, 2·9, 2·8 inches.

Male. No yellow supraloral patch; rectrices nearly black; underparts orange-yellow; black pectoral collar very broad and quite perfect.

In the synonymy of this species (*op. cit.* p. 201) Dr. Gadow includes *Pachycephala vitiensis*, Finsch and Hartlaub, Fauna Centralpolynesiens, p. 74 (part, ♀ *tantum*). It can scarcely be a matter of doubt that the female referred to belongs to *P. neglecta*, since it comes from Ovalau, and the male to *P. vitiensis*, since the description is a translation of Gray's original diagnosis of that species. Under no circumstances can it be said that any part of this reference relates to *P. torquata*, which is only known from Taviuni.

PACHYCEPHALA KANDAVENSIS.

The Kandavu Bush Shrike was described from examples obtained on Kandavu (Ramsay, Proc. Linn. Soc. New South Wales, 1877, p. 65), and the types are in the Macleay Collection in Sydney.

Dr. Gadow does not regard the Bush Shrike from Kandavu as distinguishable from that found on the island of Ngau, nor is he able to reconcile Mr. Ramsay's description of *Pachycephala kandavensis* with the examples from the island of Kandavu in the British Museum, of which there were five when the Catalogue was printed, now increased to seven by the addition of two obtained during the cruise of the 'Challenger.' I do not think that there can be any doubt that Dr. Gadow is mistaken on both these points. Species which are isolated on islands cannot be judged from quite the same standpoint as those which occupy large areas on great continents. It does sometimes happen that one island-race varies to such a degree that the variations overlap those of another island-race, whilst the extreme forms of the two races may be very distinct. In such a case the two races intergrade, though they do not interbreed, and can only be regarded as subspe-

cifically distinct. But this is not a case in point. Dr. Gadow's contention is that there is no difference between examples from Kandavu and others from Ngau. He is not willing to admit even a subspecific difference between them. I take quite another view of the question. I do not regard the two species as very closely allied. The affinities of *P. kandavensis* are not with *P. vitiensis*, which has black rectrices, but with *P. chlorura*, a species inhabiting the New Hebrides and agreeing with *P. kandavensis* in having an olive tail.

As regards Mr. Ramsay's description, it seems to me to be a good one, and as Dr. Gadow does not point out where it is defective it is impossible to guess which part of it he has misunderstood. Besides the difference in the colour of the tail, which is very marked, *P. kandavensis* diverges from *P. vitiensis* in having a broader black pectoral collar and a much more distinct yellow nuchal collar.

Male. Yellow supraloral patch absent; rectrices olive; throat white, separated from the lemon-yellow of the rest of the underparts by a complete though narrow black collar.

PACHYCEPHALA VITIENSIS.

The Ngau Bush Shrike was discovered by Dr. Rayner during the cruise of the 'Herald' (1845–1851) on the island of Ngau (Gray, 'Birds of the Tropical Islands of the Pacific Ocean,' p. 20), and the types are in the British Museum.

So far as I know, the types are unique. Dr. Gadow refers *Pachycephala optata* (Hartlaub, Ibis, 1866, p. 172) to this species; but since the type of Hartlaub's description came from Ovalau there can be no doubt that it belongs to *Pachycephala neglecta*. On the next line but one Dr. Gadow contradicts himself, the *Pachycephala vitiensis* female (Finsch and Hartlaub, Fauna Centralpolynesiens, p. 73) which he had just admitted to be that of this species being there denied to be so. The last three references are also wrong. The first of these (Layard, Ibis, 1876, p. 146) relates to a bird which is said to have a yellow throat, and to be only known from Viti Levu, and can therefore only refer to *P. graeffii*. The second (Layard, Ibis, 1876, p. 392) refers to a bird

from Kandavu, which can of course only be *P. kandavensis*. The third (Layard, Proc. Zool. Soc. 1879, p. 147; not 'Ibis' of that year as erroneously quoted by Dr. Gadow) also refers to *P. kandavensis*.

Male. Yellow supraloral patch absent; rectrices nearly black; throat white, separated from the lemon-yellow of the rest of the underparts by a broad black collar.

The females of many of these species appear to differ from each other even more than the males do, but until the differences between adult females, immature females, and immature males are discovered, it would be rash to lay much stress upon the characters by which they can apparently be distinguished from each other.

XII.—*Notes on* Eurystomus orientalis.

By H. E. Dresser, F.L.S., F.Z.S.

In a recently published part of the Proc. Zool. Soc. (P. Z. S. 1890, pp. 550–552), Mr. R. B. Sharpe has described three new species of *Eurystomus*, viz. *Eurystomus lætior*, *E. calonyx*, and *E. solomonensis*, the first two of which he has separated from *E. orientalis*. I have lately been working at this group, and as I have a considerable series in my possession from my own collection, and from those of the late Lord Tweeddale, Canon Tristram, Mr. Whitehead, and Mr. H. Seebohm, it may prove of some interest to see how far these specimens tend to confirm or to disprove Mr. Sharpe's conclusions, based on the rich collection in the British Museum, the larger portion of which, so far as *Eurystomus orientalis* is concerned, were obtained from the Hume Collection. Mr. Sharpe describes his *Eurystomus lætior* as being smaller than *E. orientalis*, as having the end of the tail black not marked with purplish blue, the head darker, the under surface brighter blue, the secondaries washed with purplish blue near the base of the outer web, and gives the habitat as the forests of Malabar, Nilghiris, Travancore Hills, and Ceylon. As regards size, he gives the length of the wing as 7·8 inches, whereas he gives

that of *E. orientalis* as 7·4, and that of *E. calonyx* as also 7·4; therefore by his own showing *E. lætior* is the largest of the three.

As regards the richness of coloration on the underparts and the blackness of the head, the richest-coloured specimens in the series before me are certainly those from Borneo and the Philippines, and there are several specimens from the latter group of islands which agree closely with Mr. Sharpe's description. I have examined two specimens from Ceylon, both of which agree with the form he names *E. calonyx* rather than with *E. lætior*. The form described under the name of *E. calonyx*, he states, differs from *E. orientalis* in having "the end of the tail black washed with purplish blue, and the whole of the black secondaries also washed with purplish blue;" and he gives its habitat as the "Himalayan Terai from Kumaon to Darjiling and Upper Assam, probably breeding throughout the whole of this range . . . from the Sardah to the Ganges, but particularly abundant in the Kotree Doon; found in summer in Eastern Siberia and Northern China, and appears to winter in Southern Tenasserim and the Malayan Peninsula, Malacca, &c."

In the series before me there is one specimen from Amoy which agrees closely with his description of *E. orientalis* and not with *E. calonyx*, and one from Camboja which agrees with Mr. Sharpe's *E. calonyx*. This latter form certainly not only winters in the Philippines, but breeds there, and is found at all seasons of the year, as there are specimens of it in the Tweeddale Collection obtained in February, March, May, June, July, August, September, and November. It appears that though the present species is partially migratory in the northern portion of its range, it is resident elsewhere. Col. Legge says that it is resident in Ceylon, Mr. Whitehead assures me that it is resident in all parts of the Malayan Archipelago that he visited, and it appears also to be a resident in the Andamans and Philippines.

In order to show more clearly the forms which are found in the different localities, I give the following tabulated results of a comparison of the 64 specimens now before

me. In his key to the species, Mr. Sharpe states that *E. orientalis* and *E. lætior* have the terminal half of the tail black, not shaded with purplish blue, whereas *E. calonyx* has the terminal half of the tail black conspicuously washed with purplish blue. I find, however, that the blue on the tail varies so greatly that it is best to separate the specimens into three categories, viz., those having the basal half of the tail only washed with blue, those having the tail from half to two-thirds washed with blue, and those having the tail washed with blue above two-thirds of its length, the two latter being, according to Mr. Sharpe, referable to his *E. calonyx*.

Locality.	Number of Specimens.	Tail washed with blue			Secondaries washed with blue	
		on basal half only.	from half to ⅔rds.	above ⅔rds.	slightly.	conspicuously.
Malacca	6	3	1	2	2	4
Java	1	..	..	1	..	1
Sumatra	1	1	..	..	1	
Billeton	1	1	..	..	1	
Borneo	2	..	1	1	..	2
Palawan	1	imperfect		..	..	1
Andamans	5	5	..	..	5	
Keeling Island.	1	..	..	1	..	1
Celebes	5	1	2	2	4	1
Ceylon	2	..	1	1	1	1
Labuan	2	..	1	1	..	2
Philippines ..	20	8	12	..	15	5
Sanghir Island	2	1	..	1	1	1
Guimeras	1	..	1	..	..	1
Ternate	1	..	..	1	..	1
Ambru	1	..	1	..	..	1
Amoy.....	1	1	..	..	1	
Camboja	1	..	..	1	..	1
Tenasserim ..	4	1	2	1	1	3
Karen Hills ..	1	..	..	1	..	1
Khasia Hills ..	1	..	..	1	..	1
Arrakan Hills .	1	..	..	1	..	1
Sikkim	3	..	1	2	..	3
	64	22	23	18	32	32

I may remark that the specimens from the Andamans vary less *inter se* than those from any other locality, and that they have, as pointed out by Mr. Sharpe, the bill rather larger, in that respect somewhat resembling *Eurystomus cras-*

sirostris. The variation in tone of colour is by no means small, some being greener, and some bluer than others, but much depends on the light, as in some lights the bird appears bluer or greener than it does in others. The greenest specimen I have examined is one from Tenasserim, and the bluest one from the Philippines, and the richest examples in general coloration and having the head darkest are some from the Philippines and N. Borneo.

The only conclusion at which I can arrive is that neither *Eurystomus lætior* nor *E. calonyx* are valid species, and that both should be united to *Eurystomus orientalis*. It is easy enough, as any ornithologist who has examined large series will know, to find a sufficient individual variation in tone of colour (more especially in richly coloured birds) in a large series to enable one to separate them into several groups; but when each group is found to be spread over almost all the range, and not to occupy any separate region, these slight variations cannot possibly be considered as of any specific value. To adopt such characters would only result in an indefinite multiplication of bad species.

I have made careful measurements of the entire series, but the examples from all the localities vary so considerably that it is scarcely worth while to give full particulars, and I will only point out that the variations are as follows:—gape 1·35 to 1·5 inch; wing 7·1 to 7·75; tail 3·9 to 4·5; tarsus 0·7 to 0·75. The largest specimen is from Ambru, and the smallest one from Sanghir Island.

As regards Mr. Sharpe's third new species, *Eurystomus solomonensis*, I have examined, besides the three specimens in the British Museum, two others from Guadalcanar, both of which have the bill without any black tip, whereas examples from New Guinea, New Britain, and New Ireland all have the culmen slightly tipped with black. Hence this character, although but a small one, appears to be constant, and the Solomon Island bird may therefore be looked on as fairly separable from *Eurystomus crassirostris*. The specific name, however, should, I think, be spelt *salomonensis* and not *solomonensis*.

XIII.—*Notes on a second Collection of Birds made by Mr. W. D. Cumming at Fao, in the Persian Gulf.* By R. Bowdler Sharpe, F.L.S., &c., Zoological Department, British Museum.

The collection which I now describe was sent to the British Museum some time ago by my excellent correspondent, Mr. W. D. Cumming. Considerable delay has taken place in the preparation of this paper, owing to the pressure of other official work, and also to the necessity of having the Passeres, the bulk of which were carbolized, carefully prepared before identification. This work has been done for the Museum by Mr. Cullingford, of Durham, and the collection of skins from Fao is now one of the most valuable of the recent contributions to the Collection.

An interesting addition to the present donation was the collection of birds' eggs which accompanied it. My readers will be glad to know that among these are eggs of the rare *Hypocolius ampelinus*, of which a figure has recently been given in the 'Proceedings of the Zoological Society' (P. Z. S. 1890, pl. xv.). Mr. Cumming, it will be remembered, was the donor of the living example of this valuable bird now in the Society's Menagerie.

I have referred to my former paper in the 'Ibis' for 1886, and also to Mr. Blanford's 'Eastern Persia,' and other well-known works.

1. Circus macrurus (Gm.) : Sharpe, Ibis, 1886, p. 476.
No. 54. Young male, Oct. 9th, 1886.

2. Circus æruginosus (L.) : Sharpe, Cat. B. Brit. Mus. i. p. 69; Blanf. East. Persia, p. 110.
55. Young male, Oct. 15th, 1886. Wing 15·2.
65. Young female, Oct. 29th, 1886. Wing 16·1.
The male is much darker than the female, and of a blackish chocolate, with a fawn-coloured head and throat.

3. Buteo desertorum (Daud.) : Sharpe, Ibis, 1886, p. 476.
Female, Sept. 14th, 1886. [Migrating in great numbers

from Arabia, passing up along the bank of the river in a north-west direction.]

4. Buteo ferox (Gm.) : Sharpe, Cat. B. Brit. Mus. i. p. 176.

Young male, Oct. 11th, 1886. [Iris a mixture of yellow and brown. Bill black at tip, plumbeous at the base. Gape yellow. Tarsi and toes yellow. Cere and orbits greenish yellow.]

5. Pernis apivorus (L.) : Sharpe, Ibis, 1876, p. 476.

A young bird, inclining to white underneath, broadly streaked with brown. [Bill and claws black; cere, gape, legs, and toes yellow. Shot among the date-trees at Fao, Sept. 23rd, 1886.]

6. Falco communis, Gm. : Sharpe, Cat. B. Brit. Mus. i. p. 376.

♂ ad., Fao, Jan. 1887.

♀ ad., Fao, Dec. 1886.

The male has a white face, but the female is of the ordinary type.

7. Falco feldeggii, Schl. : Sharpe, Cat. B. Brit. Mus. i. p. 389.

An immature female of the Lanner Falcon, Aug. 30, 1886. [I named this bird *F. peregrinus* on the authority of a Persian Shikari, who calls it Báhri, which, according to Blanford, is the name for *F. peregrinus*. To me it appears larger in the wing-measurements ($13\frac{5}{6}$) than those given for the Peregrine in the few books at my disposal, and it also wants the dark head.]

8. Falco subbuteo (L.) : Sharpe, Ibis, 1886, p. 477.

Adult, Fao, Oct. 12th, 1886. [Shot among large date-trees.]

9. Cerchneis tinnunculus (L.) : Sharpe, Cat. B. Brit. Mus. i. p. 425.

♂ juv., Sept. 22nd, 1886.

♀ ad., Oct. 9th, 1886.

10. Aquila clanga, Pall.: Sharpe, Cat. B. Brit. Mus. i. p. 248.

A young bird. [Shot by my collector, Kaldoo Asaf. Two seen together.]

11. Sturnus vulgaris, L.: Sharpe, Cat. B. Brit. Mus. xiii. p. 27.

Three specimens shot on the 10th of November. These birds are decidedly small, and the tips of the feathers are pure white. They match the birds from Morocco, which are also extraordinarily white on the breast in winter. They further belong to the purple-throated form of *S. vulgaris*, and from their small size and the other characters I have indicated I believe that they represent a small Mediterraneo-Persian race of Starling which may migrate east and west. It will be interesting if Mr. Cumming will investigate the history of the Starlings of the Persian Gulf.

12. Oriolus galbula, L.: Sharpe, Ibis, 1886, p. 477.

Two adult females, Sept. 10th.

13. Passer domesticus, L.: Sharpe, Cat. B. Brit. Mus. xii. p. 307 (1888); Oates, ed. Hume's Nests & Eggs Ind. B. ii. p. 159.

Eight eggs sent by Mr. Cumming are of a very light pattern, being white, with pale spots of greyish brown or inky black, in both cases the spots being very minute.

14. Passer flavicollis (Frankl.): Sharpe, Ibis, 1886, p. 486.

Gymnorhis flavicollis, Oates, ed. Hume's Nests & Eggs Ind. B. ii. p. 157.

Mr. Cumming sends three different types of egg for this Sparrow. One of these is distinctly Sparrow-like, being dusky brown, with scarcely any whitish ground-colour, and thickly mottled with purplish brown; axis 0·7–0·8, diam. 0·55. The second type has a greenish-white ground, with numerous well-defined spots of olive-brown, and likewise thickly mottled with ashy grey, particularly towards the larger

end; axis 0·7–0·75, diam. 0·55. The third type of egg (three sent) is so different that, but for Mr. Cumming's careful identifications, I should have put them down as the eggs of a Flycatcher of some sort. They are pinkish white, numerously but not very distinctly mottled with spots of pale reddish brown; axis 0·75, diam. 0·55.

15. Calandrella brachydactyla (Leisl.): Sharpe, Cat. B. Brit. Mus. xiii. p. 580.

An adult male was shot by Mr. Cumming on the 25th of September.

16. Alaudula minor (Cab.): Sharpe, Cat. B. Brit. Mus. xiii. p. 588.

Two female specimens are in Mr. Cumming's last collection, but the exact date of their capture is not recorded. This is one of the most interesting species represented in the series, and the range of this Lark to the eastward is thus greatly extended.

17. Galerita cristata (L.): Sharpe, Cat. B. Brit. Mus. xiii. p. 626; id. Ibis, 1886, p. 487.

The specimens sent by Mr. Cumming belong to the sandy-coloured race of Crested Lark which ranges from Asia Minor, through Persia, to the plains of India and thence to Northern China.

18. Motacilla alba, L.: Sharpe, Cat. B. Brit. Mus. x. p. 464; id. Ibis, 1886, p. 486.

Adult and young birds in winter plumage. Shot on the marsh at the back of the Telegraph Buildings, October 14th and December 14th.

19. Motacilla melanope, Pall.: Sharpe, Cat. B. Brit. Mus. x. p. 497.

An adult in winter plumage.

20. Anthus campestris (L.): Sharpe, Cat. B. Brit. Mus. x. p. 569.

A female, shot on the desert at the back of the date-forest.

21. Anthus spipoletta (L.): Sharpe, Cat. B. Brit. Mus. x. p. 592.

A specimen in winter plumage, without date.

22. Hypocolius ampelinus, Bp.: Sharpe, Ibis, 1886, p. 477.

Mr. Cumming sends sixteen eggs of this curious bird, but these afford very little help towards locating the genus *Hypocolius* in the natural system. As described by Mr. Cumming ('Ibis,' 1886, p. 479), the eggs are "glossy leaden white, with leaden-coloured blotches and spots towards the larger end, sometimes forming a ring round the larger end, and at times spreading over the entire egg." Count Salvadori has suggested to me that the affinities of *Hypocolius* might be found with the *Campophagidæ*, especially with such forms as *Chlamydochera*; but so far as the eggs go, they appear to indicate *Hypocolius* as an aberrant Shrike, and this will, I fancy, turn out to be its proper position in the system.

23. Lanius minor, Gm.: Sharpe, Ibis, 1886, p. 484.

Three immature birds. August 14th, 19th, and 24th.

24. Lanius auriculatus, Müll.: Sharpe, Ibis, 1886, p. 485.

An adult male, August 31st.

25. Lanius nubicus, Licht.: Sharpe, Ibis, 1886, p. 485.

Two young birds and a male in moult, passing from the young plumage to that of the adult, September 10th.

26. Lanius collyrio, L.: Sharpe, Ibis, 1886, p. 485.

An adult and a young male, August 30th.

27. Aedon familiaris (Ménétr.): Oates, Faun. Brit. Ind., Birds, i. p. 351.

Sylvia familiaris, Seeb. Cat. B. Brit. Mus. v. p. 36.

Nos. 10, 11, 12. Adult birds, August 11th, 14th, and 20th.

One of these specimens is very curiously marked, the

centre tail-feathers being rufous, washed irregularly with brown, unlike the other two specimens, which have the two centre tail-feathers brown.

The eggs sent by Mr. Cumming vary from the type of a Whitethroat to that of a Reed-Warbler. The ground-colour is white or greenish white, with minute freckles and spots of brown, collected somewhat at the larger end. Some have distinct underlying spots of grey, whilst others are thickly mottled with spots of greenish brown, collected at the larger end of the egg.

28. Acrocephalus streperus (V.) : Seebohm, Cat. B. Brit. Mus. v. p. 102 ; Sharpe, Ibis, 1886, p. 482.

No. 14. Obtained on the 20th of August.

29. Hypolais languida (H. & E.) : Seebohm, Cat. B. Brit. Mus. v. p. 80.

Nos. 4, 6. Two males, shot among small date-trees on the 27th and 28th of August.

30. Sylvia cinerea, Bechst. : Seebohm, Cat. B. Brit. Mus. v. p. 8 ; Oates, Faun. Brit. Ind., Birds, i. p. 395.

No. 6. A young male, August 27th.

31. Sylvia curruca (L.) : Seebohm, Cat. B. Brit. Mus. v. p. 16.

No. 16. A bird in autumn plumage, August 16th.

32. Sylvia mystacea, Ménétr. : Seebohm, t. c. p. 20; Sharpe, Trans. Linn. Soc. (2) v. part 3, p. 71.

No. 15. An adult bird, but having the black cap rather ill-defined on the nape. This is the *Sylvia rubescens* of Blanford, 'Eastern Persia,' ii. p. 77, pl. xii.

33. Phylloscopus trochilus (L.) : Seebohm, Cat. B. Brit. Mus. v. p. 56 ; Sharpe, Ibis, 1886, p. 481.

Nos. 5, 17. Adult and young in autumn, Sept. 14th.

34. Cettia orientalis, Tristr. : Oates, Faun. Brit. Ind., Birds, i. p. 441.

No. 18. An adult specimen, Nov. 4th.

35. Burnesia lepida (Blyth): Sharpe, Cat. B. Brit. Mus. vii. p. 211.

A young bird in winter plumage, Nov. 11th.

Two clutches of eggs are sent, one of five, and the other of three. They both have the ground-colour pale greenish white; but in the first clutch the reddish spots are thickly sprinkled over the egg, especially at the larger end, whereas in the second clutch they are much finer and not of so deep a rufous colour.

36. Scotocerca inquieta (Rüpp.): Sharpe, Cat. B. Brit. Mus. vii. p. 213.

I have not seen any birds of this species from Fao, but Mr. Cumming has sent eleven eggs, six in one clutch, and five in the other. They are white or creamy buff, with distinct inky black spots regularly distributed over the whole egg, with some minute, faintly indicated underlying dots of grey.

37. Merula merula (L.): Seebohm, Cat. B. Brit. Mus. v. p. 235 (1881).

Turdus merula, Blanf. t. c. p. 157.

No. 41. ♂, January 1887. Wing 5·05.

38. Erithacus hyrcanus, Blanf.: Seebohm, Cat. B. Brit. Mus. v. p. 301.

Three specimens of the Eastern Robin obtained on October 20th, and again in November. The generally paler coloration and the decidedly rufous upper tail-coverts are the characteristics of this Eastern race, which, after all, is not very different from our own Robin.

39. Cyanecula cærulecula (Pall.).

Erithacus cæruleculus, Seebohm, Cat. B. Brit. Mus. v. p. 308.

Nos. 7–9. Immature birds shot on the 12th and 13th of August.

40. Saxicola œnanthe (L.): Sharpe, Ibis, 1886, p. 483.

An adult and three young birds in freshly moulted plumage, August 19th and 24th.

41. Argya huttoni (Blyth) : Sharpe, Ibis, 1886, p. 484.
Thirteen eggs sent, of a glossy blue, taken in June. Axis 0·8–0·85, diam. 0·65.

42. Pycnonotus leucotis (Gould): Sharpe, Ibis, 1886, p. 483.
Five eggs of the usual Bulbul type, pinkish or pinkish white, thickly spotted with reddish brown, with underlying grey markings.

43. Muscicapa grisola, L.: Sharpe, Ibis, 1886, p. 480.
♂ ad. Fao, Sept. 10th, 1886.

44. Muscicapa atricapilla (L.): Sharpe, Cat. B. Brit. Mus. iv. p. 157.
♂ ad. Fao, Jan. 1887.
♂ juv. Fao, Aug. 29th, 1886.
The specimens seem to me to be absolutely identical with European examples. Mr. Palmer's Bushire example agrees with the description of *M. semitorquata* of Homeyer (Zeitschr. ges. Orn. ii. p. 185, Taf. x.), but this again seems to me to be only an old *M. atricapilla*.

45. Upupa epops, L.: Sharpe, Ibis, 1886, p. 498.
No. 30. Young bird, Aug. 30th.

46. Caprimulgus ægyptius, Licht.: Shelley, B. Egypt, p. 175.
Two female birds, Aug. 26th.

47. Cypselus pallidus, Shelley: Sharpe, Ibis, 1886, p. 487.
Three eggs. Axis 0·95–1·0, diam. 0·6.

48. Coracias garrula, L.: Sharpe, Ibis, 1886, p. 488.
No. 29. Male, Aug. 26th.
An interesting specimen in full moult.

49. Alcedo ispida, L.
Alcedo bengalensis, Sharpe, Ibis, 1886, p. 483.

An adult and young male of the smaller race (*A. bengalensis*, auct.), shot on the 29th and 30th of August.

50. Ceryle rudis (L.) : Sharpe, Monogr. Alced. p. 61, pl. 19.

A pair shot in January.

Count Salvadori (Ann. Mus. Civic. Genov. (2) iv. p. 585, 1886) has argued for the separation of the Indian Black-and-White Kingfisher (*Ceryle varia*, Strickl.) from the African form (the true *C. rudis*). I have recently gone over the large series in the British Museum, and I have come to the conclusion that there really are two recognizable races. The African bird, which is now shown to extend as far eastward as Fao, has the base of the tail spotted or barred with black.

51. Turtur cambayensis (Gm.) : Blanf. t. c. p. 270.

An adult bird; January.

52. Turtur turtur (L.).

Turtur auritus, Sharpe, Ibis, 1886, p. 489.

Mr. Cumming sends nine eggs. Axis 1·1–1·25, diam. 0·85–0·9.

53. Pterocles arenarius (Pall.) : Oates, ed. Hume's Nests & Eggs Ind. B. iii. p. 361.

Mr. Cumming sends an egg of this species of the characteristic shape and colour, the ground-colour being stony buff, spotted all over with brown or olive-brown, with underlying fainter markings of purplish grey. Axis 1·95, diam. 1·25.

54. Francolinus vulgaris (Steph.) : Oates, ed. Hume's Nests & Eggs Ind. B. iii. p. 428 (1890).

Twenty-two eggs sent by Mr. Cumming show four types of colour : plain olive, dark olive, bluish olive, and dark stone-colour. Axis 1·6–2·0, diam. 1·2–1·35.

55. Coturnix coturnix (L.) : Sharpe, t. c. p. 489.

A female (weight 4½ oz.), shot on the 14th of September.

56. Crex crex, L. : Sharpe, Ibis, 1886, p. 490.

No. 28. Adult female, October 16th.

57. Ardea cinerea, L.: Sharpe, Ibis, 1886, p. 490; Oates, ed. Hume's Nests & Eggs Ind. B. iii. p. 233.

No. 24. An immature male, shot on the 2nd of September.

No. 48. Adult, January.

One egg sent. Axis 2·4, diam. 1·75.

58. Ardea purpurea, L.: Sharpe, Ibis, 1886, p. 490; Oates, ed. Hume's Nests & Eggs Ind. B. iii. p. 235.

Three eggs forwarded by Mr. Cumming. Axis 2·2–2·3, diam. 1·65–1·7.

59. Demiegretta asha (Sykes): Sharpe, Ibis, 1886, p. 490.

No. 21. Three young specimens, in white plumage, just beginning to turn grey. [*Cf.* Mr. Cumming's remarks in 'The Ibis' for 1886, p. 490.]

Seven eggs sent by Mr. Cumming are greenish blue. Axis 1·7–2·05, diam. 1·3–1·4.

60. Bubulcus ibis, Bp.: Sharpe, Ibis, 1886, p. 491.

Nos. 18, 20, 22. Three young birds procured in September.

61. Ciconia nigra (L.): Blanf. Eastern Persia, ii. p. 297.

No. 50. ♂ imm., September 5th, 1886. Bill and legs green.

62. Ciconia alba, Bechst.: Blanf. t. c. p. 297.

Four eggs sent by Mr. Cumming; they are uniform creamy white. Axis 2·55–2·85, diam. 2·0–2·2.

63. Platalea major, T. & S.: Grant, Ibis, 1889, pp. 39–46.

Platalea leucorodia, Oates, ed. Hume's Nests & Eggs Ind. B. iii. p. 217.

"No. 25. Shot at mouth of river at Fao, Sept. 6th. Seen in large flocks."

A young bird, which Mr. Ogilvie Grant has kindly identified for me.

A large series of eggs has been sent with the present collection, and the enormous variation in size noticed by Mr. Hume is very marked. Axis 2·1–3·0, diam. 1·65–1·8. Mr. Hume does not seem to have met with such a small egg as that mentioned above.

64. Ibis melanocephala (Lath.); Oates, ed. Hume's Nests & Eggs Ind. B. iii. p. 226.
An immature male, October 25th.

65. Œdicnemus œdicnemus (L.).
Œdicnemus crepitans, Seebohm, Geogr. Distr. Charadriidæ, p. 74.
[♂. Shot in the desert at the back of Fao, Sept. 29th. Two pairs only were seen. Bill black at tip, yellow at base; iris bright yellow; legs and toes yellow.]

66. Dromas ardeola, Payk.: Oates, ed. Hume's Nests & Eggs Ind. B. iii. p. 327 (1890).
Two adult and two immature birds, October.
One egg, white, from Bushire. Axis 2·5, diam. 1·8.
Two eggs from Fao. Axis 2·45, diam. 1·8.

67. Squatarola helvetica (L.): Blanf. t. c. p. 278.
Charadrius helvetica, Seebohm, Geogr. Distr. Charadriidæ, p. 102 (1887).
No. 32. Male with black breast, Sept. 2nd.
A young bird, Oct. 18th.
No. 31. An adult bird in winter plumage, Oct. 27th.

68. Ægialitis asiatica (Pall.): Blanf. t. c. p. 279.
Charadrius asiaticus, Seeb. t. c. p. 144.
An immature bird, August 11th.

69. Ægialitis cantiana (Lath.): Blanf. t. c. p. 279.
Charadrius cantianus, Seeb. t. c. p. 168.
Nos. 11, 16, 22. Three young birds, August 12th, 22nd.

70. Ægialitis dubia (Scop.): Sharpe, Ibis, 1886, p. 492.
Ægialitis fluviatilis, Blanf. t. c. p. 279.
Charadrius minor, Seeb. t. c. p. 130.
Nos. 13, 14. Young birds, August 12th, 20th, Sept. 16th.

71. Ægialitis geoffroyi (Wagl.).
Charadrius geoffroyi, Sharpe, Ibis, 1886, p. 492; Seeb. t. c. p. 146.
Three specimens, August 19th, 20th, and 29th.

72. Glareola pratincola (L.) : Sharpe, Ibis, 1886, p. 492.
One specimen, immature, August 12th.

73. Himantopus himantopus (L.).
Himantopus candidus, Blanf. t. c. p. 286.
Himantopus melanopterus, Seeb. t. c. p. 277.
A young bird, July.

74. Recurvirostra avocetta (L.) : Blanf. t. c. p. 286.
Himantopus avocetta, Seeb. t. c. p. 289.
An adult bird, January.

75. Hæmatopus ostralegus, L. : Blanf. t. c. p. 281.
An immature male, shot on plain in front of Telegraph Buildings, Oct. 15th.

76. Totanus ochropus (L.) : Blanf. t. c. p. 285 ; Seeb. t. c. p. 368.
Two specimens, Aug. 31st, Sept. 2nd.

77. Totanus canescens (Gm.) ; Sharpe, Ibis, 1886, p. 492.
Totanus glottis (L.) : Seeb. t. c. p. 355.
[Shot at mouth of river Shat el Arab, Sept. 2nd.]

78. Totanus calidris (L.) : Blanf. t. c. p. 285 ; Sharpe, Ibis, 1886, p. 492 ; Seeb. t. c. p. 353.
Three immature birds, October.

79. Totanus hypoleucus (L.) : Seeb. t. c. p. 371.
Tringoides hypoleucus, Blanf. t. c. p. 285.
Two immature birds, Sept. 10th.

80. Tringa platyrhyncha, Temm. : Blanf. t. c. p. 284 ; Seeb. t. c. p. 433.
No. 56. Eight specimens, August and September, the latter being in full winter plumage. The others are young birds, apparently in autumn plumage.

81. Terekia cinerea (Güld.) : Blanf. t. c. p. 283 ; Sharpe, Ibis, 1886, p. 492.
Totanus terekius (Lath.) : Seeb. t. c. p. 369.
Three specimens. Mouth of river at Fao, Aug. 30th, Sept. 6th.

82. Limosa limosa (L.) : Blanf. t. c. p. 283.
Limosa melanura, Seeb. t. c. p. 390.
Male, Oct. 25. Numerous.

83. Strepsilas interpres (L.) : Blanf. t. c. p. 281 ; Seeb. t. c. p. 410.
[An adult bird, June 18th. Shot at the mouth of the river.]

84. Gallinago scolopacina, Bp. : Blanf. t. c. p. 282.
Scolopax gallinago, Seeb. t. c. p. 484.
An adult bird, October 10th.

85. Larus gelastes, Pall. : Dresser, B. Eur. viii. p. 389, pl. 601. fig. 2.
Adults and young. River Shat el Arab, August, September, and October.
Mr. Cumming sends six eggs of this species. Axis 2·0–2·35, diam. 1·55–1·7. These dimensions rather exceed those given by Mr. Hume (*l. s. c.*). The eggs are most correctly described by the latter gentleman.

86. Larus leucophæus, Licht. : Dresser, B. Eur. viii. p. 411, pl. 602. fig. 2.
Larus argentatus, Blanf. t. c. p. 290.
Shot at mouth of river Shat el Arab, September and October.

87. Sterna minuta, L. : Blanf. t. c. p. 294 ; Dresser, B. Eur. viii. p. 279, pl. 582.
Three adult birds shot on the 22nd of August, and one adult female procured on the 15th of September.
Two eggs are sent, of the usual pale type. Axis 1·25–1·3, diam. 0·9.

88. Sterna caspia, Pall. : Blanf. t. c. p. 293 ; Dresser, B. Eur. viii. p. 289, pl. 584.
No. 66. An adult bird.

89. Sterna bergii, Licht. : Oates, ed. Hume's Nests & Eggs Ind. B. ii. p. 297.
Six eggs. Axis 2·35–2·7, diam. 1·75–1·85.

All these eggs are of different types, and correspond with the extreme variations noticed by Mr. Hume.

90. Sterna anglica, Mont.: Dresser, B. Eur. viii. p. 295, pl. 585; Oates, ed. Hume's Nests & Eggs Ind. B. i. p. 304.

[Female. Shot whilst flying over fields at back of date-trees, August 27th.]

Six eggs measure—axis 1·95–2·05, diam. 1·35–1·45. The eggs are well described by Mr. Hume (*l. c.*).

91. Sterna hybrida, Pall.: Blanf. t. c. p. 294.

Hydrochelidon hybrida, Dresser, B. Eur. viii. p. 315, pls. 588, 589.

A young bird in winter plumage, August 22nd.

An adult in change of plumage, August 26th.

An adult bird in change of plumage, shot at mouth of river at Fao, on the 9th of September.

A young bird in winter plumage, September 14th.

92. Mergus serrator, L.: Dresser, B. Eur. vi. p. 693, pl. 453.

[Shot at Jask by Mr. A. J. V. Palmer. A large flock seen.]

93. Dafila acuta (L.); Blanf. t. c. p. 301.

Male. [Shot on marsh at back of Telegraph Bungalow, October 19th.]

94. Mareca penelope (L.): Blanf. t. c. p. 301.

Two adult males, October 25th.

95. Pelecanus mitratus, Licht.: Heugl. Orn. N.O.-Afr. iv. p. 1500; Sclater, P. Z. S. 1868, p. 266.

Pelecanus minor, Shelley, B. Egypt, p. 294.

Head of adult.

Young, October 24th, 1886.

Four eggs sent. Axis 3·4–3·9, diam. 2·1–2·4.

XIV.—*Descriptions of fourteen new Species of Birds discovered by Mr. F. J. Jackson in Eastern Africa.* By R. Bowdler Sharpe, F.Z.S., F.L.S.

During his recent journey to Uganda Mr. Jackson ascended Mount Elgon *, which lies north of the eastern extremity of Victoria Nyanza, and traversed other districts previously unexplored by naturalists. Mr. Jackson made a very fine collection of birds, amongst which a preliminary examination enables me to discriminate fourteen new species. Of these I now give short descriptions, and I hope to be able to give a full account of Mr. Jackson's collections in a future number of 'The Ibis.'

1. Sycobrotus insignis, sp. n.

Black and yellow: entire back, from the hind neck to the upper tail-coverts, yellow; the latter as well as the scapulars black, washed with yellow; crown and sides of head, chin, and sides of throat black; rest of under surface golden yellow; under tail-coverts a little more orange; wings and tail black; under wing-coverts white. Total length 5·7 inches, culmen 0·6, wing 3·25, tail 1·9, tarsus 0·75.

Hab. Mount Elgon.

This is an entirely new species, quite unlike any of the others, by reason of its yellow back.

2. Heterhyphantes stephanophorus, sp. n.

Entirely black above and below, excepting the forehead and centre of crown, the eyebrows, sides of face, ear-coverts, and hinder cheeks, which are orange-yellow; the sides of the face are almost entirely orange, excepting the base of the cheeks, the lores, and a broad streak through the eye: bill black; legs horn-blue; iris crimson-brown. Total length 5·7 inches, culmen 0·75, wing 3·05, tail 2·1, tarsus 0·85.

Hab. Mau.

This new species of Weaver-bird is closely allied to *H. melanogaster* from the Cameroons (*cf.* Cat. B. xiii. p. 417), but is at once distinguished by its black throat.

* See the map in Thomson's 'Masai-Land.'

3. Nigrita schistacea, sp. n.

Female. Dark ashy grey above, lighter grey on the lower back and rump; wings and tail black, with tiny spots of white on the wing-coverts; forehead, eyebrows, sides of face, and entire under surface of body black; axillaries and under wing-coverts white; between the black of the forehead and the grey of the hinder crown and neck runs a narrow line of white: bill black; legs brown; iris yellow. Total length 5·3 inches, culmen 0·45, wing 2·65, tail 1·95, tarsus 0·7.

Hab. Sotik.

Allied to *N. emiliæ* of Sharpe, but rather larger and much darker, the back being dark slaty grey instead of pearly grey; consequently the white line which borders the black forehead is very much more distinct.

4. Crithagra albifrons, sp. n.

Male. Olive-brown, with whitish margins to the wing-coverts and inner secondaries; wing-feathers and tail-feathers dark brown, edged with olive-yellow; a spot of white on each side of the base of the bill, forming together a band across the base of the forehead; ear-coverts dusky brown, as well as the cheeks and chin; a whitish patch on the fore part of the ear-coverts; throat dull whitish, spotted with black; lower throat and breast dull brown; flanks dull brown, with darker brown stripes; lower breast and abdomen pale ashy fulvous, as well as the under tail-coverts; under wing-coverts and axillaries olive-yellow: bill dusky horn-colour; legs brown; iris brown. Total length 6·2 inches, culmen 0·6, wing 3·2, tail 2·55, tarsus 0·8.

Hab. Kikuyu.

This is a representative form of *C. burtoni* of the Cameroons, but it is a smaller bird, has a white patch on the ear-coverts, the lower throat whitish spotted with black, and is further distinguished by the narrow brown stripes on the sides of the body.

5. Xenocichla kikuyuensis, sp. n.

Olive-green: wings and tail the same colour; head, nape, and sides of neck slaty grey; sides of face and entire throat

clearer slaty grey, with a white line above the eye, a whitish freckling below the eye, and having the ear-coverts distinctly streaked with white; breast and sides of body olive-yellow, bright yellow in the centre of the breast and abdomen. Total length 7·5 inches, culmen 0·7, wing 3·6, tail 3·3, tarsus 0·95.

Hab. Kikuyu.

A representative of another Cameroons form, *X. tephrolæma* of Gray, but differing in its much smaller bill, purer grey head and throat, and in the white streaks to the ear-coverts.

6. Hirundo arcticincta, sp. n.

Glossy blue above, with a chestnut forehead and rufous throat; sides of face and a narrow line encircling the throat blue like the back; rest of under surface brown, with the centre of the breast and abdomen white; under tail-coverts brown, tipped with white; tail-feathers with large white patch on all but the centre ones. Total length 5·8 inches, culmen 0·4, wing 4·75, tail 2·7, tarsus 0·4.

Hab. Mount Elgon, alt. 7000 ft.

This Swallow is a representative form of *H. angolensis*, from which it differs in having the centre of the breast and abdomen white, and in having the under tail-coverts brown, broadly edged with pure white, instead of brown or brownish white.

7. Apalis pulchra, sp. n.

Grey above; tail black, outer feathers all broadly tipped with white; throat and breast white; across the chest a broad black collar; sides of body bright rufous. Total length 5·5 inches, culmen 0·7, wing 2·25, tail 2·5, tarsus 0·9.

Hab. Mount Elgon, in thick forest.

This species seems to have no near ally in the genus *Apalis*, its rufous flanks, grey head, and black pectoral collar distinguishing it from all the other members of the genus.

8. Apalis jacksoni, sp. n.

Male. Olive-yellow above: wings grey; primaries black edged with white, broader on the secondaries, so as to form a streak down the wing; upper tail-coverts and tail dark grey,

all the feathers tipped with white, increasing in extent towards the outer feather, of which it occupies the greater part of the outer web as well; head slaty grey; lores, sides of face, and ear-coverts black, followed by a broad moustachial streak of white along the cheeks; throat black; fore neck and breast bright yellow, tinged with green on the sides of the body; thighs grey; under tail-coverts white; under wing-coverts white, washed with yellow. Total length 5·4 inches, culmen 0·6, wing 2·2, tail 2·55, tarsus 0·8.

Hab. Mount Elgon.

I have allowed this bird to stand in the genus *Apalis*, but I am not sure that *A. pulchra* is congeneric with it. For the present, however, I propose to retain this very handsome new species in the neighbourhood of *Apalis thoracica*. Its black throat and white moustache render it easily recognizable.

9. Euprinodes cinereus, sp. n.

Male. Slaty grey, a trifle browner on the head; wing-coverts like the back; quills blackish, externally slaty grey; tail-feathers grey, the three outer feathers white, with the exception of a blackish base to the inner web, the fourth with a wedge-shaped mark of white; under surface of body white, with a tinge of buff on the chest and sides of body. Total length 5·5 inches, culmen 0·55, wing 2·25, tail 2·5, tarsus 0·75.

Hab. Mount Elgon.

This species appears to me to have no very near ally. It is larger than *E. olivaceus*, and has the upper surface grey instead of olive-green.

10. Sylviella leucophrys, sp. n.

Female. Above dull olive; crown dark chestnut with a broad lateral band of white over each eye, confining a narrow frontal streak of dark chestnut; wings and tail dusky brown, edged with bright olive-yellow, the edge of the wing bright yellow; sides of face, throat, and underparts white; a streak of chestnut through the eye; the sides of the body ashy grey; under tail-coverts bright yellow, as well as the

under wing-coverts. Total length 3·4 inches, culmen 0·45, wing 2·3, tail 1·0, tarsus 0·75.

Hab. Mount Elgon.

The nearest ally to this new species is probably *S. rufica-pilla* of Bocage, but the broad white superciliary line at once distinguishes it.

11. Trochocercus albonotatus, sp. n.

Above slate-colour, with a black crest; wings like the back, the quill-feathers more dusky; tail-feathers blackish, the outer ones with broad white tips; under surface dark slate-colour, the lower breast, abdomen, and under tail-coverts white. Total length 5·6 inches, culmen 0·45, wing 2·4, tail 2·75, tarsus 0·6.

Hab. Mount Elgon.

This seems to be a very distinct species of *Trochocercus*, nearly allied to *T. cyanomelas*, but differing in the absence of the white patch on the wings, and in having the tail-feathers tipped with white.

12. Graucalus purus, sp. n.

Male. Pearly grey: wings rather darker; primaries black, edged with grey like the back; tail blackish; base of forehead, lores, and fore part of cheeks black; crown of head lighter grey than the back; all the region of the eye hoary white; entire under surface of body slaty grey. Total length 9 inches, culmen 0·7, wing 4·8, tail 3·5, tarsus 0·85.

Female. Similar to the male, but lacking the black on the lores. Total length 9·5 inches, culmen 0·75, wing 4·7, tail 3·7, tarsus 0·85.

Hab. Mount Elgon.

This Cuckoo-Shrike is a small representative of *Graucalus cæsius* of South Africa. If there had been any truth in the latter species having been got in Quamamil by Prince Paul of Würtemberg (*cf.* Heugl. Orn. N.O.-Afr. i. p. 420), we might have expected that it would have been found to be a hen of *G. purus*; but Dr. Hartlaub has already pointed out that Heuglin's description of the female agrees absolutely with the South-African bird, and there is no doubt that

Hartlaub is right. The primaries are distinctly stated to be "anguste albido marginatis;" and this is the character of *G. cæsius*, for in *G. purus* the quills are externally slaty grey like the back.

13. Gymnobucco cinereiceps, sp. n.

Brown above and beneath, with paler brown margins to the feathers; wing-feathers brown; tail blackish; head entirely dark slaty grey; throat lighter ashy grey, as well as the sides of the neck; two frontal tufts of dark sandy colour; the forehead streaked with straw-yellow. Total length 7 inches, culmen 0·85, wing 4, tail 2·4, tarsus 0·9.

Hab. Mount Elgon.

This species differs from the true *G. bonapartii* in its much larger size and grey head and neck. I think that Mr. Bohndorff's skin from Sassa in the British Museum is probably referable to *G. cinereiceps*, but the specimen is young and difficult to determine.

14. Trachyphonus elgonensis, sp. n.

Purplish black: wings and tail black, with a large white patch on the inner wing-coverts; forehead and crown dark crimson, continued down the sides of the neck; ear-coverts and cheeks black, washed with crimson; throat and fore neck black, each feather tipped with ashy grey; breast and abdomen bright lemon-yellow, separated from the spotted throat by a band of bright crimson; sides of body black, largely spotted with yellow; under wing-coverts white. Total length 9 inches, culmen 0·9, wing 4, tail 3·8, tarsus 1·05.

Hab. Mount Elgon.

This is very closely allied to *T. purpuratus* of Gaboon, but nevertheless appears to be worthy of distinction, as it is smaller, with a much smaller bill, and has a much brighter crimson wash on the forehead: the crimson border to the black of the sides of the neck and throat is also very much brighter than in the Gaboon species.

XV.—*On some new Francolins and a new Hornbill discovered by Mr. F. J. Jackson in Eastern Africa.* By W. R. Ogilvie-Grant.

1. Francolinus jacksoni, sp. nov.

Forehead, lores, and fore part of cheeks dull red. Chin and upper part of throat white, with narrow rufous shaft-streaks. Superciliary stripes, hinder part of cheeks, and lower part of neck the same, but with wider rufous shaft-streaks. Top of the head and nape reddish brown, with narrow black and grey vermiculated margins. Ear-coverts light brown. Neck, chest, breast, and belly bright chestnut, each feather margined on both sides with white, speckled in some with black. Feathers of the upper back with darker chestnut centres, and black and grey vermiculated margins, the chestnut gradually disappearing towards the lower back and on the shoulders, where the whole feathers are finely vermiculated with black and grey, and only brownish-red towards the middle. Lower back, wings, and rump brown, inclining to sienna on the outer wing-coverts, upper tail-coverts, and tail. Feathers of the sides, flanks, lower belly, and under tail-coverts with dark chestnut centres, widely margined with black and grey vermiculations. A pair of strong spurs, supplemented by a second blunt knob on the left tarsus. Total length 15·5 inches, wing 9·1, tail 5·2, tarsus 2·8, culmen 1·2.

The tip of the second primary-quill falls between the ninth and tenth in length, and the sixth is slightly longer than the fifth and seventh. The type specimen is labelled as follows:—

"♂ adult. Irides brown; eyelids coral-red. Bill dark coral-red. Legs in front of tibia coral-red; hinder part dusky. August." (*F. J. Jackson.*)

A second rather younger male, with the tarsi armed with a pair of blunt knobs, differs slightly from the above in its somewhat smaller size, and in having the outer web of the secondary quills and the tail-feathers brighter rufous. Total length 14·7 inches, wing 8·7, tail 4·8, tarsus 2·6, culmen 1·1.

The full number of tail-feathers is no doubt 14.

This specimen is labelled :—

"♂. Bill dark coral-red. Eyelids lighter ditto. Legs, front of tibia coral-red, behind darker. Irides brown. September."

This new and splendid Francolin I have the pleasure of naming after its discoverer, the indefatigable naturalist, Mr. F. J. Jackson, F.Z.S. It is strikingly distinct, and, so far as I am aware, perfectly unlike any Francolin hitherto described. The only species at all allied to it is *F. schuetti*, which it resembles in the style of plumage and in having the bill coral-red, but it is quite different, while in size it is equal to *F. erkelii*.

Two adult male specimens were obtained by Mr. Jackson in Kikuyu. The older specimen is the type of the present description.

2. Francolinus gedgii, sp. nov.

Adult male. Top of the head and upper parts rich dark brown; lores black; a superciliary white stripe commences behind the nostrils, and is prolonged on either side of the head. A black patch above the gape edged above with white, ear-coverts rufous; feathers on the sides of the head and neck white with wide black centres. Chin and throat pure white. Feathers on the back and sides of the neck, back, and wing-coverts margined on either side with white, those of the lower back with an olive-brown patch on either side of the extremity; rump and upper tail-coverts olive-brown with dark centres, the latter irregularly edged and marked with buff. Chest and rest of underparts pale buff, with wide black shaft-streaks; some of the feathers of the sides and flanks ornamented in addition with an oval chestnut patch, edged internally with black on the margin of either web. Wings dark brown; outer primaries, with the terminal part of the outer web margined, and the basal part barred with buff, the greater part of the terminal half of the inner web is also buff; rest of the primaries and the secondaries are marked, barred, and irregularly margined with buff. Tail dark brown, with narrow wavy bars and margins of pale buff.

The bill appears to have been darkish horny black, orange at the gape; and the bare patch before and behind the eye orange-red.

Wing 7·5 inches, tail 2·8, tarsus 2·4.

The specimen here described was collected by Mr. Gedge, Mr. Jackson's colleague, in whose honour I have named it.

It is labelled as follows :—

"♂. Elgon-plains. Legs brown in front, reddish brown behind. Irides dark brown. 2. ii. 90."

This Francolin belongs to the group containing *F. clappertoni* and *F. rueppelli*, and most probably *F. hartlaubi*; but I have never seen a specimen of the last-named species, which was described from an immature male obtained at Huilla, W. Africa. From the description, however, it would appear that *F. hartlaubi* is closely allied to the first two as well as to the present species. All these Francolins belong to a group characterized by having the outer webs of the outer primaries (which are dark brown) margined on the terminal half and *barred on the basal half with buff*, and either the terminal part of the inner webs almost entirely buff, as in *F. clappertoni* and *F. gedgii*, or largely barred and marked with that colour, as in *F. rueppelli* and *F. hartlaubi*. Every feather of the breast and underparts is dark brown, margined with buff.

These four species may be distinguished as follows :—

I. Back of the neck and mantle olive-brown or dark brown, margined with white or pale buff.
  A. Feathers on the chest buff, with a wide brownish-black stripe down the middle. Terminal part of the inner webs of the inner primaries buff. A patch of black feathers above the gape.
    a. Top of the head and ground-colour of the upper parts reddish or olive-brown; feathers of the mantle widely margined all round with whitish buff ..... *F. clappertoni.*
    b. Top of the head and ground-colour of the rest of the upper parts rich dark brown; the feathers of the mantle narrowly margined on the sides with white ..... *F. gedgii.*

B. Feathers on the chest dark brown, narrowly margined with buffy white. Terminal part of the inner webs of the inner primaries dark brown, marked and barred with buff and rust. Feathers above the gape white ..... *F. rueppelli.*

II. Back of the neck and mantle ashy brown, spotted with fulvous and black ..... *F. hartlaubi.*

3. Francolinus elgonensis, sp. nov.

In 'The Ibis' for 1890 (p. 347) I published some notes on *Francolinus gariepensis*, Smith, and its allies—a group to which I added a new species, *F. shelleyi*. The present Francolin makes one more of the same section.

Adult female. Most nearly allied to *F. shelleyi*, from which it differs in having the head black, each feather being edged with rufous; the fore part, sides, and back of the neck and nape, between the upper black and white stripes, rufous-chestnut, each feather ornamented with a round terminal black spot; superciliary stripes and the sides of the nape between the upper and lower black and white stripes buff. The feathers of the back and rest of upper parts rich black, edged and barred with sandy brown and buff, and with the buff shaft-stripes much reduced in width. The chest and breast-feathers either chestnut with a subterminal wavy black bar, or chestnut on the outer web and buff barred with black on the inner; the belly and rest of underparts black, tipped and barred with buff mixed with rufous. The primaries and the inner secondaries bright chestnut, barred and mottled with black towards the tip; and the outer secondaries dark brown, with regular narrow bars of buff and rufous on both webs. Wing 6·9 inches, tail 3·2, tarsus 1·8.

Mr. Jackson's notes are as follows:—

"♀ adult. Irides brown. Bill dusky horn, lower mandible fading into white horn at base. Legs pale yellowish white. Shot out of a flock of four at 11,000 feet, Elgon, 15. ii. 90. Think it is the same kind as seen on Mau at 9000 feet."

4. Francolinus streptophorus, sp. nov.

This species is not very nearly allied to any known to me, nor does it conveniently fall into any of the known groups;

but it comes closest, on the whole, to *F. granti* and its allies (see Grant, Ibis, 1890, p. 345).

Of this new bird there are four examples—a young and an adult female and two fully adult males. The plumage of both sexes on the head, back, wings, rump, and tail closely resembles that of *F. granti* already described by me in the above-mentioned paper; but the mantle and upper chest (of which the feathers are barred with black and white), and the chestnut nape, sides of the neck, sides of the throat, cheeks, lores, and superciliary stripe, distinguish the present species at a glance from every other known Francolin. Moreover, the feathers of the lower back, rump, and scapulars are largely blotched on one or both webs with rich brown; the superciliary stripe and the hinder part of the chestnut cheek and side of throat are edged above with white. The chin and throat are also white, some of the feathers round the edges tipped with chestnut. The lower chest and rest of underparts are pale buff, the former crossed with wavy black bars only, and the latter, especially on the sides and flanks, with large oblong black blotches on one or both webs of the feathers, and wavy bars of the same colour.

Neither sex bears any trace of a spur.

♂. Wing 6·2 inches, tail 2·7, tarsus 1·55.

♀. Wing 5·9 inches, tail 2·5, tarsus 1·5.

The following are Mr. Jackson's notes:—

"Irides bright brown. Bill dusky; gape and base of lower mandible yellow. Legs dull yellow. Noticed in pairs or singly, and first seen at S. foot of Elgon, 1. iii. 90."

5. Lophoceros jacksoni, sp. nov.

This very distinct species of Hornbill, of which only one adult specimen was obtained in Suk, north of Kavirondo, is most nearly allied to *L. deckeni* (Cab.) from Teita and Lamu, but may be at once distinguished by having the wing-coverts ornamented with subterminal oval white spots, these coverts being uniform black in *L. deckeni*.

Total length 19·5 inches, wing 7·5, tail 8·6, tarsus 1·5.

The specimen is labelled:—

"♂. Torquel, Suk. 27. xii. 89." (*F. J. Jackson.*)

XVI.—*Notices of recent Ornithological Publications.*

1. *Berlepsch and Leverkühn on South-American Birds.*

[Studien über einige südamerikanische Vögel, nebst Beschreibungen neuer Arten. Von Hans v. Berlepsch und Paul Leverkühn. 'Ornis, vi. p. 1.]

Graf v. Berlepsch and Herr Leverkühn give us an account of the results of their examination of the specimens of birds in the Museum of Kiel which were collected by the late Prof. Behn during his voyage round the world in the Danish corvette 'Galatea' in the years 1845–47. During the stay of the 'Galatea' in South America, Prof. Behn crossed the interior of that continent, and obtained many interesting land-birds (*cf.* Leverkühn in J. f. O. 1889, p. 101). The authors give us excellent notes on 35 species, amongst which are described as new species *Synallaxis cabanisi, S. heterocerca, Dendrornis lineatocapilla,* and *Myrmotherula behni,* and, as new subspecies, *Troglodytes furvus rex, Myiarchus tyrannulus chlorepiscius, Grallaria imperator intercedens,* and *Chlorœnas plumbea bogotensis.* Three species are provided with provisional names—*Elainia lophotes, Myiarchus bahiæ,* and *Heterocercus angosturæ.* The following species are figured:—*Dendrornis lineatocapilla, Myrmotherula behni, Chasiempis sandwichensis* jr., *Homorus galathea,* and *Grallaria haplonota.*

2. *Blasius on new Birds from the Sooloo Islands.*

[Die wichtigsten Ergebnisse von Dr. Platen's ornithologischen Forschungen auf den Sulu-Inseln. Von Prof. Dr. Wilh. Blasius. Sonderabdr. a. Cabanis' J. f. O. Jahrg. 1890, p. 137.]

After a short *résumé* of our authorities on the birds of the Sooloo group, Dr. Blasius gives us an account of a collection of 304 skins made by Dr. Platen and his wife in 1887 in Jolo-Sooloo, and transmitted to Herr Nehrkorn. The new species and subspecies, some of which have been already characterized in the 'Braunschweigische Anzeige,' are *Prioniturus discurus suluensis, Thriponax javensis suluensis, Eudynamis mindanensis albo-maculata, Ceyx margarethæ, C. suluensis, Hyloterpe homeyeri,* and *Criniger haynaldi.* In

all 21 species are thus added to the Avifauna of the Sooloo group.

3. *Blasius on Birds from Mindanao.*

[Die von Herrn Dr. Platen und dessen Gemahlin im Sommer 1889 bei Daodo auf Mindanao gesammelten Vögel. Von Prof. Dr. Wilh. Blasius. J. f. O. 1890, p. 144.]

Dr. W. Blasius received the collection of birds made by Dr. Platen and his wife in Mindanao in the summer of 1889 from Herr Nehrkorn for identification, and found amongst them examples of 31 species new to the fauna of Mindanao. Of these 31 species 7 (*Ptilopyga mindanensis, Mixornis plateni, Micropus nehrkorni, Muscicapula mindanensis, Arachnothera claræ, Ceyx platenæ*, and *Ceyx margarethæ*) are regarded as new to science, and were described in the 'Braunschweigische Anzeige' of March and April last. Their characters are now repeated. The separate copy before us is dated August 1st, 1890.

4. *Brusina on the Birds of Croatia and Slavonia.*

[Motriocem ptičjega Svijeta. Naputak i popis Domaćih ptica. Sastavio S. Brusina. Glasnika Hrv. Naravoslov. Družtva v.]

A *résumé* in French, appended to this memoir, informs us that it contains a translation of the instructions of the Committees of Austria and Hungary and of that of Dr. R. Blasius as regards preparations for the Ornithological Congress of 1891 at Budapest. This is followed by a complete list of the birds of Croatia, Slavonia, and Dalmatia, together with those of Istria, Bosnia, Herzegovina, Servia, and Montenegro —that is, of all the Croato-Servian provinces. In this series 408 species are enumerated. Of 304 of them, the author informs us, the National Zoological Museum of Agram possesses well-mounted examples, which number altogether nearly 3000 specimens.

5. *Büttikofer on Birds from Liberia.*

[Zoological Researches in Liberia. On a series of Birds collected by Mr. A. T. Demery in the district of Grand Cape Mount. By J. Büttikofer. Notes Leyd. Mus. xii. p. 197.]

The author gives us an account of two collections made by Mr. A. T. Demery, who has been specially prepared for this service in the Leyden Museum, in Western Liberia. Specimens of 87 species are in the series, of which two, *Zosterops demeryi* and *Z. obsoleta*, are described as new to science. Several others are new to Liberia. A single female example of *Charadrius forbesi* (Shelley, Ibis, 1883, p. 561) was obtained. A series of examples of *Hirundo rustica* are described, which confirm Sharpe and Dresser's statement that our Swallows arrive in their winter-quarters with the under surface nearly, in some instances quite, white, but shortly after their arrival (not shortly before their departure, as supposed by Sharpe and Dresser) change their colour by moulting into a deep buff, and retain it until they leave for the north again.

The species of birds known to the author from Liberia are now 238 in number.

6. *Coues's Handbook of Ornithology.*

[Handbook of Field and General Ornithology. A Manual of the structure and classification of Birds, with instructions for collecting and preserving specimens. By Professor Elliott Coues, M.A., M.D. London: Macmillan, 1 vol. 8vo, pp. 344.]

This is an English reprint of the introductory portion of Dr. Coues's well-known 'Key to North-American Birds,' published in 1884. Of the character and value of this excellent piece of work we have already expressed ourselves in tolerably emphatic terms (see Ibis, 1885, p. 100), and we need not now repeat them. It may suffice to say that in our opinion there is no information of this sort that we are acquainted with so well compiled and so likely to be useful to the ornithological student as that contained in the present essays, and that our best thanks are due to Messrs. Macmillan for reprinting them in this convenient form—only we do not understand why they should have waited so long to do it. And it would have been better perhaps to have arranged with the author to revise the work. Science moves fast now-a-days, and after seven years many statements that

would have been quite accurate at the time of writing them require correction.

7. *Feilden on the Domicile of the Diablotin.*

[The Deserted Domicile of the Diablotin in Dominica. By Col. H. W. Feilden, F.G.S., C.M.Z.S. Trans. Norfolk & Norw. Nat. Soc. v. p. 24.]

The Capped Petrel or Diablotin (*Œstrelata hæsitata*) formerly bred on the tops of the mountains of Dominica, but seems to have been exterminated by the Opossums (*Didelphys cancrivora*) which have been recently introduced. Col. Feilden gives us an interesting account of his visit to the former homes of this Petrel, and much useful information, extracted from the works of old authors, on its habits and on the various modes of capturing it formerly prevalent.

8. *Giglioli on the Results of the Ornithological Investigation of Italy.*

[Primo Resoconto dei Risultati della Inchiesta Ornitologica in Italia. Parte seconda. Avifaune Locali. Risultati della Inchiesta Ornitologica nelle singole provincie. Compilato dal Dottore Enrico Hillyer Giglioli. 8vo. Firenze, 1890, pp. 693.]

We have already noticed the first part of this report*. The second, now before us, contains the special reports on the birds of the different subregions or provinces into which the author has divided the area of the Italian Avifauna, and contains a large mass of information.

We observe that Dr. Giglioli believes that he has once seen an example of *Sitta whiteheadi* near Ponte alla Leccia, in Corsica, in September 1877.

9. *Hartlaub on Emin Pasha's new Birds.*

[Ueber einige neue von Dr. Emin Pascha im inneren Ostafrika entdeckte Arten. Von Dr. G. Hartlaub. J. f. O. 1890 (April number).]

Dr. Emin Pasha has sent the specimens of birds collected during his transit from the Albert Nyanza to Bagomoyo to his old correspondent Dr. Hartlaub, who is engaged in

* See 'Ibis,' 1890, p. 114.

working them out. In the meanwhile four species believed to be new are described under the following names :—*Nectarinia filiola, Burnesia reichenowi, Bradypterus alfredi,* and *Pratincola emmæ.*

10. *Holtz on the Irruption of* Syrrhaptes *of* 1888.

[Ueber das Steppenhuhn, *Syrrhaptes paradoxus*, Ill., und dessen zweite Masseneinwanderung in Europa im Jahre 1888. Von Ludwig Holtz. 8vo. Berlin, 1890.]

This is in continuation of the author's memoir on the same subject published at Greifswald in 1888. He now finds it expedient to preface this account of his later investigations by more than twenty pages of extracts from various writers, and especially from Radde, which have been known to our readers for upwards of a quarter of a century (Ibis, 1884, pp. 188–190). The most important part of the present treatise is that (pp. 40–50) in which he exposes the untrustworthiness of many reports of the breeding of Pallas's Sand-Grouse in Germany, and then (pp. 51–57) recounts the very few instances in which there is good evidence of its having laid eggs in that country in 1888; but, through omission of the customary quotation marks, it is often hard to make out whether Herr Holtz is speaking from his own experience or from that of others. The precise number of eggs found in the Empire is given (p. 64) as two sets of three each, with two single eggs in Schleswig-Holstein, and a single egg in Hanover; but in no case was a young bird observed. The rest of the treatise is occupied by an enumeration of occurrences observed in 1889, and a general summary of the whole.

11. *Hume and Oates's Nests and Eggs of Indian Birds.*

[The Nests and Eggs of Indian Birds. By Allan O. Hume, C.B. Second Edition, by Eugene Oates. Vols. II., III. With eight Portraits. Pp. 420 and pp. 461. 8vo. London, 1890, R. H. Porter.]

Mr. Oates, we are glad to say, has found time to finish his new edition of Mr. Hume's 'Nests and Eggs of Indian Birds' before his return to India, and vols. 2 and 3, com-

pleting the work, are now before us. We have already noticed the first volume (Ibis, 1890, p. 374), which contains more or less information about the nests and eggs of 278 species of the Passerine Birds of India, and carries the subject down to the end of the Sturnidæ. In the second volume the Passeres are concluded, and the nesting and eggs of the birds of the Orders Eurylæmi, Scansores, Upupæ, Trogones, Columbæ, and Cuculi are treated of, comprising altogether 295 species. Vol. 3, commencing with the Halcyones, contains all the remaining Orders, amongst which there are 279 species spoken of. Altogether we have in this excellent work details more or less complete concerning the nidification of 852 species of Indian Birds. We must all admire the genius and industry of Mr. Hume in getting together this enormous mass of valuable information from every part of the Indian Empire, and we must all thank Mr. Oates for the handy and well-printed volumes in which he has reproduced it. The two volumes last issued are illustrated by nicely-executed portraits of Blanford, Ramsay, Godwin-Austen, Blyth, Tweeddale, Brooks, Bowdler Sharpe, and Davison—all names well known in the annals of Indian Ornithology.

12. *Lucas on Bird-skeletons collected by the ss. 'Albatross.'*

[Scientific Results of Explorations by the U. S. Fish Commission Steamer 'Albatross.'—XIII. Catalogue of Skeletons of Birds collected at the Abrolhos Islands, Brazil, the Straits of Magellan, and the Galapagos Islands, in 1887–88. By Frederic A. Lucas. Proc. U. S. Nat. Mus. xiii. p. 127.]

The title of the paper sufficiently indicates the contents of this memoir. Skeletons of about 33 species were obtained in the localities above mentioned, the prize being one of *Creagrus furcatus* from the Galapagos. A large number of specimens in alcohol were also brought home.

13. *Martorelli on a Species of* Limosa.

[Nota Ornitologica sopra alcuni esemplari del Gen. *Limosa* appartenenti alle specie *Limosa lapponica*, Linn., e *Limosa uropygialis*, Gould. Del socio Dott. Giacinto Martorelli. Atti Soc. Ital. sci. nat. xxxiii.]

Dr. Martorelli's theme is an example of a species of the genus *Limosa* obtained in Italy near Foggia. Having described and figured this bird, the author gives an account of the specimens of *L. uropygialis*, *L. novæ-zealandiæ*, and *L. lapponica* in the Turati Collection (now in the Museo Civico of Milan, *cf.* Ibis, 1888, p. 150). He quotes other writers on this subject, and seems to be of opinion that the specimen from Foggia must be referred to the Eastern form of the Bar-tailed Godwit, i. e. *L. uropygialis*.

14. *Merriam on the Birds of Arizona.*

[North American Fauna. No. 3. Results of a Biological Survey of the San Francisco Mountain Region and Desert of the Little Colorado, Arizona. Part IV. Annotated List of Birds. By Dr. C. Hart Merriam. Washington, 1890.]

Arizona, in the extreme south-west corner of the great Republic, is traversed from north-west to south-east by a high escarpment, which marks the southern boundary of the great Colorado Plateau. San Francisco mountain, a volcanic peak on the edge of the plateau, which attains a height of over 12,700 feet, is cut off from the surrounding hills to a height of 8000 feet, and consequently offers an excellent field for the study of the different climates and zones of life resulting from high elevation in a southern position. Dr. Merriam spent the summer of 1889 on a physical survey of this mountain region, and of the "Painted Desert of the Little Colorado" which adjoins it to the north-east, and gives us the results of his expedition in the report now before us. He claims, amongst other things, to be able to show that there are but two primary life-areas in the Nearctic region—a northern (Boreal) and a southern (Subtropical), and that the three life-areas commonly accepted by American naturalists (the Eastern, Central, and Western Provinces) must consequently be abandoned altogether.

As regards birds, with which we are more immediately concerned in this Journal, Dr. Merriam gives us a list of the species collected and observed within the area investigated, and many field-notes thereon. About 150 species are men-

ned. *Anthus pennsylvanicus* was met with at the top of n Francisco mountain, and "probably breeds there." *ochilus platycercus* is "very abundant" in the balsam- t (8200–9200 feet) and in the upper part of the adjoining e-belt, and was found breeding on the Douglas Fir, the aracteristic tree of the balsam-belt. *T. rufus* was also ommon in the pines." The characteristic birds of the nted Desert are said to be *Amphispiza bilineata, A. belli adensis, Peucæa ruficeps boucardi, Spizella breweri, Oro- ptes montanus, Harporhynchus* sp. inc., and *Speotyto cuni- aria hypogæa*. Altogether this is a very interesting report, d is well illustrated by maps and plans.

15. *Middendorff on the Birds of the Russian Baltic ovinces.*

III. Ornithologischer Jahresbericht (1887) aus den Russischen Ostsee- ovinzen. Von E. von Middendorff. 8vo. Wien: 1890.]

Dr. E. von Middendorff sends us a copy of his third annual ort on the Ornithology of the Russian Baltic Provinces . Ibis, 1889, p. 288), that is for the year 1887. The porter was assisted by 23 observers in different places, which particulars are given, as is also a general account the state of the prevalent weather in 1887. The special rtion of the memoir which follows contains notices of 146 ecies.

16. *Murray on Indian Game Birds.*

[The Edible and Game Birds of British India, with its Dependencies d Ceylon. With Woodcuts, Lithographs, and Coloured Illustrations. James A. Murray, F.S.A.L. Royal 8vo. London and Bombay: 1889.]

This work contains descriptions of 245 "edible and game rds" found in British India, and may be useful to Indian ortsmen, as being portable in form and of small bulk. e cannot say much in praise of the illustrations, most of hich are borrowed from the author's 'Zoology of Sind.' hey may, however, assist in identification.

17. *Radde on the Birds of the Caucasus.*

[Vierter Nachtrag zur Ornis Caucasica. Von Dr. Gustav Radde in Tiflis. Ornis, vi. p. 400 (1890).]

In the new number of 'Ornis' will be found a "fourth supplement" by Dr. Radde to his 'Ornis Caucasica.' It contains a number of interesting notes upon the birds of this country * by the author and his assistant workers on the Caucasian avifauna. A fifth supplement is promised to appear shortly. Dr. Radde's so-called "*Porphyrio veterum*" (well-figured in 'Ornis Caucasica,' pl. xxiv.) from the Lenkoran district is, we believe, identical with the Indian *P. poliocephalus*. It has been already shown (Ibis, 1879, p. 195) that there is no such name as "*veterum*, S. G. Gmelin," and, as Mr. Seebohm has stated (Ibis, 1884, p. 429), the Caspian bird (which the traveller S. F. Gmelin referred to as the "*Porphyrio*" of the ancients) is the same as the Indian species, and quite distinct from *P. cæruleus* of Southern Europe.

18. *Ramsay on the Birds in the Australian Museum.*

[Supplement to the Catalogue of the Australian Accipitres, or Diurnal Birds of Prey, in the Collection of the Australian Museum at Sydney, N. S. W. By E. P. Ramsay, LL.D., Curator. 8vo. Sydney: 1890. Catalogue of the Australian Striges, or Nocturnal Birds of Prey, in the Collection of the Australian Museum at Sydney, N. S. W. By E. P. Ramsay, LL.D., Curator. 8vo. Sydney: 1890.]

Dr. Ramsay has now resumed the publication of his catalogue of the specimens of birds in the Australian Museum, Sydney, and has issued a supplement to the catalogue of Accipitres published in 1875, and a catalogue of the Striges. The first of these contains accounts of additional specimens of 9 species, amongst which are many in nestling-plumage. The Australian Owls all belong to two genera—*Strix* and *Ninox*—according to Dr. Ramsay's views. Of *Strix* he recognized 4 species and 2 subspecies; of *Ninox* 9 species. Of the latter genus two recently described species are *N. peninsularis*, of Cape York, and *N. albaria*, of Lord Howe Island. The Australian Museum does not appear to contain specimens of these forms, and in most cases the list of specimens is not very long.

* See also Dr. Radde's 'Dritter Nachtrag,' Ornis, iii. p. 457 (1887).

19. *Ridgway on some Species of* Xiphocolaptes.

[Further Notes on the Genus *Xiphocolaptes* of Lesson. By Robert Ridgway. Proc. U. S. Nat. Mus. xiii. p. 47.]

These are additional notes to Mr. Ridgway's 'Review' of the genus (*cf.* Ibis, 1890, p. 256), and relate to a specimen in the Lafresnaye Collection labelled *X. procerus*, and to other specimens in the American Museum of Natural History.

20. *Salvadori on Birds collected by Loria.*

[Viaggio di Lamberto Loria nella Papuasia Orientale. I. & II. Collezioni Ornitologiche descritte da Tommaso Salvadori. Ann. Mus. Civ. Stor. Nat. Genova, ser. 2, ix. pp. 474 and 554.]

Dr. Lamberto Loria left Florence in December 1888 on an expedition to the Austro-Malayan Archipelago, and after meeting his compatriot Fea (then on his return from Burmah) at Penang, went by Batavia, Timor, Port Darwin, and Thursday Island to Port Moresby. In these memoirs Count Salvadori gives us an account of Dr. Loria's first two consignments of birds in his usual accurate and methodical manner. At Penang examples of 5 species were obtained, none of which are of special interest. Timor is a territory less often visited, and in two localities of this island specimens of 28 species were procured, amongst which were *Stigmatops limbata*, *Oreicola melanoleuca*, *Geocichla peroni*, and *Padda fuscata*. At Port Darwin, where Dr. Loria remained nine days in May, 32 species were met with. These were all known Australian birds, but some of them had not been recorded from this locality.

The second memoir gives us an account of Dr. Loria's first collection from South-east New Guinea, chiefly made at Port Moresby, and Rigo, to the east of that port. It contains 488 specimens, which are referred to 77 species. Amongst these are a new *Ægotheles*, like *Æ. wallacei* but larger, from Rigo, *Æ. loriæ*, and a new *Pitta* (*P. loriæ*) allied to *P. mackloti* from Su-a-u, a small island near South Cape. Other noteworthy species exemplified in the collection are *Ptilotis analoga*, *Pycnopygius strictocephalus*, *Sphecotheres salvadorii*, *Corvus salvadorii*, and *Carpophaga rubiensis*.

21. *Salvadori on the Occurrence of* Cypselus affinis *in Italy.*

[Il *Cypselus affinis* in Liguria. Nota di T. Salvadori. Ann. Mus. Civ. Stor. Nat. Genova, ser. 2, ix. p. 549.]

This note records the occurrence at Genoa, on May 14th last, of a specimen of the widely-diffused Swift *Cypselus affinis*, which is thus added to the European avifauna. Its previously known localities nearest to Europe were Palestine (*cf.* Tristram, Faun. & Fl. Pal. p. 83) and Tunis (Koenig, J. f. O. 1888, p. 138). Count Salvadori gives an exhaustive list of references, and an accurate description of this new European bird.

22. *Sandager on the Birds of the Mokohinou Islands.*

[Observations on the Mokohinou Islands and the Birds which inhabit them. By F. Sandager. Trans. N. Z. Inst. 1889, p. 286.]

The Mokohinou group consists of a number of islands of volcanic formation lying about twelve miles north-west of Great Barrier Island, N.Z., and covered with a certain amount of scrubby vegetation. Numerous birds arrive there for breeding-purposes and as occasional visitors. Mr. Sandager records the occurrence of 12 land-birds, only 2 of which appear to be resident, and of 22 waders and marine species. Amongst the latter are 12 Petrels, of which one is described as new (*Puffinus zealandicus*). A Penguin (*Eudyptula undina*) breeds there, but "not in great numbers."

23. *Schalow on the Avifauna of Brandenburg.*

[Neue Beiträge zur Vogelfauna von Brandenburg. Von Herman Schalow. J. f. O. 1890, p. 1.]

Herr Schalow kindly sends us a separate copy of his "New Contributions to the Avifauna of Brandenburg," which we have perused with much interest, the writer being, as we all know, a first-rate authority on the subject. In 1886, on the occasion of the 59th assemblage of the "Deutsche Naturforscher und Aerzte" in Berlin, there was prepared and issued a memoir on the Vertebrata of the province of Brandenburg. Of this memoir the part relating to the Birds

was undertaken by Dr. Carl Bolle. Dr. Bolle recognized 278 species of birds as occurring in the province above mentioned, whereas Herr Schalow in his last essay on the same subject had only allowed 267 (*cf.* Zeitschr. f. d. g. Orn. 1885, pp. 1–44). Herr Schalow now comments on this diversity, and gives a long series of critical notes upon the different species. *Vultur monachus*, which occurred in the shape of a single adult specimen in June 1888, seems to be the most important recent addition to the list. Then follows a revised nominal catalogue of the species of Brandenburg Birds, which are now brought up to 273 in number. The memoir is concluded by a "Bibliographia ornithologica Marchica," which contains the titles of the numerous publications on the subject and short explanations.

24. *Seebohm on the Birds of the Japanese Empire.*

[The Birds of the Japanese Empire. By Henry Seebohm. With numerous woodcuts. London: Porter, 1890. 1 vol. large 8vo, pp. 386.]

Mr. Seebohm's studies of the Bird-life of Japan and its adjoining islands have resulted in the production of a handsome octavo volume, which his brother Ornithologists will receive with pleasure. It is not a perfect history of the Avifauna of Japan, but it contains an excellent summary of the present state of our information of this very interesting subject, and, in the words of the author, is an "important contribution towards our knowledge of the geographical distribution of the Birds of the Palæarctic Region."

The work commences with an account of the literature relating to Japanese Birds, arranged chronologically. This commences with Pallas's 'Zoographia,' and is continued down to the most recent papers of Dr. Stejneger and Mr. Seebohm himself. We have then a disquisition on the geographical distribution of Japanese Birds. It is shown that of 381 species included in Mr. Seebohm's list, 146 are Palæarctic generally, 139 Eastern Palæarctic, 47 Tropical species coming from the south, and 49 only yet known as endemic to Japan. Various other details are given, from which we extract the following passage:—"The birds of Japan do not differ very

widely from the birds of the British Islands. It would be very remarkable if they did. The Japanese Islands bear almost exactly the same relation to the east coast of the Palæarctic Region as the British Islands do to the west coast. The Palæarctic Region, as defined by Sclater and Wallace, is a very clearly defined one so far as the majority of birds are concerned. The range of many species extends from the British Islands across Europe and Siberia to Japan. Of course there is no species found both in Britain and in Japan but not in the intervening district. Cases of interrupted areas of distribution are almost unknown, though there are many cases in which West-European birds resemble more closely East-Asiatic ones than the Siberian races which intervene. This is unquestionably the most remarkable fact connected with the birds of Japan, and it is one that has not been insisted on as much as it ought to have been." Mr. Seebohm gives as examples of this phenomenon *Accentor rubidus* and *A. modularis*, *Garrulus japonicus* and *G. glandarius*, and *Acredula trivirgata* and *A. rosea*.

The third and principal portion of Mr. Seebohm's volume contains an account of the 381 species of Japanese birds, arranged according to his new system, with commentaries on their identification and distribution. The groups that are not represented in the Japanese avifauna are mentioned in their proper places, so that the whole of the new classification is exhibited. Very few synonyms are given—too few in our opinion, although it may be said that the repetition of useless synonyms is now-a-days a more frequent occurrence than their undue restriction. The numerous woodcuts are mostly old friends, but not on that account less useful or acceptable.

25. *Sharpe on the Birds of Fernando Noronha.*

[Notes on the Zoology of Fernando Noronha. By H. N. Ridley. Journ. Linn. Soc., Zool. xx. p. 477. Aves. By R. Bowdler Sharpe.]

The birds obtained at Fernando Noronha by Messrs. Ridley and Ramage are referred by Mr. Sharpe to 7 species. Three of these are land-birds—*Vireo gracilirostris*, a representative form of *V. magister*, now described as new; *Elainea*

ridleyana, a large-billed form of the widely-spread South-American *E. pagana*; and *Zenaida maculata*, also a well-known South-American species. The 4 sea-birds are likewise well-known. Besides these, *Tachypetes aquila*, a small Albatross, and three species of Waders were observed.

26. *Shufeldt on the Osteology of the Water-birds.*

[Contributions to the Comparative Osteology of Arctic and Sub-Arctic Water-birds. Part VII. By R. W. Shufeldt, M.D., C.M.Z.S. Journ. Anat. & Physiol. xxiv. p. 543.]

This is the seventh of Dr. Shufeldt's series of memoirs on the Osteology of the North-American Water-birds (*cf.* Ibis, 1890, p. 460). It treats of the Longipennes, *i. e.*, the Stercorariidæ, Laridæ, and Rhynchopidæ, which groups are regarded as "family" value. It is illustrated by excellent woodcuts. The memoir was originally written five years ago, at which ...h, as the author informs us in a footnote, no skeletons of the Terns and only one imperfect skull of *Rhynchops* were available for comparison. He has now, however, the missing types at hand, and is, we are glad to hear, engaged on a complete treatise on the Osteology of North-American Birds.

27. *Shufeldt's Myology of the Raven.*

[The Myology of the Raven (*Corvus corax sinuatus*). A Guide to the Study of the Muscular System in Birds. By R. W. Shufeldt. 343 pp. 8vo. London: 1890, Macmillan & Co.]

Although the literature relating to the muscular anatomy of birds is very extensive, the present work is, as its author truly states, the only complete account of the muscles of a particular type. The Pigeon or the Fowl might perhaps have been a better selection, since in these birds there are several muscles present which are wanting in the Passeres; and they are quite as readily obtainable. Nevertheless a careful and clearly illustrated account of any type of bird-life will prove very useful to students of this branch of anatomy; and it appears to us that the work has been well done, and may be safely followed as a reliable statement of facts. In Dr. Gadow's chapter on "Aves," which forms a portion of

Bronn's 'Thierreich,' we already possess an excellent handbook to the muscular system of birds in general, and the fact that it is written in German ought not now-a-days to be any hindrance to its use. But it is difficult to reconcile Dr. Shufeldt's suggestion (p. vi of the Preface) that this is a disadvantage, with his long quotations (in one case amounting to eight pages) from the work in question, which are not translated. A few notes are given upon the muscles of birds other than the Raven, and some comparisons are made with Reptilian and Mammalian muscles. These latter comparisons, however, consist almost exclusively of quotations from Prof. Mivart's 'Elementary Anatomy.'

28. *Spelman on a Collection of British Birds.*

[A descriptive Catalogue of William W. Spelman's Collection of Birds shot in Norfolk and Suffolk prior to October 1888. 4to. 1888.]

This is a catalogue of a mounted collection of specimens of birds obtained in Norfolk and Suffolk, belonging to Mr. William W. Spelman, of Bradeston House, Brundall. There are 86 cases, containing examples of about 150 species. Mr. Lowne, of Great Yarmouth, is the taxidermist who set them up. The localities are in most cases exactly given.

29. *Stone on the Owls in the Collection of the Academy of Natural Sciences of Philadelphia.*

[Catalogue of the Owls in the Collection of the Academy of Natural Sciences of Philadelphia. By Witmer Stone. Proc. Acad. Nat. Sci. Philad. 1890, p. 124.]

We are much pleased to find some one is again at work at the magnificent collection of birds in the Museum of the Academy of Natural Sciences of Philadelphia. Mr. Stone, who has already catalogued the Muscicapidæ (see Proc. Phil. Acad. 1889, p. 146), now gives us an account of the Owls, of which the Academy appears to possess a good series, though the numbers of the specimens are not given. A few notes are added, besides the general localities. About 113 species and subspecies are enumerated as represented in the Collection.

30. *Tschusi zu Schmidhoffen's 'Ornithologischer Jahrbuch.'*

[Ornithologischer Jahrbuch. Organ für das palæarktische Faunengebiet. Herausgegeben von Victor Ritter von Tschusi zu Schmidhoffen. Band I. Hefte 5–9, 1880.]

We have now received parts 5 to 9 inclusive of this new ornithological journal, the inception of which has been already spoken of (*cf.* Ibis, 1890, p. 461). They contain many papers of general interest, amongst which we may call attention to Herr Reiter's discovery of three species new to the avifauna of Bosnia (*Accipiter brevipes, Phileremos penicillata*, and *Anas marmorata*). Dr. Carl Bolle contributes an article "In the Shadow of the Peak of Teneriffe," which is based, we suppose, on old reminiscences; and Herr Leverkühn writes on the ancient Avifauna of Pomerania.

XVII.—*Letters, Extracts, Notices, &c.*

The following letters have been addressed to the Editor of 'The Ibis':—

Sir,—In your last issue of 'The Ibis' (1890, p. 359) appears a very interesting account of the habits of the Blue-billed Duck (*Erismatura ferruginea*) of Buenos Ayres, by Mr. J. Graham Kerr, and the fact of their being similar to those of our Australian representative, *E. australis*, may perhaps be worthy of being placed on record in your Journal.

As I have stated, the habits of this Duck observed by me here, during the winter and spring of last year (1889), are identical with the Buenos-Ayres species, even to the peculiar manner of courtship adopted by the male bird, so amusingly described by Mr. Kerr, and its then strong resemblance to an *Ornithorhynchus*, also as regards the difficulty and, as it proved in my case, impossibility of shooting these birds, owing to their extraordinary powers of instantaneous diving.

Hitherto Western Australia has always—if I do not mistake—been regarded as the exclusive habitat of this bird; but that it does occasionally, though it would seem very

rarely, wander far beyond the boundaries of that colony is evidenced by my having, as stated above, met with it on several occasions during the winter and spring of last year. This period was an extremely wet one over the whole of Australia, and particularly so in this usually dry portion of New South Wales; and, as a result, this and several other species of aquatic birds that I had not previously observed during a residence of thirty years in this locality appeared here. On one occasion I had the good fortune to discover a nest which contained two eggs just on the point of hatching, and on which the female was sitting, whilst only a few yards distant the male, evidently proud of his charge, was swimming about in company with six or seven newly hatched young ones. Unfortunately, when I came suddenly on this family-scene I had no gun, otherwise, from my close proximity to the birds before they observed me, I could scarcely have failed to obtain a specimen. I came quite close to the birds before they observed me, the female dropping from the nest like a lump of lead, and disappearing beneath the water the instant she did so, whilst the male and young ones dived at once, and none of them reappeared until they had put some sixty yards between themselves and me. The nest was a neatly-made structure composed of rushes, but without any lining, and was placed in a low dense polygonum bush some six or eight inches above the water. The eggs were very large for the size of the bird, white in colour, and of a very coarse texture. As a proof that this was not an exceptional instance of this rare bird breeding here, I may mention that, on a subsequent occasion, on another sheet of water some 25 miles distant, I saw another brood of young ones in company with their parents.

I was very eager to obtain a specimen of this bird to send to my friend Dr. E. P. Ramsay, of the Sydney Museum, but I regret to say that all my efforts in that direction were fruitless; for although I repeatedly fired at them, sometimes not more than forty yards distant, I never succeeded in killing one, nor, so far as I could judge, even hitting them, for, as Mr. Kerr remarks, "the duck was too sharp

for me." One instant there would be a duck swimming, or rather floating, within easy range, the next a flash and report, and the Duck would calmly reappear some 50 or 60 yards further off, apparently uninjured, quietly floating as before, and with his tail cocked straight up as if in derision. This was the case in every instance, and I at last gave up the attempt to obtain an example in disgust; and had I been in any way superstitious, I should certainly have regarded the creature as something uncanny and bearing a charmed life; for I may mention that on the same occasions, and at longer ranges, I had no difficulty in killing the Large Grebe (*Podiceps australis*) and the Musk Duck (*Biziura lobatus*), both of which are expert divers.

I am, yours &c.,

K. H. Bennett.

Yandembah Station,
Booligal, N. S. Wales,
Sept. 18, 1890.

Sir,—I am given to understand that there is still some doubt as to the number of eggs laid at a sitting by the Sooty and Noddy Terns. Having been to Ascension and also to one of their great breeding-places in the West Indies, perhaps I may be able to throw some light on the question. First, as to Ascension. Nobody there has ever heard of more than one egg being laid by the Sooty Tern (*Sterna fuliginosa*); and as the birds breed in hundreds of thousands, it is hardly likely that they would all change their nature and cease to lay more than one, when in other parts of the world they are reputed to lay three, simply because some of their nests or, rather, eggs are taken, for food principally, by the small number of people in the island, and the island has only been occupied for about 50 or 60 years. I was there 18 years ago, and they only laid one egg then.

On 13th June last, when cruising off the south coast of Jamaica in H.M.S. 'Pylades,' I anchored off Morant Cays, which consists of a round coral-patch, with four or five fathoms of water and four small sand islands on it. The islands lie about 60 miles S.E. of Jamaica, and are occa-

sionally visited by a schooner for gathering eggs and obtaining turtle. The eggs are sold in the market for cooking and eating, and are called Boobies' eggs. It was blowing a strong "trade," and I had some difficulty in landing on S.E. Island, and was quite unable to do so on the lee side, but, strange to say, succeeded on the weather side, there being a reef between the island and the breakers, which formed a natural breakwater. To leeward of this I found a small sheltered spot where I and my two companions, Lieut. Edward Hunter-Blair and Lieut. Douglas Nicholson, landed. My boat's crew had brought tubs and buckets to put the eggs in, and we brought back sufficient for all hands. The island was partly covered with a low bush, about 18 inches high. Underneath and in the open, on the bare ground, without any sign of a nest or even of a made hollow, and often so close together that the birds were almost touching, were seated thousands of Sooty Terns, all with their heads the same way, *i. e.* all pointing to the wind.

There was a comparatively small number of Noddies (*Anous stolidus*), and they usually kept together, though in the midst of the Sooties. Their nests—which were a shapeless mass of seaweed and rubbish and quite flat, without any hollow in the centre that was appreciable, and which usually had either stones or shells in addition to the single egg—were usually placed on top of the low bushes and sometimes on the ground; but a nest was always used. The birds, both Sooty and Noddy Terns, were very tame, and often we had to touch a bird with one foot to make it move off the nest, and it would then flutter off a few feet and return again immediately we moved away. All the time we were on the island tens of thousands of the Terns were flying round screaming, close over our heads; and they became so bold that, to prevent them flying into our faces, we had to continually drive them off with sticks. I had particularly requested my companions and the men of my boat to be very careful and let me at once know if in any case more than a single egg had been deposited in any nest; but no such case was discovered. In all cases, both of Sooty and Noddy Terns, only a single egg was found.

There is a very enthusiastic young naturalist at Kingston, named Mr. Charles Turner, and I have had many conversations with him. He also has visited Morant Cays, and agrees with me that one egg is all that the Sooty and Noddy Terns lay and sit on at one time, though it is certain that they hatch out other eggs during the season.

In 1885 I was cruising in H.M.S. 'Starling' in the Red Sea, off the Soudan coast, and on one of the small island-reefs I found a breeding-place of the smaller Sooty Tern (*Sterna anæstheta*). It was after the breeding-season; but the ground was covered with their burrows, and I found six or eight eggs in deserted nests. The nests were made by burrowing between tufts of coarse grass and into the sand for about 1 foot or 18 inches, and I never found more than a single egg in any nest, so it appears that this species also lays only one egg.

Yours &c.,
JAMES B. YOUNG.

H.M.S. 'Pylades,'
North-American and West-Indian
Station, Oct. 9, 1890.

SIR,—I have recently obtained an English-killed example of *Coracias indicus*, an adult, shot at Muckton, near Louth, in this county, on Oct. 27, 1883, by a cottager. The bird was perched at the time on a heap of manure.

It was received in the flesh by a local taxidermist, in whose shop I saw it shortly afterwards, during the time he was setting it up. It was closely bound with coarse cotton-thread over slips of wood to keep the feathers in position when drying.

The occurrence was recorded in the Migration Report for 1883, p. 47, and in 'The Zoologist,' 1884, p. 185, but erroneously there as *Coracias garrulus*, the colour of the breast and back, so far as these could be examined, leading me to think that it was probably an immature example of that species. Without going into further details, I may say there is perfectly satisfactory evidence that the bird was obtained as described, and that there is no possibility of its having been

exchanged for any foreign skin of a Roller; there are also no indications of its having been an escaped bird.

Both Professor Newton and Mr. Dresser, who have seen and kindly examined our Lincolnshire bird, agree that it is undoubtedly *C. indicus*.

Altogether about one hundred occurrences of the Roller have been recorded in the British Isles, chiefly in the southern and eastern counties. No doubt the greater number are still in public or private collections and accessible for examination; it would be interesting to learn if any of them can be referred to the Eastern form.

The Roller was first noted as a visitor to our shores by Sir Thomas Browne, who described a specimen obtained in Norfolk in May 1664; he was not, however, aware of the name of his bird. The passage having reference to it is very remarkable, and will be found, quoted from Wilkin's edition of Browne's works, in Stevenson's 'Birds of Norfolk' (vol. i. pp. 312, 313). Although the description, compared with the light of the present day, is somewhat imperfect, there cannot be any doubt that the bird was a Roller of some sort, but it was clearly not *C. garrulus*; what, then, was it?

The matter has been referred to the highest possible authority on Rollers—Mr. Dresser; he writes as follows:—"I have carefully looked at the reference in Stevenson's 'Birds of Norfolk,' and certainly the description does not apply to *Coracias garrulus* in any stage of plumage. It agrees to some extent with *C. indicus*; but he says nothing of the striation on the throat and breast, and his description of the tail 'greenish,' 'the extremities of the outer tail-feathers thereof white with an eye of green,' does not agree with any Roller that I know."

We certainly cannot expect the description of more than two hundred years ago to be minutely accurate; and I think there is nothing in Sir Thomas Browne not mentioning the throat-stripes on the bird (if it had any). The "eye of green" in the tail raises a greater difficulty, but the expression may have meant only the green patch on the rectrices.

I think we may consider the weight of evidence in this description to be at least suggestive of the occurrence of *Coracias indicus* in Norfolk in 1664.

Yours &c.,

Great Cotes, Ulceby, Lincolnshire,
Oct. 9, 1890.

JOHN CORDEAUX.

SIR,—On the 11th of September last a Pectoral Sandpiper (*Tringa maculata*) was shot on Breydon Water, Great Yarmouth, by a tourist, who forwarded it in the flesh to Mr. Southwell for identification, through an amateur birdstuffer.

On the 12th Sept. two more were shot in the same locality, on the marshes adjoining Breydon, by Mr. F. Smith, but one of them, being only wounded, was not recovered till the following day. All three specimens are in immature plumage. The last two proved on dissection to be a male and female, which were nicely mounted by Mr. Lowne, naturalist, Yarmouth, in whose shop I saw them shortly after they were killed.

Strange to say, the first example of this Sandpiper recorded as having been obtained in Great Britain was killed on *the same* piece of water on the 17th of October, 1830, since which several others have been procured in that neighbourhood (*vide* Yarrell, vol. iii. pp. 368, 369).

Yours &c.,

Herringfleet Hall, Lowestoft,
Oct. 21, 1890.

E. A. BUTLER, Lt.-Col.

SIR,—In the last number of 'The Ibis' Dr. Günther has pointed out a very peculiar modification of the covering of the heel in very young Wrynecks (*Iynx torquilla*), the skin of that part being greatly thickened and forming a prominent pad, the surface of which is studded with obtusely conical tubercles. This is not an isolated fact, as the same thing is found in young Capitonidæ. Lieut. Goffin, in the 'Muséum des Pays-Bas,' *Buccones*, p. 16 (note), after having noticed that the young birds of the genus *Megalæma* have the bristles at the base of the bill longer than in the adult

birds, writes as follows:—"J'ai observé un caractère plus curieux encore, et par lequel on peut immédiatement distinguer l'oiseau adulte des jeunes; savoir, que ces derniers ont constamment le talon muni de protubérances coniques et pointues, que l'on remarque même très distinctement dans les plus petites espèces. Ce phénomène remarquable a sans doute un certain but dans l'économie de l'oiseau non encore parvenu à l'état adulte, puisque ces protubérances s'écaillent et disparaissent parfaitement dans un âge plus avancé."

I have pointed out the same thing in my 'Catalogo Sistematico degli Uccelli di Borneo,' p. 35; and I am under the impression that it happens also in the Woodpecker. Two years ago I shot two young birds of the Green Woodpecker, and I have a vague recollection of having noticed the presence of the tuberculated pad on the heel, only I did not attach much importance to it, as I thought that the fact was well known.

Yours &c.,

T. Salvadori.

London, Natural History Museum,
Nov. 4, 1890.

Sir,—May I draw your attention to a slight error in your columns? In 'The Ibis' of last October, p. 410, the Cormorant is stated to use its wings when diving. I wonder how this has been ascertained; for it is diametrically opposed to the opinions of many keen observers, by one of whom the passage has been pointed out to me, as they are good enough to consider me an authority upon these birds.

I cannot imagine how anyone could get near enough to a wild diving Cormorant to see what it does under the surface. Now facts are stubborn things to deal with; and as I have kept these birds all my life, and have had one that reached the age of twenty-three, I think I may fairly be considered an authority on this subject. My Cormorants, with which I am constantly catching fish, *never use their wings* under the water, but keep them very tight and close to their bodies. They only propel themselves by their feet, which are thrown far astern, and used very much like the screw of a steamer; at the same time the long neck is *drawn in*, to be

shot out when within the proper distance of a fish. This, by-the-bye, has been well illustrated in Mr. Frohawk's excellent plate, which accompanied my article on Cormorant-fishing in 'The Field' of October 18, p. 571. As a further proof that the wings are never used, I will refer to the Fisheries Exhibition, where Richard Cosgrave, now in Lord Lilford's service, exhibited my Cormorant, called "The Subinspector." It was shown in a *very large glass tank*, with a quantity of artificial rockwork, which often served the fish as a safe retreat from their enemy. There could be no mistake as to its non-use of the wings; and this exhibition was a daily one before hundreds of spectators. If still more proof is required, an accident which befell one of my Cormorants will, I think, be sufficient for all reasonable people. Many years ago one of my birds broke one of its wing so badly that it could not be set; for, as in all diving-birds, Cormorants' bones are very hollow and contain air. This being the case, I took the bird to a young surgeon, now eminent in his profession, who kindly amputated the whole wing. When the patient recovered, it dived perfectly and caught fish quite well, which is surely a good proof that the wings are not used in diving.

I am, Sir, yours &c.,

Nov. 6, 1890. F. H. Salvin.

Sir,—I daresay it will interest you to learn that some time ago (14th October) we received at the Zoological Gardens, Amsterdam, a young specimen of *Emberiza aureola*. The bird was caught at Harderwyk, prov. Gelderland, and is the first specimen of its kind obtained in Holland.

I am, Sir, yours &c.,

S'graveland, Hilversum, Holland, 10th Dec., 1890. F. E. Blaauw.

The Spotted-billed Pelican (Pelecanus manillensis).—This Indian representative of *P. rufescens* I have never seen alive. I should much like to get specimens of it for the Zoological Society's Collection, where, so far as I know, it

has never been exhibited (see my notes, P. Z. S. 1868, p. 264, and 1871, p. 634). According to the new edition of Hume's 'Nests and Eggs' (iii. p. 276), Mr. Oates found it breeding in enormous numbers in Lower Burmah, on the Sitang River below Shwaygheen, so perhaps Major Bingham, now, I believe, at Moulmein, might be able to help us in this matter. Col. Legge found it nesting at Uduwila Tank, near Tissa Maha Rama, in the south-east of Ceylon, so that it might be obtained in this locality also.—P. L. S.

Phasianus humiæ *from a new Locality*.—Of this fine Pheasant, originally discovered by Mr. Hume in Munipur, and subsequently described and figured, from specimens obtained in the same district, by Lieut.-Col. Godwin-Austen (see P. Z. S. 1882, p. 715), an adult male specimen, as we are informed by Mr. W. L. Sclater, has lately been received from a different locality. This specimen was obtained by Capt. Daly in the vicinity of the Ruby Mines in Upper Burmah and presented by him to the Indian Museum. It would appear, therefore, that the range of this species is wider than has been heretofore supposed.

New or Rare British Birds.—The occurrence on the Welsh coast, in Cardigan Bay, of a rare Petrel, *Œstrelata torquata*, Macg., is recorded in 'The Zoologist' for December last (p. 454). The species was originally discovered by John Macgillivray in the island of Aneiteum, New Hebrides, but has also occurred in the Fijis (*cf.* Salvin, Ibis, 1888, p. 360).

A specimen of the "Baltimore Oriole" of North America (*Icterus baltimore*) is stated to have been "caught alive in an exhausted condition" at Balta Sound, Shetland, in September last. It is possible, however, that this may have been an escaped cage-bird. See 'Field,' lxxvi. p. 746, and 'Zoologist,' 1890, p. 457.

At the meeting of the Zoological Society of London held on Nov. 18th last, Mr. F. Menteith Ogle, F.Z.S., exhibited a specimen of the Red-breasted Flycatcher (*Muscicapa parva*) that he had himself shot on the beach at Cley-next-the-Sea, Norfolk, on Sept. 13th, 1890.

Obituary. JOHN HANCOCK.—By the death of Mr. John Hancock, which occurred at Newcastle-upon-Tyne, on the 11th of October last, we have lost an ornithologist of a kind almost unique, and another of the few links which still connect us with our predecessors of the end of the last and beginning of the present century has been broken. Though no less venerable for his age—he was 84 years old—than for his character, he was personally known to but few outside of the town in which he so long lived. There, however, he had many friends, even before he had enriched its Museum with the fine ornithological collection he bestowed upon it in 1884. Losing his father, who was a tradesman in Newcastle, while yet a child, John Hancock received but a poor education, a deficiency deeply felt by him in after years, and doubtless one of the reasons why it was only with the greatest difficulty that he could be induced to lay before the public any of the store of knowledge which he possessed. It is said, and can well be believed, that he, like his brother Albany (who rose to so great scientific fame), was from his boyhood devoted to the study of Natural History, and never lost an opportunity of prosecuting it that the intervals of business presented. In 1826 Bewick wrote of him as "a young friend and promising naturalist;" and just twenty-one years after Hancock superintended a new edition of the famous 'British Birds,' the value of which people are beginning to recognize, for owing to the care taken, first in cleaning the old blocks, and then in printing from them with the best of ink—ink of inferior quality having been previously used, and especially in the earlier issues, which command so high a price—fine details of engraving, the existence of which had hardly been suspected before, became manifest with an effect that is in many cases marvellous, while even the few blocks which, through original defect in the wood, had become worn, present no worse figures than they had done before. In the spring of 1833, John Hancock, with another friend, accompanied the late Mr. Hewitson on a birds'-nesting expedition to Norway, the results of which were made known by the last-named gentleman in his well-known oological work, and briefly, though more con-

nectedly, in the short-lived 'Magazine of Zoology and Botany' (ii. pp. 309–317). Just fifteen years later Hancock joined the late Mr. Charles St. John on a tour with the same object in the then almost equally unexplored northern district of Sutherland; but his field-experience was otherwise mainly gained in his own neighbourhood, where, on the 26th of September, 1838, he chanced to fall in with an example, the first recognized in the British Islands, of the little bird at that time called the "Dalmatian Regulus," but now well known, and hardly to be deemed an unusual visitor to Western Europe, as the Yellow-browed Warbler (*Phylloscopus superciliosus*). Of this species, the specimen shot by himself at Hartley on the coast of Northumberland, which he afterwards figured in his 'Birds of Northumberland and Durham,' is still to be seen in his collection. In that same year, and only a short time before, the British Association met at Newcastle, and Hancock's "Remarks on the Greenland and Iceland Falcons," subsequently published in the 'Annals of Natural History' (ii. pp. 241–250), attracted not a little attention. He lay, however, at that time under the grave mistake (though therein he was by no means alone) of confounding the adult of *Falco candicans* with its young, and of describing this last as resembling the immature stage of *Falco islandus*—an error that he was not able to correct until 1854 (Ann. & Mag. Nat. Hist. ser. 2, xiii. p. 110), and few have since been rash enough to controvert the truth of the views he then enunciated*; for he was indefatigable in making observations on such birds as came in his way, and though comparatively few of these have seen the light, time has in most cases proved their accuracy.

Another of his discoveries—as such it really was, for though Yarrell's claim to priority is undoubted, no publication thereof had been made, and the fact was wholly

* For comments on both these subjects, so inseparably connected with Mr. Hancock's name, the readers of 'The Ibis' may be referred to our volume for 1862 (pp. 44–57), in which both are treated at some length according to the light that then existed. For later remarks on the Falcon question reference may be made to the 'Annals and Magazine of Natural History' (series 4, xii. pp. 485–487).

unknown to Hancock—was the specific distinctness of *Cygnus bewicki*. As unfortunately so often happens in such cases, some unpleasantness arose out of the circumstances. Yarrell, partly through a proper exercise of caution, and not suspecting that anyone else was likely to meet with specimens of his newly-found Swan, deferred its description until after it had come to the notice of the northern ornithologists, Wingate and Hancock; but it is especially due to the acumen of the latter that the specific validity of Bewick's Swan was recognized. Whether tidings of the fact reached Yarrell, and prompted him to make known the information he had possessed for some four or five years, matters little. If it were so, he was certainly justifying his rights; but those who are curious in such trivial matters may read the charge and the defence in the 'Philosophical Magazine' (new ser. viii. pp. 128–130 and 167–169). The whole incident is much to be regretted, and in nothing more than that Hancock thence conceived the ornithologists of the south of England to be jealous of him—an idea, we are sure, that was utterly mistaken, as was shown by the welcome they gave to his handiwork.

For many years Hancock had been attempting to raise "taxidermy" to an art. He knew how a bird should look, and having the eye had also the hand of an artist, so that he could mount a dried skin and endue it with the spirit of life. Other men doubtless may have tried to do the like, but for lack of the knowledge that comes of observation and the delicacy of manipulation that seems to be inborn, perhaps no one except Mr. Waterton had succeeded. There are still some among us that remember with pleasure Hancock's contributions to the Great Exhibition of 1851, where, placed in the central transept, they were always surrounded by admirers, and at the end went unrewarded! One of them at least—but that by no means the best—may now be seen in the Natural History portion of the British Museum in Cromwell Road, it having been bequeathed to the Trustees by Mr. Hewitson, who had become its possessor. On the occasion of the International Exhibition of 1862, Hancock

made a similar attempt to illustrate life in death; but, as was noticed at the time in these pages (Ibis, 1862, p. 283), the Commissioners refused him the space he required, and the beautiful groups he had prepared remained for a long while known only to his private friends. They have now been placed in the Newcastle Museum*, for which he in his later years unceasingly laboured, restoring, with that patient skill of which he was so great a master, many of its historic specimens that had come from the Allan and Tunstall collections more than a century ago, and adding others from his own stores set up with a regard to truth and feeling that more than one much vaunted assemblage of mounted groups fails to approach. Indeed, of Hancock's performances it may be said that, unequal as they may be, the worst of them never looks like a stuffed bird—the attitude of some may be ungraceful or possibly forced, but *life* is always there. In 1874, Hancock brought out his most considerable literary work, and that by which he will always be remembered, the 'Catalogue of the Birds of Northumberland and Durham,' though it seems somehow to have escaped the notice of the then Editor of this Journal. It is an unpretentious, sound piece of work; its statements as to fact may, we believe, be always trusted, and though assent may be reserved in regard to some of its author's opinions, they are always worthy of attention as coming from a very original mind.

It may here be remarked that in the 'Bibliographia Zoologiæ' compiled by Agassiz and edited by Strickland for the Ray Society, the few publications (three only) of Mr. John Hancock, therein entered, are ascribed to a namesake of his; and the mistake, of which he was aware, but was wholly indifferent about, has not been corrected by Carus and Engelmann in their 'Bibliotheca Zoologica.'

* The group of Swans attacked by an Eagle is said to have given Landseer the idea of one of his celebrated pictures; but there is this difference between the work of the two artists—the scene executed by Hancock, though fanciful, is possible, that painted by Landseer is impossible.

THE IBIS.

SIXTH SERIES.

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XVIII.—*Notes on Birds observed in Switzerland; chiefly in the Cantons of Vaud and Neuchâtel.* By Howard Saunders, F.L.S., F.Z.S.

The present paper contains—with few exceptions—the results of personal experiences during twelve months in Switzerland. My excuse for its poverty must be that liability to sudden recall to England prevented me from making long excursions in the mountains, and even compelled me to reside near one of the main lines of communication with London; so that the birds mentioned are chiefly those which came within notice during the course of easy walks. I saw comparatively little of the habits of the Alpine species, many of which, however, have already been well described by my friend Mr. Scott B. Wilson (Ibis, 1887, pp. 130–150), and by the Rev. W. W. Fowler ('The Oxford Tutor') in his 'Year with the Birds.'

From the second half of January to the early part of May, 1890, my quarters were at Lausanne, a city which, as many people know, is set on the side of a hill and riven by ravines. All around are vineyards, but half-an-hour's walk further uphill brings one to the large wood of Sauvabelin, chiefly of beech and oak, with a few spruce-firs; consider-

able forests of the last being found a little higher up, especially on the roads to Berne and to Oron. Below Lausanne, and along the lake towards Morges, the cultivated ground contains much large timber and fine walnut-trees: attractive to insectivorous birds. In the Museum is a fair collection of local species; also a larger one which formerly belonged to the late M. Vouga, consisting of "European birds" so-called, according to Degland and Gerbe's list; but many of the specimens are not Swiss, and some belong to species which have never been seen in Switzerland, or even in the Old World—for instance, the American Bald-headed Eagle. Among its treasures are a mounted *Alca impennis* and an egg; there were formerly two eggs, but one was bartered for the remains of a Gorilla! Of course Geneva was visited, where I had the pleasure of becoming acquainted with Dr. Victor Fatio; short excursions were made along Lake Leman and up the Rhone valley as far as Brieg; while, as regards Lausanne, my friend Mr. Hermann Goll, Dr. Larguier, the director, and M. Bastien, the curator of the Museum, assisted me in various ways.

The third week in April I went up to Chaux-de-Fonds, in the Neuchâtel Jura, to see M. Louis Nicoud, who has a fine collection of eggs; and, under the guidance of that excellent field-naturalist, attempts were made, in very bad weather, to find a nest of the Nutcracker—unsuccessfully, as will be seen under my notes on that species. This visit, however, induced me to migrate early in May to Neuchâtel, a very pretty, clean town, and one which, it is surprising to find, is so little frequented by English visitors, as it forms an excellent base for many interesting excursions. Its Museum has a European celebrity among geologists, owing to its association with Agassiz; and the ornithological gallery is of special interest to students of the Neotropical Avifauna, inasmuch as it contains the famous collection formed by the late J. J. von Tschudi, with numerous types of the species first described by him from Peru. The well-known director, M. Louis de Coulon, is now compelled by age to renounce the active part he

formerly took in the management of this Museum, which is, however, as it stands, a remarkably good specimen of the old-fashioned class, before life-like groups of mounted animals were thought necessary for the instruction or delectation of the public. The Neuchâtel fauna is particularly well-arranged; while in the general collection may be mentioned *Alca impennis*, and examples of two species of *Merganetta* from the rapid streams of the Peruvian and Chilian Andes; also a specimen of *Chen rossi* and three of *Bernicla ruficollis*, obtained years ago, when examples were to be seen in very few Museums.

Summer-quarters were found on Chaumont, a spur of the Jura, which rises about 2400 feet above Neuchâtel and 3850 above sea-level. The ridge is crowned with dense woods of spruce, which gradually become thinner to the eastward, until they end altogether on the top of the Chasseral (5280 ft.), which is separated from the main Jura by the elevated Val St. Imier. As there are no springs in that range, and consequently very few running streams (the inhabitants being almost dependent on rain-water, of which there is no lack), the Jura is not very rich in species of small birds. In other respects it proved to be an excellent retreat during the summer months, for the climate at Chaumont, and in the range generally, is less extreme than at the same elevation in the Alps: the view, extending over the lakes of Neuchâtel and Morat, and from Mont Blanc to Pilatus, is hardly to be surpassed; while, except in August, the weather was decidedly good, which was certainly not the case in the Alps. The electric explosion, followed by a tornado, on the 19th of that month was something to be remembered; but during the sultry hours which preceded that devastating storm the birds did not drop down dead on our ridge of the Jura (as I learned, from a lady's letter in the 'Times,' they did in other parts of that range), or I might have been able to add a few species to my scanty list of *Passeres*!

Descending to Neuchâtel early in September, I ran down with Mr. Goll to the Grisons, to get a glimpse of chamois

and other Alpine creatures, visiting a few museums on my way there and back. In those of Bienne, Soleure, and Fribourg, nothing particular was noticed, ornithologically; while the collection at Berne is too well-known to call for special remark. Zand's Museum of Alpine animals in the last-named city is, perhaps, worth a visit, though Zand is now very old, and his groups are dusty and faded. The same may be said of the once-famed Stauffer's Museum at Lucerne, which is no longer up to its former reputation. At Zurich the collection in the Polytechnic is decidedly good, and contains examples of some valuable exotic species. The finest museum on modern lines is, however, at St. Gall, where the initiative of the late Dr. Girtanner has been ably seconded by his son, to whom I was introduced; while the local specimens of birds are mounted by Mr. E. Zollikofer, who is not merely a skilled taxidermist, but an artist whose soul is in his profession. The groups of Wall-Creepers on the rock (in the Museum and at Dr. Girtanner's house); the Scops Owl recoiling in consternation before a beetle which, on being disturbed from its hiding-place, looks as if from its size it might prove an awkward customer: these and many others are works of art, and are of themselves worth a visit to the quaint old town—though it, too, has been much modernized since my last visit, twenty-eight years ago.

At Coire there is a very good local collection of birds, amongst which is an example of *Vanellus cayennensis* killed in the Grisons a few years since: probably escaped from confinement, though how it got so far up the Rhine valley is a mystery. In addition to fine specimens of the usual series of mammals, are the last Ibexes, all young, killed in 1888. The birds observed in the Prättigau are mentioned in my notes. In October I came back to Lake Leman and settled at Vevey, where this paper was written. There I obtained some really trustworthy information from Mr. Eric Grand d'Hauteville, who, though still at school, has succeeded in mounting a very interesting little collection of birds in life-like attitudes, evidently the result of patient study of their habits.

It will be understood that, unless otherwise stated, my remarks refer to the districts mentioned in the title, and are merely the results of a short and limited experience in a country where the natural features tend to upset broad or general statements. For instance, the avifauna of the western portion of Lake Leman is far richer than that of the upper end, especially in those migratory species which frequent open cultivated ground and flat shores. If my residence had been at Geneva, the character of my list would have been considerably modified, for no migration of importance appears to take place by the Valais, on the way to or from the south.

The greater part of this paper was written in November and printed in December last, but I have endeavoured to work in the results of the observations of two months more.

Turdus viscivorus, Linn.

The Mistle-Thrush was not seen or heard near Lausanne until the middle of March, and I do not think it is a resident. In the Jura it was plentiful—though very shy—from May till September; and birds were observed above Vevey till the end of October.

Turdus musicus, Linn.

The Song-Thrush is a migrant, and was not identified near Lausanne until April 13th, although it may have arrived a little earlier. Instead of being the familiar bird which we are accustomed to see on our lawns and hammering snails on the gravel walks, the Thrush, in Switzerland, is a shy, retiring species, frequenting the forests on the mountain-sides above 2000 feet, and seldom visible, except for an instant, as it darts, high in the air, from one tall fir to another. On Chaumont, where it was in full song in May and June (inferior in melody to that of English, and especially of Scottish birds), I never saw adults on the ground feeding, although later the young were noticed hopping along woodland paths. The nest is placed in the spruces, and is not easily found. In early autumn the Thrush is found on the fields, and for a short time on the vineyards; and I saw a

few dead birds in the Vevey market up to the end of October, together with Redwings; the Fieldfare is, however, the *Grive* of the dealers.

Turdus pilaris, Linn.

I saw only one Fieldfare near Lausanne until a slight thaw on February 27th, 1890, when numbers made their appearance on the fields, in bright clean plumage. In autumn they repassed, and up to the middle of February 1891 I saw a few on the mountains.

Turdus merula, Linn.

The Blackbird is resident and was seen throughout the winter in the gardens of Lausanne and Vevey; it is common enough at Neuchâtel, but was never observed as high as the ridge of Chaumont.

Turdus torquatus, Linn.

The Ring-Ouzel is a migrant. It was fairly plentiful in the Jura, where some nests were still being built on May 23rd, when a few already contained young birds, and I saw a brood on the wing by June 2nd. The nest is placed on the branch of a spruce—generally one which is thickly hung with moss and lichen—and near the stem; seldom as low down as 15 feet, while often 40 feet or more from the ground—very different from the lowly positions affected by this species in the British Islands. The adult male attracts attention by sitting on the top of a tall fir and uttering vigorously his scolding *tett, tett, tett.* The bill in this mountain race is decidedly yellower than in average British examples, but much paler than the orange colour of the Blackbird. In autumn the Ring-Ouzel may be seen on the rowan-trees, and among the vineyards by the lakes, until the end of October.

Saxicola œnanthe (Linn.).

The Wheatear is widely distributed in Switzerland from spring to autumn, and Mr. Scott Wilson has recorded the great elevation (8150 ft.) at which it breeds; but it is probably local in the Jura, where I seldom saw it.

Pratincola rubetra (Linn.).

The Whinchat is fairly common from spring to autumn

in the valleys. The Stonechat (*P. rubicola*) has been obtained by Mr. E. Grand d'Hauteville, but it is very rare near Vevey.

Ruticilla phœnicurus (Linn.).

The Common Redstart was first seen on April 14th, and was often noticed afterwards on Chaumont as well as lower down, but it was not nearly so plentiful as the next species.

Ruticilla titys (Scopoli).

The first Black Redstart—a male—was seen near Lausanne on April 12th, when sleet was falling, and on the 19th both sexes were observed at an elevation of 3000 feet in the Jura, where it was still bitterly cold. From the latter date onwards this species was everywhere abundant, and there were at least two nests, if not more, at the same time on our hotel at Chaumont, one of these being under the roof of the verandah, so that we could watch the process of feeding, &c., at about eight feet above our heads; the young were hatched by May 23rd. On June 2nd I found a nest with only four much incubated eggs in a shed on the wind-blown summit of Chasseral (5280 feet), but six is the usual number. The nest is a good-sized structure; and, whether on a ledge under eaves or in a hole in the wall, it is always well out of reach of cats, of which every cottage seems to possess at least one. Two broods are usual, and three are not rare. In autumn the latest date for the Black Redstart was October 29th, among the vineyards at Vevey.

Cyanecula suecica I did not see alive, but it is a well-known visitor. Most of the specimens in the St.-Gall Museum have red on the breast, but a few are unspotted blue.

Erithacus rubecula (Linn.).

The Redbreast was a bird which we were always expecting to see on our walks about Lausanne, but perhaps we looked for it too high, for only four or five were seen till well on in March, and it never came to the food freely exposed on our terrace. An unfinished nest was examined in the main Jura in April, but I very rarely saw or heard the bird on Chaumont, and the Black Redstart seems to take its place on all the moderately high ground. It is, however, not

uncommon near Vevey, among the sheltered gardens and vineyards, in autumn and throughout the winter.

Daulias philomela (Bechst.).

I saw and heard the Northern Nightingale (the *Sprösser*), near Lausanne, on April 30th and a few days later.

The true Nightingale (*D. luscinia*) is now almost, if not quite, unknown at Lausanne; but Dr. Larguier assured me that a pair formerly bred on his property in a spot which he pointed out. It has occurred near Neuchâtel.

Sylvia cinerea, Bechst.

On April 26th the arrival of the Whitethroat was noticed at Lausanne; and this was one of the few Warblers observed on Chaumont during the summer.

Sylvia hortensis, Bechst.

The Garden Warbler was in full and excellent song on Chaumont on May 22nd. Nest with four eggs, June 6th; young out of nest before end of month.

Sylvia atricapilla (Linn.).

A male Blackcap was seen and heard near Lausanne on and after April 25th; the species is generally distributed on the low ground, but was not observed on Chaumont.

Regulus cristatus, Koch.

I observed the Golden-crested Wren in the Jura, but somehow I did not identify the Fire-crest (*R. ignicapillus*), which is, however, undoubtedly found and nests there, as well as on Lake Leman.

Phylloscopus rufus (Bechst.), Ph. sibilatrix (Bechst.), Ph. bonelli (Vieillot), Ph. trochilus (Linn.).

The Chiffchaff was common in the Jura. So also was the Wood-Wren, but its plaintive call-note and "shivering" song were only to be heard on the warm slopes facing the south, among the beech and oak. Bonelli's Warbler was several times identified, on the slopes and even on the summit of Chaumont, especially during the latter part of summer, when the birds frequented the larches for insects, and were more visible than on the spruces. I have seen

the eggs of all three, and Pasteur Robert showed me a clutch of eggs of Bonelli's Warbler with a Cuckoo's egg. The Willow-Warbler seldom mounts to the ridge of the Jura, and is hardly known there as a breeder (Nicoud).

Acrocephalus streperus (Vieillot).

The Reed-Warbler was seen and heard among the reeds at St. Sulpice, Lake Leman, on April 26th, close to a Swan's nest.

Opportunities were wanting for seeing the Marsh-Warbler (*A. palustris*) alive; but I know that it is found in suitable localities along the Rhine valley and its vicinity, from Coire to Zurich; also in the lower Valais, whence I have seen eggs.

Accentor modularis (Linn.).

The Hedge-Sparrow, like the Redbreast, was a bird for which I was always looking, but long in vain. I saw it at Lausanne on April 21st, and had observed it two days earlier in the Jura; I afterwards saw one sneaking about among some fagots on Chaumont. Seldom met with at Vevey, but said to be common at Montreux.

Accentor collaris (Scopoli).

The Alpine Accentor came under my notice in the Grisons. During the severe winter of 1890–91 individuals used to visit the terrace of a house above Montreux, but they were not on view when I called there *. Mr. Nicoud records this species as a winter visitor to the Doubs district of the Jura.

Cinclus aquaticus, Bechst.

The Dipper is common on all suitable streams, and along the margin of Lake Leman. There was a nest on a ledge of the cascade about a mile above Lausanne, and up to April 24th I used to watch the birds going in and out, probably feeding their young, but then some British boys from one of the "crammers'" establishments found the nest and promptly tore it down. All the birds seen had plenty of chestnut-brown on the breast.

* Since the above was written I saw a family party of six in the Val d'Anniviers.

Parus major, Linn.

The Great Titmouse was by far the most numerous of those members of the genus which used to come to the pieces of fat hung from the trees in front of our hotel at Lausanne during winter. Swiss specimens are remarkable for the brightness of their colours.

Parus ater, Linn.

Parus cæruleus, Linn.

The Coal-Titmouse was not nearly so plentiful as the preceding species; it used, however, to come to the pieces of fat; and during the severe weather small parties might sometimes be seen on horse-droppings along the roads. The Blue Titmouse was more frequent. This, as well as the preceding species, might be seen hanging on the suspended pieces of fat at the same time, and it is hardly necessary to add that both are residents.

Parus palustris, Linn.

I did not see the Marsh-Titmouse, or its Alpine form, *P. borealis*, until the latter part of February: chiefly in the fir-woods. It breeds in the Jura, and is not uncommon wherever there are spruces.

Parus cristatus, Linn.

Owing, perhaps, to the thickness of the foliage, I did not see the Crested Titmouse in the Jura for some time, but it is tolerably common there, and towards the end of summer it shows itself more. In the Grisons, while sitting motionless waiting for roe-deer, this pretty bird would often be feeding within a foot or two of my head.

Acredula caudata (Linn.).

The Long-tailed Titmouse is resident and generally distributed. Even in the most severe weather I never saw it touch the fat hung from the trees.

Sitta cæsia, Wolf.

The Nuthatch was very common at Lausanne, especially in the beech-woods, and it occasionally came to the suspended pieces of fat. Its loud love-note was first heard during the cold bright weather of early March, and by the middle of

that month the male was seen courting—spreading out his tail to its fullest extent and displaying the white spots, throwing somersaults, and performing other antics. On the ground this species hops like a Finch, and when working its way among the dead beech-leaves it might easily be mistaken for the male of *Fringilla cœlebs*.

Troglodytes parvulus, Koch.

Some weeks passed before I could see a Wren near Lausanne; and in the Jura the bird did not seem to be abundant. Its favourite places were timber-stacks in the forests. It is, of course, generally distributed.

Certhia familiaris, Linn.

The Tree-Creeper manages to find a living during the Swiss winter, and is rather plentiful.

Tichodroma muraria (Linn.).

I was five minutes too late for a Wall-Creeper which had been on the walls of the University at Lausanne on February 25th, 1890; but on February 3rd, 1891, I had an excellent view of one at St. Maurice, above the frozen Rhone. Fine groups, brilliant in colour, are in the Museums of St. Gall, Berne, &c., and in private collections; in fact, there is reason to fear that this species is being overcollected. In the young bird the throat is of the same grey colour as the shoulders: not white, as in the winter plumage of the adult. Mr. Nicoud tells me that this species visits the cliffs of Doubs in March.

Motacilla alba, Linn.

First seen on the newly irrigated ground during a slight thaw on 25th February, 1890; generally distributed, and nested on the hotel at Chaumont.

Motacilla melanope, Pallas.

The Grey Wagtail is a resident on Lake Leman, ascending in spring; the first pair was seen on a rocky stream above Lausanne on April 6th. In the Jura it is found wherever there is water; and as a pair had a nest in the wall of the picturesque old castle at Valagin, above Neuchâtel, on June 28th, there must be two broods in the season.

Motacilla flava, Linn.

On the afternoon of April 26th a flight of thirty or forty Blue-headed Wagtails alighted in a field of rye, then about three inches above the ground, on the Morges-Geneva road. I sat down and kept quiet, when many, in pursuit of insects, fed up to within a yard or two, and on being disturbed by passers-by (who were perhaps surprised to see me sitting like another Whittington on a milestone) they flew up, twittering, into some low fruit-trees, returning very quickly. I did not notice this species on the Jura ridge.

Anthus trivialis (Linn.).

The Tree-Pipit was identified at Chaumont on July 7th, and in September Mr. Goll shot one out of a party which were feeding on a mountain pasture in the Grisons; they looked so large and tawny that we hoped for something better.

Anthus pratensis (Linn.).

The Meadow-Pipit was seen on newly-manured land near Lausanne in spring, and it undoubtedly nests in the main Jura, though Mr. Nicoud considers it a bird of passage; but it appears to be less common there than the Water-Pipit, while Chaumont is too thickly wooded to suit it.

Anthus spipoletta (Linn.).

The Water-Pipit breeds on the main chain of the Jura, but I did not see it on Chaumont until the end of August. In the Grisons it was very plentiful in September on the sloping irrigated pastures, and I noticed that when it flew up and perched on the roof of a chalet, it always selected one of the large stones employed to keep the shingles down, whereas the Black Redstart preferred the ridge or the gable.

Lanius excubitor, Linn.

The Great Grey Shrike is a resident; I saw several in the months of February 1890 and 1891 round Lausanne and Vevey. While I was watching one—perched, as usual, on the topmost branch of a bush—it suddenly dropped as if shot, and the next moment the shadow of a soaring Buzzard

passed over, reminding me of old experiences of catching "passage-hawks" at Valkenswaard. I did not see this species on Chaumont.

The Lesser Grey Shrike (*L. minor*) visits St. Gall and other cantons of Eastern Switzerland. M. Bastien, the curator of the Lausanne Museum, has a curious Shrike (named *L. dubius* by Dr. V. Fatio), which appears to be a hybrid of *L. minor* with the Woodchat, *L. pomeranus*. The last is only a rare visitor to the east end of Lake Leman, but a male, shot from the nest, is in the collection of Mr. E. Grand d'Hauteville.

Lanius collurio, Linn.

The Red-backed Shrike was common at Neuchâtel in May, but was not observed on Chaumont.

Muscicapa grisola, Linn.

Neuchâtel, May 18th; not on Chaumont.

Muscicapa atricapilla, Linn.

A family party on the larches close to the Chaumont hotel on July 15th.

Hirundo rustica, Linn.

First seen at Lausanne on April 6th, but I heard of its arrival at Ouchy, on the lake, some days earlier. Seldom seen so high up as Chaumont, and never observed breeding there. Many at Vevey until October 24th; last seen on 29th.

Chelidon urbica (Linn.).

The House-Martin appeared at Neuchâtel on May 8th, and swarmed there during summer; but its visits to Chaumont were rare.

Cotile riparia (Linn.).

Noticed about April 12th; breeds in banks near Bienne and elsewhere in the flat country, but is rare at Vevey.

Ligurinus chloris (Linn.).

Seen and heard on Chaumont, though not common; also observed at Villeneuve in the depth of winter.

The Hawfinch (*Coccothraustes vulgaris*) visits the neighbourhood of Vevey in winter. (In coll. E. G. d'H.)

Carduelis elegans, Stephens.

The Goldfinch must be to some extent resident, as I saw one near Morges during the intense frost of early March. Many were seen afterwards on the low ground, but none on Chaumont.

Chrysomitris spinus (Linn.).

The Siskin breeds freely in the Jura, and M. Nicoud tells me that he has found a nest with eggs by March 24th.

Chrysomitris citrinella (Linn.).

Citril Finches were breeding in the Jura (in the locality so well described by Mr. Scott Wilson) by May 23rd, and I saw and heard them several times on Chaumont afterwards; but absence in England during June interfered with my observations.

Serinus hortulanus, Koch.

The Serin Finch is common on the lower ground, but I did not see it on Chaumont.

Passer domesticus (Linn.).

The House-Sparrow is resident, and common enough about the towns, villages, and the cultivated country up to about 2700 feet; but I never saw it at Chaumont, although all kinds of grain grew there, even if they did not flourish.

Passer montanus (Linn.).

The Tree-Sparrow was often observed about farms and villages, especially where walnut-trees abounded, up to about 2000 feet; not seen on Chaumont.

Fringilla cœlebs, Linn.

Resident everywhere—at least up to 4000 feet, and not only the most plentiful of Finches but the commonest bird in the country. The old males, brilliantly ruddy on the breast, began to sing loudly as soon as the frost broke up, the song being far finer than that of our bird. Young hatched by April 26th.

I did not meet with the Brambling, but it is a well-known visitor in hard winters; a few were seen at Vevey in January 1891.

Acanthis cannabina (Linn.).

The Linnet was building in the high Jura on May 23rd, and I afterwards saw it on Chaumont, but it was not plentiful.

Pyrrhula europæa, Vieillot.

Only one, a male, seen on Chaumont, September 2nd. Said to be common in winter near Vevey.

Loxia curvirostra, Linn.

During the winter Crossbills might be seen in the gardens of Lausanne as well as in the neighbouring woods. M. Nicoud assured me that, in the Jura, he had found eggs in December, and had seen the old birds feeding their young by January 8th, but eggs may be looked for up to the middle of April. Flocks passed over Chaumont on July 1st, and subsequently family parties frequented the larches, the light cones of which they carried off. Among spruces it is not easy to see the birds, but on the larches they may easily be recognized, even at a great height, by the sharply-forked tail.

A female Two-barred Crossbill (*L. bifasciata*) was observed above Vevey towards the end of 1889 by Mr. E. Grand d'Hauteville.

Emberiza citrinella, Linn.

Resident and plentiful, even in the streets of Vevey, &c. In the Jura the Yellow Bunting nests in spruces (instead of availing itself of banks and low bushes); probably to escape the cats, which have a prowling-radius of at least a mile around each chalet.

The Cirl Bunting (*E. cirlus*) from the nest, as well as the Ortolan (*E. hortulana*), have been obtained by Mr. E. Grand d'Hauteville, near Vevey.

Sturnus vulgaris, Linn.

The Starling was first seen on February 27th, 1890, on the meadows near Lausanne, where it afterwards became plen-

tiful; but I only found it nesting in old trees, not in houses, as with us; and it was never seen on Chaumont. In autumn vast flocks frequented the vineyards at Neuchâtel, and notices were posted in the streets, calling the attention of proprietors to the fact that, during the vintage, this and other species injurious to grapes were exempted from the protection conferred during the rest of the year by Swiss legislation. Seldom seen in winter at Vevey.

Pyrrhocorax alpinus, Koch.

Flocks of the Yellow-billed Alpine Chough were observed, as might have been expected, in the Grisons during the month of September. I was unprepared to find this species as low down as the vineyards above Lake Leman, but on November 13th, while walking up to Les Avants from Montreux, several flights passed over—some so close that I could see their yellow bills—and settled down in the higher vineyards. Their note first attracted my attention; it was a rolling *tir-kee, tir-kee,* which, when uttered in chorus, was really melodious. Of course I am well aware, from experience in Spain and in the Pyrenees, that this species has a harsher note when disturbed; but these birds were evidently in the best of humours, anticipating something good (probably small snails) among the now neatly-tended vines. I afterwards saw this Chough on several occasions, tumbling about and "kiting" after its fashion.

The Red-billed Chough (*P. graculus*) I did not meet with in the wild state, but I heard of it as near as Champéry. Mr. E. Zollikofer has both species in his aviary at St. Gall.

Nucifraga caryocatactes (Linn.).

In winter the Nutcracker is widely distributed, and in February one was feeding for some time in the garden of my friend, Mr. Goll, at Lausanne. Nests with eggs were taken on March 21st and 24th, in the main chain of the Jura, and one of these, with its contents, was presented to me by M. Nicoud, who subsequently showed me the site. The nest, quite different from that of the Jay, but not unlike that of *Perisoreus infaustus*, was in a red spruce, close to the

stem, and about 15 feet from the ground. In April, a long and fatiguing search with M. Nicoud for another nest was in vain. When courting, and even when building, the birds are very noisy, but as soon as incubation begins they become silent, shy, and stealthy in their movements; so that it seemed like looking for the proverbial needle to search for a nest in the miles of thick firs. However, having been taught where to look and where it was no use looking, I found a nest on Chaumont; but, alas! the birds had flown. Before visiting the Jura I was under the impression that the Nutcracker was common in that range, but my experience now is that the bird is not numerically abundant there at all. It is true that a good many nests have been obtained in the chain, from Neuchâtel to Soleure; but that is owing to the fact that forests in the Jura are less encumbered with snow than in the Alps, and also that several persons are on the look-out for them there. The Val d'Anniviers, opposite Sierre, in the Valais, is said to be a good place for Nutcrackers; but whether it is workable in March is another matter. Nests with eggs and young are in the museums at Coire, St. Gall, and in various private collections.

It was in the Prättigau that the best opportunity presented itself for observing the ways of the Nutcracker. Between September 14th and 18th this species was quite common among the hazel-bushes; and the top of a low wall, within five minutes walk above the village where I was staying, was a favourite anvil on which to hammer the nuts, their shells lying thick on it. Every few minutes a bird might be seen flitting along the hillside—its widely-spread tail-feathers displaying the white spots on their tips—with a somewhat dipping flight, less laboured than that of the Jay. Often, alighting on a sloping patch of sward, the Nutcracker would draw itself up till its neck seemed unnaturally elongated, then give a few skips, and, taking a short flight, make a furious attack on a bush, tearing off a whole cluster of nuts. This was sometimes rejected, after a comically critical examination, and another cluster would be torn off; after which the bird would fly up to some tolerably wide branch of a fir,

and hammer the nuts energetically to free them from their shucks, pausing to look up, as if for admiration; so like our old friend Punch, after disposing of his enemies, that I almost expected the "rootitoot" of triumph to follow. Then the bird would hop rapidly up the branches—as if on the rungs of a ladder—to the top of the tree, dash away across a ravine, settle on a bush, and be lost to view for a time, returning with its crop quite distended with nuts. I watched the antics of these amusing birds for hours, often within easy gun-shot and by the aid of a binocular; in fact, nearly all one Sunday was spent with the Nutcrackers. One of the notes is a peculiar *gurre, gurre*; but there is another, like a sprung rattle.

Garrulus glandarius (Linn.).

The Jay is exceedingly common everywhere, and resident.

Pica rustica (Scopoli).

The Magpie is only too plentiful, but far less so than the Jay, and does not ascend so high. I do not find it noted from Chaumont.

Corvus monedula, Linn.

The Jackdaw is found about several old fortified towns (such as Morat, Fribourg, Romont, &c.) and *châteaux*, but it is very local.

Corvus corax, Linn.

The Raven is now almost confined to the mountains, where I saw and heard it several times. A pair inhabit that grand cirque, the Creux-de-Vent, above the Val de Travers, between Neuchâtel and Pontarlier.

Corvus corone, Linn.

In Switzerland the prefix "Carrion" cannot appropriately be applied to the Crow, for that bird virtually takes the place of our Rook, eats similar food, and is equally at home in the wooded mountains, the fields, the gardens, and about the houses, even in towns like Lausanne and Vevey. At the last-named place it stalks along the parapet by the lake, within a yard or two of the passers-by, strives with the Gulls

(*Larus ridibundus*) for the bread thrown to them, and is almost as tame and impudent as its Indian relative, *C. splendens*. In autumn it displays great adroitness in dropping walnuts from a height on the flat copings of the walls of the vineyards, in order to break the shell, and the mark is rarely missed. On November 7th I saw a Crow stoop down to the lake and distinctly ruffle the surface with his wings and body, to capture a small dead fish, which he was made to drop by the Gulls. Round the lakes it makes its nest early in April—as with us—in large open trees; but in the Jura the spruce-firs afford it better concealment. A score of birds may often be seen together.

Corvus cornix, Linn.

I only observed the Hooded Crow once, on February 27th, along with a number of the common species, on the fields between Morges and Lausanne. I heard of one near Vevey in November.

Corvus frugilegus, Linn.

The Rook is a migrant: I counted a band of eleven below Lausanne on February 27th, and saw another flock further off. There was, however, a solitary individual which frequented the gardens of our hotel at Lausanne during the winter, stalking up and down on the terrace within a few yards of the windows: a genuine, old, well-wattled Rook. This bird was on the best terms with a Crow, and the two held the garden against all intruders; uniting to attack, with great vehemence and outcry, a male Sparrow-Hawk which used to sweep over the hedges of evergreens with tolerable regularity between noon and one o'clock. When scrag-ends of meat or bone were tied to the ends of branches so slender that in trying to reach them these birds must necessarily topple over, they would make dashes on the wing at the food, which was purposely tied with weak thread, and noisy was the jubilation when the spoil was carried off. In December 1890 a small flock passed over Vevey, and in the first days of January 1891 we found that here also a solitary Rook had taken up his abode among the pollarded planes on the terrace; but after a week of intense cold he was seen no more.

Alauda arvensis, Linn.

I saw no Sky-Larks till April near Lausanne, and till May near Neuchâtel; not many even then, according to our ideas; but the bird is found sparingly in the valleys and breeds there. Large flocks came in autumn, but few remained after the first snow fell.

Alauda arborea, Linn.

The Wood-Lark undoubtedly nests at Chaumont, where I saw several pairs, and heard the song; the clumps of trees on that hillside, with a southern aspect, are just suited to it.

Cypselus apus (Linn.).

First seen at Lausanne April 27th; common afterwards.

Cypselus melba (Linn.).

On May 20th I ascended the tower of the münster at Berne, to visit the well-known breeding-place of the Alpine Swift, before the hand of improvement sweeps away the old roof and erects a brand-new spire. Only some eight or nine nests—solid structures about three inches wide and resembling the bottoms of tartlets—were then built; for the weather had been cold, and several dead birds were lying under the eaves, while only one nest contained eggs, two in number. I can add nothing of importance to the descriptions given by Mr. Scott Wilson and the Rev. H. A. Macpherson of this fine species. On September 17th M. Goll and I saw five individuals, evidently on passage, in front of the Scesaplana, in the Prättigau, our attention being arrested by their dashing flight and white underparts.

Caprimulgus europæus, Linn.

The Nightjar is found in the lower districts in summer, but only in small numbers, or at most it is very local.

Iynx torquilla, Linn.

Seen at Lausanne April 27th; heard a few days earlier.

Picus martius, Linn.

The Black Woodpecker was observed several times on Chaumont and in other parts of the Jura, but I was unsuccessful in my search for an inhabited nest. The laugh of the

male is very loud, and sometimes startling, though far less harsh than that of the male Green Woodpecker.

Gecinus viridis (Linn.).

The Green Woodpecker is very common in the low wooded country, but I did not find it on the fir-covered ridge of Chaumont. I have watched with a binocular both sexes, in April, uttering their note, and may state that it is much softer and more rippling in the female than in the male. During the intense cold of January 1891 I observed this species searching systematically for food under the eaves of farm-houses, and also sending its bill far under the "shingles" of roofs exposed to the sun. I never heard its laugh as long as the severe weather lasted.

Gecinus canus (J. F. Gmelin).

I saw this species only in the Grisons; it looks distinctly smaller and duller in colour than the Green Woodpecker, on the wing. Local specimens are in the Neuchâtel Museum, but it is rare in the Jura district; also of rare occurrence near Vevey (E. G. d'H.).

Dendrocopus major (Linn.).

The Great Spotted Woodpecker is generally distributed in the wooded districts, and was often observed, even in Lausanne itself. On April 6th, close by the Tribunal on the Mont Benon, a Sunday crowd stood watching a fine male bird which was sending the chips flying from a rotten place in a large elm, 10 to 15 feet above the heads of his observers, and the next day he was working hard on the same tree, but on the other side; the amount of splinters and rotten wood at the foot of the tree would have well filled a bushel-measure. A female was sitting on her eggs in a hole in a spruce fir on May 23rd, in the Jura. I often saw this species on banks (as well as on trees), but never on the level ground among the leaves, where the Green Woodpecker is frequent.

Local specimens of *D. minor* are in all the collections; of *D. medius* chiefly in those of the east and of the Rhine valley, though there is an example in the Neuchâtel Museum from that canton.

Picoides tridactylus (Linn.).

I saw the Three-toed Woodpecker in the Grisons; it occurs in many of the Alpine forests, but not in the Neuchâtel Jura.

Alcedo ispida, Linn.

The Kingfisher was observed in all suitable localities.

The Roller (*Coracias garrula*) and the Bee-eater (*Merops apiaster*) are rare visitants, but Swiss specimens are in many museums.

Upupa epops, Linn.

The Hoopoe was first seen on April 18th, on the willow-covered ground between Lausanne and Neuchâtel; it is fairly common there during summer, and sometimes nests in the gardens of Lausanne and Ouchy.

Cuculus canorus, Linn.

Common in the Jura, and often seen and heard on Chaumont; plentiful near Vevey (E. G. d'H.).

Syrnium aluco (Linn.).

The Tawny Owl is widely distributed in Switzerland, including the Jura.

Nyctala tengmalmi (J. F. Gmelin).

This thick-plumaged Owl is found in many of the fir-woods of Switzerland, and I saw it several times in the Jura, where its nesting-places—generally a hole previously occupied by the Black Woodpecker—were pointed out by M. Nicoud, who gave me a clutch of three eggs. I have heard the bird calling on a dull day, as well as by night; its cry being intermediate between that of the Little Owl and of the Scops, but more like that of the latter.

The Little Owl (*Athene noctua*) is resident in small numbers in the low country; the Scops Owl (*Scops giu*) is also found there in summer. The Eagle Owl (*Bubo ignavus*) is to be found in most of the deep ravines, and a pair or so inhabit the Gorges du Chauderon, &c., near Montreux; also a few suitable spots in the Jura. The Long-eared Owl (*Asio otus*) is resident; *A. accipitrinus* is a bird of passage. The Barn Owl (*Strix flammea*) I believe to be rare. The Pigmy Owl

(*Glaucidium passerinum*) is chiefly known, in Switzerland, as an inhabitant of the forests of the Grisons, though it may perhaps range for some distance northwards along the Rhine valley. Mr. E. Zollikofer, of St. Gall, has a cageful of these amusing little birds, one of which has laid many eggs.

Readers of this journal will be aware that Drs. V. Fatio and Th. Studer have published an excellent Catalogue of the diurnal birds of prey, with coloured maps showing their distribution (*cf.* Ibis, 1889, p. 394). Of this I have availed myself in the following remarks on some of the rarer or more interesting Swiss species of Raptores.

Gyps fulvus (J. F. Gmelin).

About a dozen occurrences of the Griffon-Vulture are on record, and local examples are in the museums of Berne, Sion, and Coire; another from the Grisons being at Schaffhausen. The Coire bird is immature and was killed in October or November; most of the others were shot in May and June. No Swiss breeding-place is known.

Two examples of the Black Vulture (*Vultur monachus*) are said to have been shot near Pfäffers and Sargans, in the valley of the Rhine, about 1848–49, but no Swiss specimen is in existence.

Neophron percnopterus (Linn.).

The Egyptian Vulture has long been known to nest regularly on Mont Salève, just within French territory, but immediately above Geneva; and further south, in Savoy, it has several breeding-places. M. Alfred Vaucher, whose acquaintance I made, has given some interesting details in the above-mentioned Catalogue; and he told me that there was little doubt of the occasional nesting of this species still further north, namely in the Jura. On Mont Salève the birds are keenly watched by collectors; the nests are robbed nearly every year, and, what is worse, the owners are often shot.

Gypaëtus barbatus (Linn.).

Between 1801 and 1887 eighty-eight occurrences of the Bearded Vulture are recorded in Messrs. Fatio and Studer's

Catalogue; of these, 57 examples are existent in various museums and private collections. Whenever a bird is seen every possible effort is made to obtain it, as it fetches a high price, and ere long this species will have ceased to be indigenous in Switzerland. The last example obtained was a bird found poisoned near Viège (Visp), in the Valais, about the end of February 1886; it now occupies a central position in the Museum at Lausanne. It is said that this was an old female (there is very little red on the breast) which had been known for 20 or 25 years as nesting on the Bietsch-horn; but the curious thing is that the chasseurs of the Valais knew of no other Bearded Vulture, although, if she nested, she must have had a mate. A certain Benedict Henzen has furnished some wonderful notes:—how he saw a Bearded Vulture attack a child, which had to lie down flat and hold on to the rocks to avoid being dragged (*entraîné*) over a precipice, while a man who came to the rescue with a loaded gun was driven by the attacks of the bird to take refuge in a hut; how another carried off a kid three months old; how, in 1870, a lamb, also belonging to Henzen, was carried from the Grütene to the Stockgraben, where it remained bleating for two days until the Bearded Vulture "*revint le chercher*":—beyond which deponent sayeth not. Dr. E. de Fellenberg, who contributed these notes to the Catalogue in 1887, says that he has no reason to doubt these and similar statements; but those who have examined the weak feet and toes of the above species will form their own opinion as to his credulity!

The Museum of St. Gall possesses a superb and probably unrivalled series of Bearded Vultures, from various parts of Europe, Asia, and Africa, formed by the Drs. Girtanner.

Circus æruginosus (Linn.).

The authors of the Catalogue say that the Marsh-Harrier is never found in Switzerland during the winter; but on February 26th I had an excellent view of a bird of this species—apparently an immature female—beating over a marshy creek near St. Sulpice, on Lake Leman. It was

certainly not the Black Kite: a bird which, Dr. Fatio thinks, is sometimes found there in winter.

The Hen-Harrier (*C. cyaneus*) is chiefly a migrant. The Pallid Harrier (*C. swainsoni*) is a rare visitor; a local specimen is in the Neuchâtel Museum.

Circus cineraceus (Montagu).

On June 25th I saw a pair of Montagu's Harriers quartering the moorland near Pontarlier; the male was a dark grey bird, but not one of the black variety.

Buteo vulgaris, Leach.

Some Buzzards are resident, but the species did not become plentiful till towards the end of February; it does not go high up in the mountains, even in summer. Considerable migrations are on record. In the Prättigau, at about 3500 feet, one pounced upon, and afterwards dropped, a Shrew, which proved to be of rather a rare species, and M. Goll preserved it.

Buteo lagopus (J. F. Gmelin).

I had a good view of a Rough-legged Buzzard mobbed by two Crows and a Magpie early in January 1891; the bird settled close to me. This species is undoubtedly a visitor on migration; but the authors of the Catalogue add that it *breeds* on Mont Salève and in the valley of the Rhone (Bas Valais). I begged M. Vaucher, one of the authorities, to make certain of this, for, if the identification is correct, this extension of its breeding-range southward is most remarkable. He had not preserved the bird, and there is not, so far as I know, any Swiss example shot from the nest, nor do I expect to hear of one!

Aquila chrysaëtus (Linn.).

The Golden Eagle was seen by me only on the face of Mont Vilan (7800 feet), in the Grisons. Specimens are in every museum; in that of Coire there is a fine case containing two birds which were killed while fighting.

The Spotted Eagle (large form) appears to be chiefly a visitor to the open country round the great lakes. The same may be said of the White-tailed Eagle (*Haliaëtus albicilla*),

which is, however, far more frequent, mostly in immature plumage. The Short-toed Eagle (*Circaëtus gallicus*) nests annually, according to M. Vaucher, on the wooded portions of Mont Salève; also, irregularly, in other parts of Switzerland. The Osprey (*Pandion haliaëtus*) is known to breed sparingly near Schaffhausen and in the vicinity of all the large lakes, while it is not uncommon on passage. In January 1891 I saw one over the upper end of Lake Leman.

Milvus migrans (Boddaert).

The Black Kite was first seen on April 10th, and often afterwards over the Lake of Geneva. There it is common; while several pairs were always to be seen on the Lake of Neuchâtel, though the bird rarely showed itself above Chaumont. I often saw it drop down upon surface-fish, and eat them from one foot as it flew, in the manner described by Mr. Scott Wilson; and I also observed that while one of a pair was fishing the other was soaring at a great height, as he has stated. Though common on the large lakes and rivers, the Black Kite is rare elsewhere; it migrates early.

The Red Kite (*M. ictinus*) is more generally distributed, but I never saw it alive in Switzerland.

Astur palumbarius (Linn.).

The Goshawk is resident in the low country. It was seen near Lausanne, and often in the Neuchâtel Jura, where I tried in vain, unassisted, to find the nests of two pairs of birds. One of these was undoubtedly near the well-known Pierre-à-Bot (a huge erratic boulder, brought by ice from the Mont Blanc formation), but that part of the forest was 2000 feet below the top of Chaumont, and there was the climbing back to be considered!

Accipiter nisus (Linn.).

The Sparrow-Hawk is very common. On Chaumont I saw a female carrying off something—probably a chicken—so heavy that her legs were dragged down to their full extent, and she could scarcely reach the shelter of the trees. A nest with four eggs, taken on May 23rd, was made entirely of twigs of larch.

Pernis apivorus (Linn.).

Owing to absence in England during the greater part of June, I did not see the Honey Buzzard on Chaumont till the beginning of July. There were two pairs, and their nests were, I believe, about three miles apart; but my search was vain, for in those dense woods the birds were soon lost to view; moreover, the nest is usually, I am told, on a thick spruce-fir. A female often flew close past the hotel, sometimes just clearing the gable, and once the adult male was recognized by his grey head, but in a moment they were over the ridge, where the eye could not follow them. In August the young were on the wing, attended by their parents; the latter answering immediately and sweeping over me whenever my imitation of the cry of the young was accurate; their *whee* or *kee* is very shrill and less "mewing" than the call of the Common Buzzard. We frequently came upon the remains of the nests of wasps and wild bees, torn up.

Falco peregrinus, Tunstall.

Observed near Lausanne in March; well known and widely distributed in the lower valleys of the mountains, but said to be rare and unknown as a breeding species in the Grisons and Tessin.

Falco subbuteo, Linn.

I saw two young birds taking short flights from the tops of some spruces on Chaumont, early in August. In Switzerland the Hobby appears to be remarkably bold and powerful, inasmuch as, according to the authors of the Catalogue, it captures Pigeons and Partridges!

The Red-footed Falcon (*F. vespertinus*) is an irregular visitant.

Falco æsalon, Tunstall.

A Merlin swept past me on Mont Vilan, in the Grisons, on September 15th; it is considered a rare species in Switzerland.

Falco tinnunculus, Linn.

The Kestrel is undoubtedly common, but it did not come under my notice so often as the Sparrow-Hawk.

Of the water-birds I can say little. The Cormorant occurs on the lakes; the Grey Heron was sometimes seen flagging along the low shores near Neuchâtel; the Purple Heron is a visitor; the Squacco Heron is common on passage, and may perhaps be found nesting among the reedy swamps near Orbe, where the Bittern used to breed, though drainage has much diminished the area of its haunts. The Little Bittern is widely distributed and nests as near Lausanne as St. Sulpice. A Flamingo (*Phœnicopterus roseus*) obtained on the Lake of Neuchâtel on October 19th, 1865, is in the museum of that town; so are also local examples of the Grey Lag, White-fronted, Lesser White-fronted, and Bean Geese; as well as such maritime species as the Eider Duck, the Velvet Scoter, and others. The western half of the Neuchâtel lake is frequented, so long as the water is open, by almost all the Ducks in the European list; and Lake Leman (which never freezes), though too deep to afford good feeding-ground, has attracted almost an equal number of species, though fewer individuals. Those which I have identified were the Golden-eye (*Clangula glaucion*), common in February and March; the Tufted Duck (*Fuligula cristata*), which is semi-domesticated at Geneva; and the Pochard (*F. ferina*), seen in April near the marshy delta formed by the Rhone, where a good many Teal are found. The following, however, may be mentioned under separate headings.

Cosmonetta histrionica (Linn.).

M. Bastien's collection at Lausanne contains a male Harlequin Duck shot by him at Lully, on the lake, September 12th, 1865.

Mergus merganser, Linn.

The Goosander nests (or has nested) on the island of St. Pierre, in the Lake of Bienne, and also near Auvernier, on the Lake of Neuchâtel, where the low sandy shore is fringed with pollards. There, early on the morning of May 18th, I had an excellent view of an adult male, and the parents with the three downy nestlings are in the Museum of Neuchâtel. In December 1890 and January 1891 a flock consisting of fourteen were often seen in front of our windows:

one was an old male in superb plumage, and there was a younger male with less white, while the rest were females or birds of the last season. Other flocks were scattered along the lake.

The Red-breasted Merganser (*M. serrator*) and the Smew (*M. albellus*) are well-known visitors to the lakes; I saw four of the latter in February 1891.

Cygnus olor (J. F. Gmelin).

The Mute Swan is found on the lakes in a semi-wild state, and may often be observed taking long flights in line, even at some distance from broad water; for instance, I have seen birds flying across the valley of the Aar at Berne. A pair which had a nest close to the pier at Ouchy formed a great attraction to visitors: the female was sitting on four eggs on March 22nd; by the 26th or 27th she had eight; by April 27th some of the young were hatched, and by May 2nd six birds were on the water, two eggs being unproductive. That is less than the period which I have given in my 'Manual'; probably it varies somewhat according to climate in this as with other species.

Columba palumbus, Linn.

Flights of Ring-Doves were observed coming from the direction of the Rhone valley on April 5th, after which the species became common in the wooded districts, including the Jura, till October.

Columba œnas, Linn.

The first Stock-Doves were identified near Lausanne (a flock of eight) on February 27th; I afterwards saw many pairs in the wood of Sauvabelin, above Lausanne, where they breed in the hollows of the old trees; also in the Grisons.

The Turtle-Dove (*Turtur communis*) occurs, but appears to be rather uncommon in the lake districts, as well as in the Jura.

Tetrao urogallus, Linn.

The Capercaillie is still tolerably abundant in the main Jura, and also on Chaumont, as well as in the Alps. After the love-season the males frequent high spruce-clad localities,

while the females are often found lower down the slopes, where the beech and oak are mingled with the firs.

The Black Grouse (*Tetrao tetrix*) is unknown in the Jura. In the Alps generally it is well known, and in the Grisons it is even plentiful.

Bonasa betulina (Scop.).

The Hazel-Grouse is found in the Jura, as well as in the Alps, and I often saw it on Chaumont; especially from the beginning of July onwards, when the birds were in coveys. These are fond of basking in slight open patches on the hill-side, where large timber has been felled, and on being flushed they immediately flutter up into trees, where, however, they do not stay long. The call-note is a loud, clear *b-chick* or *b-cheek*.

In the Grisons we came upon many fresh tracks of Ptarmigan (*Lagopus mutus*) in the snow, but did not try to flush any on that occasion, as we were after chamois. In years past I have seen many. The Ptarmigan is not found in the Jura.

Perdix cinerea, Latham; Caccabis rufa (Linn.); Caccabis saxatilis (Meyer).

The Grey Partridge inhabits the cultivated region, but it is not plentiful; while the "French" Red-leg is uncommon or very local. The Rock or Greek Red-leg (the *Bartavelle*) is well known in the Valais and in most of the mountainous portions of Switzerland. I have seen the Barbary Partridge (*C. petrosa*) hanging up in the shops at Vevey; probably imported from Sardinia.

I heard grave complaints of the sad diminution in the number of Quails which visit Switzerland to breed. Some Swiss sportsmen seriously attribute this to the enormous number taken in Egypt in spring since the British occupation, and they are fully persuaded that for several years past Londoners generally have been battening on Quails; in fact, they feel inclined to say, with St. Jerome (slightly altered), "Tu coturnicem eructas" when they meet an Englishman!

The only member of the Rallidæ that came under my notice was the Coot (*Fulica atra*) on the Lakes of Lucerne

and Leman. Nor were my opportunities great for seeing Waders. The Lapwing was observed over the low ground; the Common Sandpiper (*Totanus hypoleucus*) was seen in pairs along the Broye, which connects the lakes of Neuchâtel and Morat; and on April 26th five Redshanks were feeding on the marshy shore below Lausanne. M. Bastien has several examples of the Turnstone (*Strepsilas interpres*); also a Terek Godwit (*Terekia cinerea*), shot in spring on Lake Leman, while I believe that another from Neuchâtel is in the Vouga collection. All the ordinary Scolopacidæ are to be found in the local collections. Woodcocks were on passage on November 20th, and were comparatively plentiful, but there are not many "to the acre" of mountain woodland.

Hydrochelidon nigra (Linn.).

The Black Tern was observed daily on the lake of Neuchâtel in autumn; it occurs on passage in large numbers on Lake Leman.

The White-winged Black Tern (*H. leucoptera*), the Whiskered (*H. hybrida*), the Gull-billed (*Sterna anglica*), and the Common (*S. fluviatilis*) have all been obtained in breeding- as well as in autumn-plumage. I was surprised to find in the Museum at Geneva an adult specimen of the Roseate Tern, *Sterna dougalli*: one of a pair shot on the lake on May 17th, 1860. This species I had always considered as exclusively maritime, nor should I have ever suspected it of migrating across the Continent, on the way to or from the Mediterranean, where it is known to occur.

Larus ridibundus, Linn.

The Black-headed Gull is said to breed in the marshes at the mouth of the Dranse, on the Savoy side of Lake Leman, on which it is found all the year round—not leaving us even in January 1891, when 28° and 30° of frost were not uncommon. Plenty had full black heads on March 4th, 1890, when the thermometer was at 20° and the rocks were coated with ice; while by November 14th several of the many birds at Vevey showed a distinct approach to a hood. A dark line gradually runs from each ear-patch across the head; later, a similar and parallel line grows up from the eyes, so

that the head appears to have two narrow bands of dusky grey; then the dark feathers increase between; and lastly they come on in front, till the base of the bill is reached. A few birds have almost complete hoods at the time of writing this. They are easily observed, for they are accustomed to be fed with bread (one baker being a recognized purveyor of "pain pour les mouettes" cut up in pieces, at ten centimes a bagful), and as soon as a window is opened in the morning they come flocking up, catching the pieces thrown to them without a miss (except when they come into collision), and amid deafening clamour. If one bold bird takes a piece from my fingers, others will often follow suit, while the same individual will take pieces over and over again; but at other times they will all sweep by in silence, looking wistfully at the extended morsel. During the severe cold I gave them fat meat.

Larus canus, Linn.

In January 1891 I identified several adult and immature examples of the Common or Blue Gull, at Vevey and along the lake. The white tips, after the subterminal black alar bar, render the former very conspicuous; while the dark outer edges to the wings in the young contrast strongly with the whitish border in *L. ridibundus*.

I have also seen at a distance a large grey-backed Gull, probably *L. cachinnans*, and a black-backed species, which was, I think, *L. fuscus*; it was hardly large enough for *L. marinus*. The Little Gull (*L. minutus*) is sometimes common on passage; the Kittiwake (*Rissa tridactyla*) and some other species also occur.

The three species of Colymbidæ are found on the lakes; a Black-throated Diver in the Neuchâtel collection being in full breeding-plumage, while a Great Northern Diver is so young that a few filaments of down are still adhering to its head.

No Grebes have come under my notice at this upper end of Lake Leman, but all the European species are represented in the Swiss museums.

Hôtel des Trois Couronnes,
Vevey, February 16th, 1891.

XIX.—*On the Birds of the Volcano Islands.*

By Henry Seebohm, F.Z.S.

Since my paper on the Birds of the Bonin Islands (Ibis, 1890, pp. 95–108) was published Mr. Holst has visited the Volcano Islands, and has sent me a box of birds' skins and eggs from Sulphur Island, the central one of the group.

The Volcano Islands lie south of the Bonin Islands, in the same latitude as the north of Formosa, and in the same longitude as the east of the main island of Japan. Sulphur Island is a low, flat, narrow stretch of land, about five miles long, with what appears to be an extinct volcano, about 600 feet high, in the south-west. The centre is very barren, principally black sand and grey clay, with a few dried-up tufts of grass, and an occasional hardy bush. Everywhere are scattered stones and rocks, especially to the north-east, and in the centre are three or four big blocks of rock, two or three hundred feet high. To the south-east of these rocks is a plain of what seemed to be pure sulphur, which was boiling furiously in three or four holes when visited by Mr. Holst. Close to the north shore are some hot springs. There are a few large trees on the island, and both in the north-east and in the south-east is dense low scrub, bound together with climbers. Forty miles north of Sulphur Island is the island of San Alessandro, a steep and almost inaccessible mountain, some 2500 feet high. The following birds were observed on Sulphur Island.

Monticola cyanus solitarius.

The Eastern Blue Rock Thrush was not very common.

Hypsipetes squamiceps.

The Bonin Island Bulbul was not very common.

Cettia diphone.

The Bonin Bush Warbler was common. Two examples were sent.

Zosterops japonicus ?

Six examples of a White-eye were sent, five of them in spirits, and one which had been in spirits. The latter has a

pale yellow throat, and the upper parts are greenish. The others have faded to grey above and white below, with a trace of brown on the breast and flanks.

It is impossible to say whether they represent a new species or not. They do not differ in dimensions from the Japanese species.

Fringilla kittlitzi.

The Bonin Island Greenfinch was common. Three examples sent.

Falco peregrinus.

Four or five pairs of Peregrine Falcons frequented the rocks near the centre of the island, and appeared to live principally upon Bulwer's Petrel, which was very abundant. Two examples sent.

Columba ianthina.

The Pigeon of Sulphur Island seems to be the Japanese species, and not the fine bird of the Parry Islands (*Columba versicolor*). It breeds on the island, but is not common. This bird and its allies have evidently nothing to do with the genus *Carpophaga*. I have recently examined large series of both groups from Polynesia, and find that whereas the species belonging to the genus *Carpophaga* have 14 tail-feathers, those belonging to the subgenus *Ianthœnas* have only 12 as in typical *Columba*. There seems to me to be no reason whatever why they should be removed from the genus *Columba*. Probably Gray was the first person who made the mistake (Gray, 'Genera of Birds,' ii. p. 469), which Jerdon followed, to Blyth's astonishment (Blyth, Ibis, 1867, p. 149). There seem to be also various anatomical peculiarities in which these Pigeons differ from *Carpophaga* and agree with *Columba*. There does not appear to be any generic difference between *Columba ianthina* of Japan and *Columba laurivora* of the Canaries.

The crown in newly moulted examples of *Columba ianthina* is slate grey, glossed with pinkish purple. The purple gloss seems to increase in amount with the age of the feather, until it entirely hides the slate-grey; but as it increases it

becomes duller and more rusty in colour, until finally it fades to a rusty brown without gloss. Two examples from Sulphur Island are in the intermediate stage.

PORZANA QUADRISTRIGATA.

The White-eyebrowed Crake was occasionally seen on Sulphur Island, and one example was sent home. It was taken on the 7th of June. This is probably the most northerly locality whence it has been obtained.

TOTANUS INCANUS BREVIPES.

Two examples, supposed to be the Asiatic Wandering Tattler, were seen.

DIOMEDEA NIGRIPES.

A species of Black Albatros was breeding in great numbers on the sandy ground, many rotten eggs were lying about, and there were plenty of young in down, some almost full-grown, standing like so many soldiers on guard. An egg taken on the 8th of June measures 4·2 inches by 2·6 inches, and is dirty white, without any spots.

PUFFINUS CUNEATUS.

The types of this Shearwater were discovered in the spring of 1883 on Krusenstern Island, between the Sandwich Islands and the Marshall Islands, by Mr. Snow of Yokohama, who sent them to me. Being unable to identify them with any known species of *Puffinus*, I gave one of them to Mr. Salvin, who described it as a new species under the name of *Puffinus cuneatus* in the July number of this journal for 1888 (Ibis, 1888, p. 353). Four months later, on the 8th of November, the same species was described as *Puffinus knudseni* (Stejneger, Proc. U.S. Nat. Mus. 1888, p. 93) from an example discovered by Mr. Knudsen on Kauai, one of the Sandwich Islands.

Snow's Shearwater has a long cuneate tail (central rectrices 5·4, outer ones 3·7 inches); the mantle is brown (not grey), and the breast and belly white. It breeds abundantly on Sulphur Island, and Mr. Holst has sent a female, with the egg taken with it; the latter measures 2·5 inches by 1·65, and is unspotted. On the label of the skin the bill is said to

be light grey with a black hook; the tarsi and feet are described as pale pink, and the irides as pale brown.

Bulweria bulweri.

Bulwer's Petrel has been supposed to be peculiar to the Atlantic, but it has recently occurred in the Pacific Ocean on Kauai, one of the Sandwich Islands (Stejneger, Proc. U. S. Nat. Mus. 1890, p. 380).

Mr. Holst found it very common on Sulphur Island, and sends three examples, in each of which the pale bar across the wing formed by the grey margins of the greater wing-coverts is very conspicuous, which bar is said to be absent in *Bulweria macgillivrayi* from the Fiji Islands. These Petrels flew about at night like Bats in the twilight in great numbers, being extremely bold, sometimes touching the gun with the tips of their wings, but the rapidity of their flight made it very difficult to shoot them. Mr. Holst succeeded in dropping one of them, and afterwards secured several more in the daytime, when they were found hidden away in pairs among the bushes and rocks all over the island, but he was unable to find any eggs.

Sula leucogastra.

The Common Booby was very abundant, and great numbers of their eggs were taken early in June. They vary in size from 2·7 inches by 1·7 to 2·4 inches by 1·6.

Phaeton rubricauda.

The Red-tailed Tropic Bird was only seen on San Alessandro, where it was very abundant, but kept well above the range of gunshot. No skins were brought from this island, but Boobies, Albatroses, and many small birds were seen.

XX.—*On a supposed new Species of Petrel of the Genus* Œstrelata, *from the Kermadec Islands.* By Osbert Salvin, M.A., F.R.S., &c.

Œstrelata cervicalis, sp. n.

Supra capite summo nigro plumis omnibus ad basin albis, cervice postica alba plumis stricte pallido griseo margi-

natis, dorso toto et tectricibus caudæ superioribus fusco-nigricantibus plumis quoque griseo limbatis, uropygio fere pure nigricante; alis nigris, tectricibus majoribus vix grisescentibus et strictissime albo marginatis; cauda obscure fusca ad basin retricum mediarum alba, rectricibus lateralibus in pogonio interno fere ad apicem cum rachidibus pure albis; fronte, loris et corpore toto subtus cum tectricibus caudæ inferioribus pure albis, genis et area ante oculos nigro punctatis; remigibus nigris, infra ad basin tantum albis, margine alarum externo subtus nigricante albo intermixto, tectricibus majoribus et intermediis pure albis, secundariis in pogonio interno fere ad apicem pure albis; rostro nigro, pedibus carneis, digito externo extrorsum et omnibus cum palmis pro dimidio distali nigris. Long. tota 19·0 poll. Angl., alæ 11·5, caudæ 5·3, rostri a rictu 1·7, tarsi 1·5, dig. med. cum ungue 1·9.

Hab. Ins. Kermadec.

Mus. Brit.

Obs. Œ. phæopygiæ, mihi, proxima, sed rostro multo robustiore, cervice postica alba, et plumis dorsi griseo limbatis certe distinguenda.

The specimen from which the above description is taken was recently sent to the British Museum by Captain Carpenter of the whaling barque 'Costa Rica Packet,' with the information that it was obtained "about a year and a half ago" on the Kermadec Islands. The bird is evidently allied to the section of *Œstrelata* of which *Œ. hæsitata* is the best known example. From this species it is readily distinguished by its larger bill and its dark uropygium, but it has the nearly pure white hind neck of *Œ. hæsitata*; in this it differs from *Œ. phæopygia*, but agrees with that bird in having a dark rump. The size of the bill separates it from both these birds.

A character by which these three birds may be distinguished is the colour of the primaries beneath, which are black over the whole of the exposed portion of the inner webs, and only become white under the larger coverts.

Other species of *Œstrelata* allied to *Œ. cervicalis* are *Œ. magentæ* and *Œ. externa*. But in the former the forehead is

grey to the base of the bill, and the latter has a longer thinner bill, and the exposed portion of the inner webs of the primaries beneath, near the larger coverts, is white.

Œ. phæopygia was first described from specimens obtained in the Galapagos Archipelago (see Trans. Zool. Soc. ix. p. 507, pl. lxxxviii. fig. 1). It has since been found in the Sandwich Islands, and has been again described by Mr. Ridgway as *Œ. sandwichensis*.

The British Museum has recently received a specimen from the Island of Kauai, which agrees accurately with the types of *Œ. phæopygia*.

The only species of *Œstrelata* hitherto known from the Kermadec Islands is *Œ. neglecta*, Schl. (Mus. Pays-Bas, vi. Procell. p. 10). This is a smaller bird than that now described, with much more white on the primaries beneath, besides differing in other characters.

XXI.—*On the Birds of Madagascar, and their Connection with Native Folk-lore, Proverbs, and Superstitions.* By the Rev. James Sibree, Jr., F.R.G.S.*—Part I.

The Natural History of Madagascar is a study of great interest, not only to the zoologist, but also to the geologist and physical geographer; for although the animal life of the great African island is by no means so varied and so striking as that of some of the other large islands of the world, its peculiarities and its omissions are extremely significant; and the many peculiar and isolated animals it contains throw much light upon the physical condition of the island and its surrounding groups in earlier geological periods. This statement is true of the Mammalia, the Reptiles, and the Insects of Madagascar, and it is no less true of its Birds.

My object in the present and subsequent articles is two-

* Reprinted from the 'Antananarivo Annual,' 1889, with additions and corrections by the Author.

fold: first, I purpose to collect together all the available information about Malagasy birds, as regards their forms, their habits, their peculiarities, and their habitats. We know as yet comparatively very little about these beautiful and interesting living creatures, and what has been noted about them is chiefly in the French language, in the works M. Grandidier and M. Pollen. It will be of service, I think, to translate this information, and to put together the little we do know, and this may possibly induce other residents in the island to note the habits and peculiarities of the birds more minutely, and so eventually to widen our knowledge of the subject. I also purpose to bring together the many allusions to birds and their habits in Malagasy folk-lore and proverbs, as well as to point out the descriptive character of many of the native names for the birds of Madagascar, and the light these names often throw upon the birds' habits.

And secondly, I shall give, as far as practicable, a complete list of the birds of the island, as known and described up to the present time, arranged according to the most recent classification of competent ornithologists, together with both their English and their scientific names, and also those by which they are known in Hova or standard Malagasy, as well as in the various provincial dialects. This list will accompany the chapters describing each of the Orders of the Malagasy Birds.

The avifauna of Madagascar comprises, as at present ascertained, no less than 240 species, including sea-birds, among which there are naturally numerous wide-ranging forms common to many other countries; and among these latter there is, of course, little that is peculiar or of any special interest. It is among the land-birds proper, numbering 150 species—and omitting many shore- and water-birds, as well as several of powerful flight, and therefore of wide distribution—that we find some of those peculiar and isolated types of bird-life which, as Mr. A. R. Wallace remarks, "speak to us plainly of enormous antiquity, of long-continued isolation, and not less plainly of a lost . . . . continental island [or archipelago of large islands], in which so many, and

various, and peculiarly organized creatures could have been gradually developed in a connected fauna, of which we have here but the fragmentary remains."

Many lists of Madagascar birds have been published by travellers and naturalists. Flacourt, in his 'Histoire de Madagascar' (1661), enumerated in the 11th chapter of that work 56 birds under their local names; in the following century Brisson described 31 species, which had been sent to Réaumur by Poivre; and in 1840 Sganzin published in the Strasburg Natural History Society's 'Mémoires' the Malagasy and French names of 84 birds. But it was in 1848 that there appeared, in a German review, the first detailed and systematic list of the birds of Madagascar, prepared by Dr. G. Hartlaub, comprising 94 species. This list was afterwards increased, in a more complete work by the same savant in 1861, to 153 species. Other lists were published—by Jules Verreaux in 1865; by M. Grandidier in 1867; and especially by Messrs. Schlegel and Pollen, who, in their fine work 'Recherches sur la Faune de Madagascar,' in 1868, gave descriptions, more or less complete, of 143 species of Madagascar birds, together with figures of many of them; and in 1877 Dr. Hartlaub published a second and enlarged edition of his 'Ornithological Fauna of Madagascar,' in which 214 species of birds found in the island are described. But by far the most elaborate and complete account of Malagasy birds (as well as of all the animal life of the country) is contained in the unequalled six volumes (four of plates and two of text) forming part of M. Grandidier's great work on Madagascar, still in process of publication. In these plates not only are the external forms and plumage of the birds shown in their varied and beautiful colours, but their osteology is fully given, and, in the case of the most curious birds, their anatomy is also carefully delineated.

It is to French naturalists that the discovery of the greater part of the Malagasy birds is due: to Poivre and Sonnerat, Bernier, Goudot and Rousseau, and Lantz, Humblot and Grandidier. But much has also been done by others, especially by Crossley, Edward Newton, Plant, Waters, and

Meller, among English naturalists, and by the Dutch travellers Pollen, Van Dam, and Van der Henst, who, together with some others, have made important collections.

Madagascar possesses a considerable number of genera and species of birds peculiar to itself: 35 genera and 129 species, distributed among 54 families. The result of a detailed study of the Malagasy avifauna is, says M. Grandidier, "that it has a very specialized character, and that, notwithstanding the small distance which separates Madagascar from the African continent, its affinities are much greater with the extreme East than with Africa; since, if we leave on one side all the birds of powerful flight, there are about twice as many more allied to Oriental than to African species, besides which the greater part of the characteristic genera of Africa are entirely wanting.

"It is now known that Madagascar comprises three 'Regions,' which are very distinct in their physical aspect, their geological formation, their vegetation, and their climate. These are: (1) the Region of the East and North-west, which is mountainous, damp, and covered with wood, or with herbaceous plants of greater or less size, according to the localities; (2) the Central Elevated Region, which is very bare and rugged, almost entirely destitute of trees and shrubs [except small patches of forest, still left in a few places, and on the margins of the rivers, and in the inhabited portions], and where a bad coarse herbage scarcely covers the clayey soil of deep red; and (3) the Region of the West and South, which is flat, dry, and sandy, with here and there small woods and thinly scattered trees. The centre of the island contains only few birds, almost all of powerful flight, principally Birds of Prey, Swifts, Swallows, and Water-birds; in fact, these are regions which can give harbour to only a few animals.

"The birds which are most commonly seen in the central portions of Madagascar are Kestrels, Kites, Owls, Swifts, and Kingfishers, the two last-named along the numerous water-courses; Swallows, Crows, Larks, Cardinal-birds, Herons, and Egrets near the rice-fields; and Wild Ducks, Wild Geese, and Divers in the marshes and lakes. We

also meet, although more rarely, with Parrakeets, Peregrine Falcons, Bee-eaters, Sandpipers, Plovers, Warblers, Flycatchers, Quails, and Partridges. Bustard-Quails and various Waders are likewise met with on the banks of the lakes and along the rivers; also Rails, Snipes, and Gulls.

"The two coast regions are, on the contrary, well peopled with birds of all sorts, and while the greater part of these inhabit indifferently one or the other, it is no less true that there are a certain number which have their habitat almost exclusively in one region only, and which give it its special characteristics. There are also some which keep to a still more limited area, not going beyond a very restricted range. At the present time 50 species are known which are peculiar to the Eastern Region and to the almost identical district of the North-west, and 23 species peculiar to the Western Region. We consider as 'peculiar to a region' the species which, so far, have only been found in that region, or which, while very common to one, are only seen very exceptionally in the other. No doubt in the future numerous modifications will have to be made in these numbers, but meanwhile the special characters of the two avifaunas are not the less sharply defined.

"It is interesting to note that a certain number of species, which are of sedentary habits, undergo certain modifications under the influence of the physical conditions with which they are surrounded; in fact, as we have already said, the biological conditions are very different in the two regions of the East and North-west on one hand, and of the West and South on the other hand. These differences manifest themselves in the birds of the West in diminished size, and in a tendency to albinism and a general paler colouring.

"Even the eggs of certain of these birds have a lighter and less vivid colour, and are a little smaller, than those of their eastern relations"*.

* These paragraphs are translated from M. Grandidier's 'Histoire Naturelle des Oiseaux;' and the preceding paragraphs as to the lists of Malagasy birds are also condensed from the same work.

I will add in this note what M. Grandidier says further as to the special

The lists of birds to be given, together with their native names, both Hova and provincial, are taken in the main from a small quarto pamphlet of eight pages published by the Rev. W. Deans Cowan some years ago. But I understand that the scientific information there brought together was partly due to that accomplished German naturalist, Dr. J. M. Hildebrandt, whose death in 1881 was such a loss to science and to our scientific knowledge of Madagascar, especially in its connection with Africa. This list, however, has been completely rearranged, according to the Natural Orders, and to it I have added other particulars from later information, especially from M. Grandidier's work. In the classification of the Madagascar avifauna, now, I believe, done for the first time in English, I have followed the arrangement laid down by Mr. R. Bowdler Sharpe, and adopted by him in his treatment of the Birds in 'Cassell's New Natural History,' vols. iii. and iv. In the nomenclature of genera and species I have chiefly followed M. Grandidier, as the first authority on these points as regards the ornithology of Madagascar.

In Mr. Cowan's paper the native names by which most of the birds of the island are known in different parts of the

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character of the Madagascar avifauna. The 35 peculiar genera, most of which possess great interest from an ornithological point of view, are: (1) *Coracopsis* among the Parrots; (2) *Eutriorchis*, a Harrier-Eagle; (3) *Heliodilus*, an abnormal Barn-Owl; (4) *Coua*, Lark-heeled Cuckoos; (5) *Leptosomus* and (6) *Brachypteracias*, which connect the Rollers and the Bee-eaters; (7) *Neodrepanis*, a Sun-bird; (8) *Philepitta*, a Paradise-bird; (9) *Falculia*, an aberrant form of Starling; (10) *Hartlaubia*, between the Starlings and the Thrushes; (11) *Hypositta*, a Nuthatch; (12) *Eroessa*, (13) *Ellisia*, (14) *Dromæocercus*, and (15) *Mystacornis*, all species of Warblers; (16) *Thamnornis*, a Tailor-bird; (17) *Bernieria*, (18) *Oxylabes*, (19) *Crossleyia*, species of Babbling Thrushes; (20) *Tylas*, a Bulbul; (21) *Newtonia* and (22) *Pseudobias*, genera of Flycatchers; (23 to 29) *Artamia*, *Cyanolanius*, *Leptopterus*, *Lantzia*, *Oriola*, *Vanga*, and *Xenopirostris*, Passerine birds allied to E. Indian, Australian, and Polynesian species; (30) *Euryceros*, a very remarkable bird allied to the Orioles; (31) *Calicalicus*, a Butcher-bird; (32) *Funingus*, a Pigeon; (33) *Lophotibis*, a Crested Ibis; (34) *Mesites*, very curious birds among the Waders; and, lastly, (35) *Margaroperdix*, a Partridge, allied to the Quails.

country are carefully noted; and as many of these are very significant and descriptive, pointing out some habit or peculiarity, I shall give translations of such names, for they frequently illustrate the native power of seizing the salient features of the living creatures which come under their notice. In some cases, also, a native proverb points out some marked peculiarity of a bird; while other birds are closely connected with the native superstitions and beliefs.

It will be seen in the following pages that I am indebted to other observers and to eminent naturalists for much of the information here brought together, and that I have freely used facts derived from every available source; in short, that these papers are only to a limited extent the result of original observation. But I think that this will in no way decrease, but rather add to, whatever interest and value they may be found to possess. For several years I have resided in the high interior province of Imèrina, either in the capital, Antanànarìvo, or its neighbourhood; and, as already shown (on the preceding page) by quotations from M. Grandidier, that bare highland region is very devoid of woods, and the avifauna is therefore very scanty. I have, however, made several long journeys into other parts of the island, and have frequently stayed near the edge of the upper forest, where birds are, of course, more abundant; and I have tried to utilize all such opportunities of gaining acquaintance with the animal life of the country. Only those who, like M. Grandidier and M. Pollen, have travelled extensively in the lower forest-region and the wooded coast-plains, can speak from personal knowledge of the more varied and abundant avifauna which is there to be met with. I am glad therefore to be able to translate and quote from their works; and I am under great obligations to my friend M. Grandidier for kindly giving me much information on numerous points as to which I was in uncertainty.

Each of the Natural Orders in which the Madagascar birds are arranged will be now noticed separately, and any points of interest with regard to individual species, genera, or families will be pointed out.

I.—The Rapacious Birds.

The Rapacious Birds (Table I. pp. 202–3) of Madagascar, as will be seen by the list, comprise 22 species, the majority being various kinds of Hawks, Kites, and Buzzards, but including also several Owls and two Eagles, but no Vultures.

The most common bird of this Order is the *Papàngo*, or Egyptian Kite (*Milvus ægyptius*), a large bird of almost world-wide distribution and found all over the island. It may be seen every day flying gracefully along in search of the lizards and snakes, and the mice, rats and young birds, which form its chief food, and continually swooping down upon its prey. Towards the end of the rainless season, when the long dry grass is burned on the bare hills and downs of the interior, the Papàngo may be noticed sweeping backwards and forwards close to the edge of the blazing grass, so as to pick up the smaller creatures escaping the advancing flames, or those which have been overtaken by them and killed. I have occasionally observed several hundreds of these Hawks in the neighbourhood of Ambòhimànga, hovering in the air or describing great circles at an immense height, and have wondered how such large numbers could obtain food. The Rev. R. Baron says, "Large numbers of these birds occupy the same roosting-places at night. At Ambòhidratrìmo they take their position in the trees on the west side of the town, while the Crows roost in those on the east side."

This bird is the dread and detestation of the country-dwelling Malagasy, for it swoops down upon their chickens and pigeons, and is only scared away by their loud cries and execrations. From these habits comes one of its provincial names, *Tsimilàho*, i. e., "The-one-who-does-not-ask," but takes without saying "By your leave." It is constantly seen in company with the White-necked Crows, and, like them, feeds near the villages, especially where oxen are killed. Although it does often carry off the people's fowls, it is very useful in destroying vermin. The name Papàngo, says M. Grandidier, comes from the words, *papy*, to watch for, and *àngona*, a meeting, because these birds hover continually above the

Tabular List of Madagascar Birds according to the Natural Orders.

(TABLE I.)

English Name.	Scientific Name.	Hova or General Name.	Provincial Malagasy Names.
	Order I. **ACCIPITRES.** (BIRDS OF PREY.)		
	Suborder *FALCONES.* (FALCONS.)		
Rayed Gymnogene	*Polyboroides* MADAGASCARIENSIS*.	Fihìaka (*Bs.*, *T.*, *Ba.*, *N.S.*, *N.B.*, *Tm.*)†.	Vòronaomby (*Bs.*, *T.*).
Long-legged Harrier	*Circus* MACROSCELES.	.....	Fandràsalàmbo (*Ba.*), Fandràntsandàmbo (*N.B.*).
Henst's Goshawk.....	*Astur* HENSTI.	.....	Fandràsangàra (*Bs.*).
Frances's Goshawk	*Astur* FRANCESI.	.....	Fandràsa (*Bs.*, *Ba.*, *T.*), Vàndraokibo (*N.S.*), Firàsy, Pariafòdy (*N.B.*).
Morell's Goshawk	*Astur* MORELLI.	.....	Firàsy (*N.B.*).
Madagascar Sparrow Hawk ..	*Accipiter* MADAGASCARIENSIS.	.....	Vàndraokibo (*N.S.*), Firàsy (*N.B.*).
Short-winged Buzzard	*Buteo* BRACHYPTERUS.	Fanìndry, Bérirìnina.	Hindry (*Bs.*, *T.*), Pómpa (*Ba.*), Tinòro, Bobàky (*N.S.*), Endrina (*N.B.*), Bèvoróty (*Tm.*).
Noisy Sea Eagle	*Haliaetus* VOCIFEROIDES.	.....	Ankoày, Hànka (*N.S.*).
Madagascar Serpent Eagle....	EUTRIORCHIS ASTUR.	.....	.....
Egyptian Kite	*Milvus ægyptius.*	Papàngo (*Bs.*, *Ba.*, *T.*, *N.B.*, *N.S.*, *Tm.*).	Tsimalàho (*Bs.*, *Ba.*), Tsimalaoke.

Andersson's Pern	*Machærhamphus anderssoni.*	.....	.....
Smaller Peregrine Falcon	*Falco minor.*	Vòromahèry (*Bs.*, *N.B.*, *N.S.*).	Fandràsa (*Bs.*), Fandràsalàmbo (*T.*), Fantio (*Ba.*), Tsipàra (*Tm.*).
Stripe-bellied Falcon	*Falco zoniventris.*	.....	.....
Grey Falcon or Hobby	*Falco concolor.*	Làvèlatra.	.....
Madagascar Cuckoo Falcon ..	*Baza* MADAGASCARIENSIS.	Hindribémànana, Bémànana.	Pòmpa (*Ba.*, *T.*), Hindry (*T.*), Endry (*N.B.*), Tinòro (*N.S.*).
Newton's Kestrel.....	*Tinnunculus* NEWTONI.	Hitsikítsika.	So also, with slight variations, in all the dialects; *e.g.*, Hìtika, Ikitíky, Kètsikètsy, &c., Andradìa (*S.E. Co.*).

Suborder *STRIGES.* (Owls.)

Cape Long-eared Owl.....	*Asio capensis.*	.....	Hànka (*Bs.*, *Ba.*, *T.*), Hàngikànga (*Tm.*), Vòrombózaka (*S.*).
Madagascar Long-eared Owl..	*Asio* MADAGASCARIENSIS.	.....	Vòronònkona (*T.*).
Madagascar Hawk Owl	*Ninox superciliaris.*	Tòrotòroka (*Ba.*, *N.S.*), Taràraka.	Tòvetòveko, Tòitòiko (*Antk.*).
Madagascar Scops Owl	*Scops* RUTILUS.	Tòrotòroka (*T.*, *N.B.*, *N.S.*).	Atóroko (*S.*), Tòtoròko (?).
Common Barn Owl.....	*Strix flammea.*	Vòrondòlo.	So in all other dialects.
Soumagne's Owl	HELIODILUS SOUMAGNEI.	.....	Vòrondòlo.

* In these lists the genera and species or varieties of birds peculiar to Madagascar are shown by small capitals.

† The contractions of provincial names are as follows:—*Bs.*, Bètsilèo; *Ba.*, Bàra; *T.*, Tanàla; *Tm.*, Taimòro; *Tnd.*, Tandróy; *Btm.*, Bétsimisàraka; *N.B.*, North Bétsimisàraka; *N.S.*, North Sàkalàva; *Antk.*, Antankàrana.

native villages. The Rev. L. Dahle, however, thinks the word to be one belonging to the original African element in the Malagasy language, and allied to the Swahili *kipànga*, a bird of prey, and to a Zulu root, *panga*, to seize, ravage, &c. Another of its provincial names is *Parìakoròvana*, or "Disperser-of-Thrushes." Mr. Cory tells me, "I have known a Papàngo take meat out of a man's hand as he carried it from market, and I have often heard natives say they have seen the same. There is a habit the tame Pigeons here have acquired, and that is, of flying directly a Papàngo comes in sight, and continuing to do so until it has passed, proving that they know this Kite never stoops, but always pounces; yet I have never known them touch even a sitting pigeon."

Several Malagasy proverbs refer to the Papàngo; *e. g.*, to its rapacity and boldness, in the following: "Acting like a Kite's claws; not taking gently, but greedily." So again: "A Kite swooping over the sea, swooping also over people's land;" and again: "The wild cat is weary, for the fowl (it was seeking) is carried off by the Kite." Occasionally it seems that it catches more than it can eat, for another proverb says: "The Kite that caught a tortoise: it certainly got it, but did not get much after all." And its occasional food of locusts is mentioned in this: "Not (like) a little swarm of locusts and afraid of a Kite." One of the native *Haintèny*, or oratorical flourishes, says: "The Kite is an arrant thief, the Crow is blear-eyed, and the Brown Stork (*Tùkatra*) is long-necked: all are rogues and abuse one another."

Another very widely-spread rapacious bird is the little lively and noisy *Hìtsikìtsika*, or Kestrel (*Tinnunculus newtoni*), which is found in or about every village (at least in Imèrina), often perched upon the gable "horns" of the houses, or even on the extreme point of the lightning-conductors. It is by no means shy, and one can sometimes approach it quite closely, and see its bright fearless eyes, before it darts away. It is fond of the same resting-place, and, after a noisy chatter with its mate, takes a sweeping flight for a few hundred yards and returns to its former position. There are two varieties of this Kestrel; one has a light-coloured, the other a brown-

tinted breast. Its name, which, with slight variations, is practically the same all over the island (see List, p. 202), is probably an imitation of its peculiar querulous cry. A Malagasy verb, *mihìtikìtika*, "to strut, to swagger," is probably taken from the name of the bird; or is the reverse the case? Several native proverbs refer to the Kestrel's quick restless flight and its frequent habit of hovering aloft, poised almost motionless, or with an occasional quivering of the wings, which, in Malagasy idiom, is called "dancing"* (*mandìhy*): *e.g.*, "The Kestrel is at home in dancing, and the Little Grebe (*Vìvy*) is at home in the water;" "The Kestrel does not forsake the precipice where it nests;" and "The Kestrel is not hovering (lit. "dancing") without reason, for there below is something (in the way of prey)." And again: "Dance, O Kestrel, that we may learn also (to do it) when it is harvest time." And its habit of sometimes driving away the robber Papàngo, but itself appropriating the Kite's intended prey, is referred to in a proverb applied to one who was expected to be a benefactor, but turns out an oppressor, thus: "He was thought to be a Kestrel to be honoured (or, to protect the birds), but becomes a Falcon (*Vòromahèry*) carrying off the chickens." Among some tribes, or, perhaps, only certain families, the Kestrel is a sacred or tabooed bird. M. Pollen says: "Being one day hunting in the neighbourhood of Anòrontsànga, I killed one of these Kestrels, when a farmer came to meet us, saying that I had committed sacrilege in killing, as he said, a sacred bird. He begged me to leave it to him, so that he might bury it in a sacred place. I hesitated, except to grant him the beak of the Kestrel, which had been broken by the shot. The good man, accompanied by a slave carrying a load of sugar-canes, and happy to be able to take away any part of the sacred bird, tried to express his gratitude by offering me half of the load. I have, however, observed that this bird is not sacred among the Antankàrana, the Bètsimisàraka, and other tribes." In confirmation of this, the Rev. J. A. Houlder also says, "It seems

* Malagasy dancing consists chiefly in graceful posturing of the hands and arms, with but little movement of the feet.

pretty certain that the Kestrel was formerly worshipped, and a small piece of the legs or wings or body was given by the diviners to be used as a charm, or presented as a sort of sacrifice, when praying to the idols. Many of the ignorant Malagasy still venerate the bird and make supplication to it."

Another Hawk worth noticing, although much less common than the two previously mentioned ones, is the *Vòromahèry*, or Lesser Peregrine Falcon (*Falco minor*), a small but very courageous bird, which has long attracted the attention of the Malagasy for its swiftness and fearlessness. Mr. W. D. Cowan observes, "There is a marked difference in the way the Papàngo hunts, circling lazily over a village, from that of the Vòromahèry, which out of the invisible height drops like a thunderbolt upon his prey. The Papàngo swoops with wings expanded; the Vòromahèry drops with closed wings." Its native name, which means "Powerful bird," is also that of the tribe of Hova Malagasy who inhabit the capital and its near neighbourhood. Probably from that circumstance this Falcon has been adopted as a kind of crest or emblem by the central Government, and used to be engraved on the official seals. Large metal figures of a bird, popularly supposed to be the Vòromahèry, are fixed on the ridge of the roofs of the two largest royal palaces, and also over the palace gateway. These figures, however, have a crest of seven feathers, similar to that which surmounts the crown of the Malagasy queens. One of the proverbs referring to this Falcon has already been quoted in speaking of the Kestrel (see above p. 205). Another says: "Falcon's eggs on the face of the cliff: that which screams out is its young."

Many of the Malagasy Hawks and Falcons are very handsome birds, beautifully marked with horizontal bars of alternate light and dark colour on the breast, belly, and tail. But perhaps the most handsome of them all is the Rayed Gymnogene (*Polyboroides madagascariensis*), the male of which is of a pearly grey colour barred with black, while on the tail- and quill-feathers are broad bands of pure white and intensely

glossy black. The female is differently tinted, and the young birds are brown in colour. They build among the long grass in the deepest marsh they can find. This bird stands high, having very long legs, and, with its crest of feathers on the crown and neck, has much the appearance of a Secretary-bird, although really very different in internal structure. Its cry is a sort of scream, whence its name of *Fihìaka*, from *hìaka*, "a scream of defiance." Another name is *Fisìopàty*, lit. "Whistler-for-the-dead." It is also provincially called *Vòronaomby*, "Ox-bird."

The Madagascar Cuckoo Falcon (*Baza madagascariensis*) takes one of its names, that of *Endry*, "Clownish," from its stupid and awkward air, a name shared also by the Short-winged Buzzard (*Buteo brachypterus*); and this latter is also termed *Bèvoróty*, "Big-bellied," and *Bobàky*, "Swelled," from its heavy appearance. Of these birds, however, M. Pollen says, "Their flight is majestic; they hover almost continually, mounting to a great height in the air, uttering their piercing cries and describing circles. The Fork-tailed Drongo has a special antipathy to this Buzzard, always chasing it when it perceives it." This bird's nests are built on lofty trees, like those of the Crows, but larger; and it lays three or four eggs. It is easy to find, as it utters piercing cries when approached. *Bèrirínana*, i. e., "Many-in-winter," is another of its names. Their voracious tearing up of their prey is noticed in the names given to several of the Malagasy Hawks, those in which the words *Firàsa* or *Fandràsa*, the "Tearer" or "Divider," or, more freely, the "Butcher," appear, either in these simple forms or combined with other words (from the root *ràsa*, a word meaning the cutting up and dividing of oxen or other animals). This is the name of the Madagascar Sparrow Hawk (*Accipiter madagascariensis*), which is also called *Vàndraokìbo*, "Quail-eater." By both of these names are also known the nearly allied birds, Morell's Sparrow Hawk and Frances's Harrier Hawk. This latter is also termed *Parìafòdy*, "Disperser-of-Cardinal-birds," on which bird it largely feeds, and *Ampamàkalóhanikìbo*,

"Quail's-head-breaker." It is almost always seen in couples, the male and female birds together. *Fandràsalàmbo*, "Wild-boar-butcher," is the name given to another species of Harrier Hawk; and this (as well as *Fandràsa*) is also a provincial name of the Lesser Peregrine, or Vòromahèry, above mentioned. A Goshawk is called *Fandràsangàra*, an obscure name as regards the latter portion of the word, but clear enough as to its first part. (Perhaps this name refers to its tinting, from a root *ngàrà*, "of mixed colour.")

Others, again, of these Hawks are known by the name of *Hìndry* or *Fanìndry*, words either from a root *tsìndry*, "to press down," or from another root *hìndry*, "to pounce on," and probably referring to their pursuit of, and swooping down upon, their prey. These are names of the Short-winged Buzzard, and also of the Madagascar Cuckoo Falcon (both already mentioned). Mr. Cory observes that "*Hìndribémànana* is a common name for these birds along the eastern side of the forest. The '*Hìndry*' is often dropped, and *Bèmànana* ('Having-much') is alone used. They do not 'pursue' their prey, to speak with strict accuracy, but 'pounce' on it when on the ground."

The long pinions and quill-feathers of the Grey Hobby (*Falco concolor*), projecting even beyond the tail, are noticed in its name of *Làvèlatra*, i. e., "Long-wings." These birds only appear in Madagascar in the rainy season, coming from Africa in pursuit of the clouds of locusts which frequently cross the Mozambique Channel, and on which they principally feed. Their flight is rapid, like that of a Swallow, and they may be seen pursuing the locusts as the Swallows do gnats. A Sàkalàva name of this bird is *Tsiasàra*, i. e., "Not-found-in-the-dry-season;" and another provincial name is *Fandràntsambàry*, i. e., "Pruner-(or cleaner-)of-rice," because it feeds on the locusts, the plague of the rice-fields.

It will be seen that this group of rapacious birds presents good examples of the Malagasy power of giving striking and appropriate descriptive names to the living creatures of their country. Some of their names, however, as *Pòmpa*, *Rehìla*, *Tinòro*, &c., are still obscure; for explanation of these we

must wait fuller knowledge of the provincial dialects of the native language*.

The Eagles are represented in Madagascar by two if not three species, of which the most common is the *Ankoày* or *Hànka*, the Fishing or Sea Eagle (*Haliaëtus vociferoides*), which is found all along the western coast and on the numerous small islands off the north-west of the mainland. Captain W. F. W. Owen, R.N., gives a graphic account of the habits of this large and handsome bird: its keeping watch on a tree or cliff at the edge of the water, its lightning-like swoop into the sea after its finny prey, and its power of instantaneously arresting its downward flight. M. Grandidier says that a single pair of these Eagles is found in many of the innumerable small bays of the north-western coast, of which they take exclusive possession, allowing no other Eagle to encroach on their own preserves. He also says that as soon as the Eaglets become old enough to provide for themselves, the parent birds persistently drive them away from the nest and from the neighbourhood. They usually lay only one egg, rarely two. The nest, which is very large, is built on a pandanus or other tree on the shore. They are more slender in form, and the wings are smaller, than in the other species of Fish Eagles. They feed principally on fish, catching adroitly those which appear at the surface. Compressing their wings, they dart headlong on their prey; and if this is too large to be carried in their talons, they then beat its head with strokes of their beak and tow it along, their wings serving as sails. The northern Sàkalàva name of Ankoày applied to this Eagle appears to be an imitative one derived from its cry of *hoai, hoai*. This Sea Eagle is peculiar to the island, although nearly allied to an African species; it is dark brown in colour, with powerful talons.

Of the other Madagascar Eagles (if there really are two others), much less is at present known. One of them, the Bare-legged or Harrier Eagle, has been formed into a distinct genus (*Eutriorchis*) by Mr. Sharpe. It appears to be

* Possibly *Tinòro* is from the root *tòro* (with the infix *in*) and means the "Crusher," the "Bruiser," the "Breaker."

very rare, only one example, shot by Mr. Crossley in the Mangòro valley, being known. It is remarkable for its extreme shortness of wings and immoderate length of tail. But M. Grandidier doubts the existence (in Madagascar) of the other alleged species, the Crested or Hawk Eagle (*Spizaetus occipitalis*), which has apparently been seen only once, by Messrs. Pollen and Van Dam, on the north-west coast opposite Nòsifàly, but was not captured.

Six, if not seven, species of Owl are known in Madagascar, most of them being not very common; two, however, the Scops Owl and the Barn Owl, are tolerably plentiful. The last mentioned appears to be exactly identical with the almost world-wide and well-known bird of that name. As among most other peoples, the Owl is regarded by the Malagasy as a bird of ill omen; they call it *Vòrondòlo*, i. e., "Spirit-bird," thinking it an embodiment of the spirits of the wicked; and when its startling screeching cry is heard in the night, they believe it to be a presage of misfortune to some one. There are numerous fables and stories about the Owl, illustrating the popular dread of and dislike to the bird. The Long-eared Owl of Madagascar (*Asio madagascariensis*) is termed *Vórombózaka*, i. e., "Bird-of-the-dry-grass," from its hiding among the reeds and the long grass which grows so plentifully on the Imèrina downs. Another provincial name for the first of these birds is *Vòronònkona* (or *Vòronònkina*), possibly from a word (*onkénina*) meaning short and stout. Other names of the Madagascar Owls, as *Tórotóroka* and *Hànka*, appear to be descriptive of their cry. The Hawk Owl (*Ninox superciliaris*) is known by the name of *Taràraka*; it always sits on the ground, and is common in the marshes and among long grass. M. Grandidier says that the provincial name of the Scops Owl, *Atóroko*, means "I am going to say"*, and that some Malagasy consider it as a menace when they hear it. Like the Owls in all other parts of the world, the Madagascar species are really public benefactors, by keeping down the number of rats and

* More correctly, *tòro* means "to point out, to direct;" or it might be from the obsolete form *tòro*, "crushed, bruised" (see p. 209).

mice and other vermin; but their nocturnal habits, their large staring eyes, the "uncanny" ear-like feathers of some, and especially their unearthly screech, have all combined to make them objects of dread. These and other popular notions, as well as observation as to the habits of the bird, are shown in the following proverbs, which probably mostly refer to the Barn Owl, but some also to the Scops, thus: "Don't act like an Owl: sulky in another's house;" "A wild cat laughing at an Owl: the one that creeps ridicules the one that flies"*; "Bent down in grief and dejection, although nothing has befallen you, like an Owl;" "It is the Tufted Stork (*Tàkatra*) that finishes a nest†, but it is the Owl that swells out and gives itself airs;" "An Owl appearing in the daytime, so all who see it swoop down on it."

Our notes on this Order may conclude with the following Malagasy fable referring to the Owl and other birds:—

"Once upon a time, they say, all the birds of the air assembled and agreed to choose one of their number to be king and leader; but the Owl, it is said, did not come, for his mate chanced to be sitting just then. So all the birds agreed together that any one who should see the Owl, and did not kill him, should be expelled the community and be counted as an enemy. And that is why the Owl does not go about in the daytime, but only at night; for if any birds see him, they all set upon him to beat him.

"And the Falcon also, it is said, wanted to be king and appointed himself, but the rest did not agree to it; so he left all his companions and became their enemy. Therefore, if the Falcon sees any other bird, he carries it off forthwith, because it is his enemy; and so the birds, it is said, chose one of themselves as their king. And their choice fell on the Fork-tailed Shrike, because of his good behaviour, and his long crest, and also on account of his many-toned voice.

"And that, they say, is why this Shrike is considered by the people to be the king of the birds."

* Wild cats (*Kàry*) are as much objects of dislike as Owls, and are frequently classed with them by the Malagasy.

† The *Tàkatra* (*Scopus umbretta*, Gm.) makes a very large and conspicuous nest.

II.—The Woodpecker-like Birds.

The second Order of Birds, according to Mr. R. Bowdler Sharpe's arrangement, comprises those termed Picariæ (Table II. pp. 214–216), which in some points resemble the Woodpeckers (*Picus*) in their structure. This division is again divided into two suborders of (*a*) Climbers and (*b*) Wide-gapers. In the first of these, of the seven families of which it is composed, only two have representatives in Madagascar, viz., the Parrots and the Cuckoos. Of the remaining families, the Honey-guides, Plantain-eaters, Woodpeckers, Toucans, and Barbets, none are found in the island.

I. The Climbers.—Two species of Parrot and one Parrakeet are among the denizens of the Malagasy woods and plantations in almost every part of the country.

1. These Parrots, the one dark grey in colour, and the other slaty black, are both of sober plumage, with none of those brilliant tints which mark many species of Parrot in other parts of the tropics. But they are both intelligent birds, and, like their congeners, can be easily taught to speak a few words and to whistle a tune; they are therefore frequently kept as pets by the Malagasy. The sooty species (*Coracopsis obscura*) is found also (introduced) in Réunion, but the black one (*C. nigra*) is peculiar to Madagascar. Mr. Cowan speaks of the latter species as having been seen by him in large flocks at Ihòsy and Isàlo, in the Bàra country (south-central region).

The Sooty Parrot, except in the breeding-season, is found in small companies of from six to eight individuals. Its food is rice, seeds, roots, and wild fruit. A Malagasy proverb, whose "moral" is to reprove a too easy-going, changeable disposition, speaks of "a male Parrot seeking fruit in the forest: he finds a luscious morsel here, but in an instant he is off to get another there." This bird flies high, but if one of them is shot or wounded, its companions will come with sharp cries of defiance at the hunter, as if to save their comrade. This Parrot, M. Grandidier says, is *fàdy*, or sacred, to one of the royal families of the Vèzo Sàkalàva, and he gives the following story as accounting for the origin of the veneration in which they hold it:—

"Làhimerìsa, king of Fiherènana, told me that one of his ancestors was one day walking alone in one of his manioc plantations at some distance from the royal village, when he was surprised by a band of robbers on a marauding expedition from the Bàra country. They did not know the king, who had nothing in his appearance or dress to denote his rank. But seeing his thick chain of gold gleaming under the knobs of hair covered with grease and white clay, they took him unawares, speared him, and possessing themselves of the coveted prize, threw the body into a hastily dug grave, and decamped. How long he remained there no one knows; but he was not dead, only seriously wounded; and on recovering consciousness, and seeing nothing but darkness around him, and feeling the earth pressing heavily on his chest, he believed himself in the other world. He was in profound distress; when, suddenly, he seemed to hear shrill piercing cries, as if a flock of Parrots had passed over his head. He listened attentively; the cries which met his ears were approaching nearer. Doubtless a babbling and restless crowd of them was perched on a neighbouring tree. 'But there are no Parrots in the other world,' thought our hero; 'I am not dead!' He took courage, and freeing himself by a tremendous effort from the layer of earth which covered his body, he perceived the bright shining of the sun, in whose rays the Parrots were sporting in the trees around him. Hope revived within him, and he made his way, not without difficulty, to his village, where, after the needful care and nursing, he eventually recovered strength. In thankfulness to the birds whose cries had roused him from his torpor and given him courage to free himself from his tomb, he solemnly vowed for himself and his descendants, to the latest generation, that they would never kill Parrots."

The Sooty Parrot is the larger of the two species, the Black one being a third less in size; but the latter is found in much greater abundance, and in companies of from six to twelve individuals. Both species are more terrestrial and less arboreal in their habits than most Parrots, nor do they make much use of their claws to convey food to the mouth. These birds have many provincial names besides the common one of

Tabular List of Madagascar Birds.

(TABLE II.)

English Name.	Scientific Name.	Hova or General Name.	Provincial Malagasy Names.
	Order II. **PICARIÆ.** (WOODPECKER-LIKE BIRDS.)		
	Suborder *ZYGODACTYLÆ.* (CLIMBING BIRDS.)		
	Family PSITTACI. (PARROTS.)		
Sooty Parrot	CORACOPSIS OBSCURA.	Bolòky (*Bs.*).	Sihòtsa, Vàza (*Ba.*), Kavòky, Ampòma (*T.*), Koérabé, Vàza (*N.S.*), Boèzabé (*N.B.*).
Black Parrot	CORACOPSIS NIGRA.	Bolòky (*Bs.*).	Sihòtsa, Vàza (*Ba.*), Kavòky, Ampòma (*T.*), Vàza, Kakìo (*N.S.*), Koèrakèly (*S.*), Boèzantsikòtra, Boéza (*Btm.*).
Grey-headed Parrakeet (or Love-bird).	*Agapornis* MADAGASCARIENSIS.	Sàrivàzo (*Bs., N.S.*).	Kitrèoka (*Ba., T.*), Sàravànga (*Ba., T.*), Karòko (*N.S., N.B.*), Sàravòsa (*S.*), Masèsy.
	Family CUCULIDÆ. (CUCKOOS.)		
Grey-headed Cuckoo	*Cuculus poliocephalus.*	Kànkàfotra (*Bs., T., Ba., N.B.*).	Taotaonkàfa (*N.S.*), Bótokónkóna (*Antk.*).
Madagascar Lark-heeled Cuckoo	*Centropus* TOULOU.	Tolòho; so also in almost all the dialects.	Abìlimbòrona (*W.Co.*), Mitsóly (*Ba.*), Mónjo (*N.B.*).
Reynaud's Coua	COUA REYNAUDI.	.....	Kóa (*Btm.*), Taitóhaka (*Bs., Ba., T.*), Fandikalàlana (*P.*).
Crested Coua	COUA CRISTATA.	Fandika[illegible]lana.	Tivóka (*N.S.*), T[illegible]vótse (*S.E. Co.*), Ambosànga (*N.B.*), Antisòma.

Tawny-rumped Coua	COUA PYRROPYGIA.	.....	Tsilóka, Tivóka or Tivòko (*S.*).
Verreaux's Coua	COUA VERREAUXI.	.....	Tivòka or Tivòko (*S.Co.*).
Blue Coua	COUA CÆRULEA.	Taitso, Tétso.	Mariha (*N.E.*), Tèso (*S.E.*), Kaitso, Kétso (*Bezànozàno*).
Serres's Coua	COUA SERRIANA.	.....	Kòa (*Bm.*).
Delalande's Coua	COUA DELALANDEI.	.....	Famàkisifotra, Famàkiakòra (*T., Bm.*).
Giant Coua	COUA GIGAS.	.....	Eoka or Heokè (*S.*).
Red-capped Coua	COUA RUFICEPS.	.....	Hàliotsa (or Aliòtsa, *S.*)
Olive-capped Coua	COUA OLIVACEICEPS.	.....	Aliòtsa (*N.S.*).
Running Coua	COUA CURSOR.	.....	Aliòtsa (*S.Co.*).
Coquerel's Coua	COUA COQUERELI.	.....	Lètsa, Akòka (*S.*).

Suborder *FISSIROSTRES.* (WIDE-GAPING BIRDS.)

Family ALCEDINIDÆ. (KINGFISHERS.)

Crested Kingfisher	*Corythornis* CRISTATA.	Vintsy (*T., N.B., N.S.*).	Vintsiràno (*Bs., Ba., T.*), Vòrombòla (*Bs., Tm.*), Béntsy (*N.S.*), Litotra (*Ba.*).
Rose-cheeked Kingfisher	*Ispidina* MADAGASCARIENSIS.	.....	Vintsiàla in almost all dialects, Ravintsy (*Tm.*).

Family UPUPIDÆ. (HOOPOES.)

Fringed Hoopoe	*Upupa* MARGINATA.	.....	Tàkadàra (*Bs., Ba.*), Berao (*N.S.*).

(TABLE II., *continued.*)

English Name.	Scientific Name.	Hova or General Name.	Provincial Malagasy Names.
Family MEROPIDÆ. (BEE-EATERS.)			
Madagascar Bee-eater.....	*Merops superciliosus.*	Tsikiríoka, nearly the same in many dialects.	Kiriokio (*N.S.*), Kirinkirio (*N. B.*), Sikirikiriko (*Antk.*).
Family CORACIIDÆ. (ROLLERS.)			
Kirombo	LEPTOSOMA DISCOLOR.	Vòrondrèo.	Kiròmbo (*S.*), Vòrontsìo (*Btm.*).
Lesson's Ground-Roller	BRACHYPTERACIAS LEPTOSOMUS.	.....	.....
Scaly Ground-Roller	GEOBIASTES SQUAMIGERUS.	.....	.....
Crossley's Ground-Roller	ATELORNIS CROSSLEYI.	.....	Vòrontràndraka (*T.*).
Pitta-like Ground-Roller	ATELORNIS PITTOIDES (Lafr.).	Sakóka (*Ba., T.*).	Avòka (*Bs.*), Rèniangàly (*N.B.*), Tsikòko (*Tm.*).
Broad-billed Roller	EURYSTOMUS GLAUCURUS.	Maorára.	Hàrakàraka (*Bs., T., Tm.*), Tsiràraka (*Bs., Ba., N.S.*), Fitivàratsa (*N.S.*), Vòronkàka.
Family CAPRIMULGIDÆ. (GOATSUCKERS.)			
Madagascar Goatsucker	*Caprimulgus* MADAGASCARIENSIS.	Fandìkalàlana.	Tandrónisóny (*Bs.*), Tatàro (*Ba., T., N.S., N.B., Tm.*).
Gray's Goatsucker	*Caprimulgus enarratus.*	Matòriándro (*Bs., Ba., T.*).	.....
Family CYPSELIDÆ. (SWIFTS.)			
Small Swift	*Cypselus parvus.*	Sìdintsìdina (*T.*).	Fitiliàndro (*N.S.*), Manàviàndro (*N.B.*), Vòronàndro (*Antk.*).
Madagascar Swiftlet	*Collocalia francica.*	Sìdintsìdina.	Fireríngakély (*Bs.*), Vòromaola (*T.*).
Grandidier's Swift	*Chætura* GRANDIDIERI.	.....	Fitiliàndro (*N.S.*), Manàviàndro (*N.B.*), Vòronàndro (*Antk.*).

Bolòky, by which they are known both to the Hova and Bètsilèo. Some of these names seem imitations of their harsh cry, while the meaning of others is obscure, except in so far as they denote their comparative size, as *Koéra*BÉ and *Koèra*KÈLY (the *large* Koera, the *small* Koera), &c.

About six years ago a paragraph went the round of the London papers telling of the recent "death of the oldest inhabitant of the Regent's Park Zoological Gardens." This was a specimen of the Black Parrot of Madagascar, which had been an inmate of the Gardens ever since July 1830, only two years after they were opened*. The bird had therefore been fifty-four years at Regent's Park; but how old he was when he arrived there is not known, except that he was described as "an adult bird." He appears to have died merely of old age.

The Madagascar Parrakeet (*Agapornis madagascariensis*) is a lively and brightly coloured little bird, and is found in considerable numbers, in the outskirts of the woods and near the cultivated districts, all over the island. They go in large flocks, often of as many as a hundred together, and sometimes do considerable damage to the rice-crops. They are, however, very excellent eating, and are often snared with a kind of bird-lime. They have greyish-white heads, but the body and wings are bright green, the male bird having the lighter tint spreading also over neck and breast. They are often taken alive to Mauritius and Réunion, and sometimes to Europe. The two sexes of this Parrakeet show great affection for each other, the pair sitting close together on their perch, from which habit they are often called Lovebirds (*Agapornis*).

One of the native names of this Parrakeet, *Karaoka*, is probably descriptive of its cry; while another, *Masèsy*, means "degenerated," or "become small," apparently because it is considered a dwarf species of Parrot. This idea also appears in the latter portion of their Hova name *Sàrivàzo* or *Sàrivàza*, *Vàza* being a name for the two Parrots also, and probably is identical with the root *vàza*, "loud-voiced," "clamorous."

* See P. Z. S. 1884, p. 562.

2. The second Family of the first Suborder of the Picariæ, that of the Cuckoos, contains in Madagascar no less than fourteen species. Of these twelve belong to a genus peculiar to the island, and are among those numerous birds which give a distinct and special character to its avifauna. These are the Couas (from a native name *Kòa*, pronounced *kooa*), which are large handsomely coloured birds; they are remarkable for their short and obtusely pointed wings, loosely barbed feathers, long stiff tail, long thighs covered with large scales, and a fleshy caruncle round the eyes. These twelve species, says M. Grandidier, are strictly local in their habitat, most of them being confined to one district, out of which they are never found, and those which live in the damp forests on the eastern side of the island are very distinct from those which inhabit the dry and sandy plains on the western side. This is shown clearly in a map which M. Grandidier gives of the distribution of the various species. These differ from each other not only in colouring, but also in the proportions of the different parts of their bodies—wings, tail, beak, legs, &c. *C. delalandei* is perhaps the handsomest of all the genus; it is deep blue above, with whitish breast and red belly.

Five species of *Coua** inhabit the large forests, or at least the wooded regions, where they are found jumping from branch to branch in search of their food, which consists of insects, and especially of land-mollusks. In their stomachs there is usually found a fetid gelatinous mass of matter, which comes from the slugs and snails, of which these birds are very fond. These five species are true climbers. The other seven species, on the contrary, rarely perch, and live in the plains, where they run on the ground, as well as under the trees. The Couas feed chiefly on worms and insects, and, at certain seasons, on seeds. All the Couas, whether climbers or runners, pillage mercilessly other birds' nests at the time of incubation, and sometimes even attack small adult birds. They are unsociable, not one of them living in flocks, for they are almost always met singly, except at

* *C. reynaudi*, *C. cristata*, *C. pyrropygia*, *C. verreauxi*, and *C. cærulea*.

the breeding-season. There is no difference in colour between the sexes. Their flight is heavy and awkward; in fact the Couas do not make much use of their wings unless they are obliged.

The climbing Couas go from tree to tree, cocking their tails, and making the solitudes of the forest resound with their short sharp cry. Their habits remind one of the Magpie, but they do not, like that bird, seek the society of man, although they are not shy. They nest in high trees.

The running Couas pass the greater part of their life on the ground, flying very rarely. They are more distrustful than their cousins the climbers, and one never hardly hears their voice. Their tails, which are much more slender than those of the climbers, trail on the ground, and are therefore always much worn.

The Crested Coua (*Coua cristata*) is the only species of the genus which is found all over Madagascar, at least wherever there are woods. It has a variety of names, one of which, *Tivótse*, says M. Grandidier, means "crested" or "tufted," and refers to its appearance; while others, as *Ambosánga*, "That-which-climbs," and *Antisòma*, "That-which-loves-to-play," refer to its habits. Its Hova name, *Fandìkalàlana*, means "Road-crosser."

The Blue Coua is very common on the east and north-west coast, and also in the upper forest-belt. Its cry is a harsh guttural sound like "Turruh," repeated twice or thrice. It is a large bird, and is very conspicuous as it perches on the trees. A wounded one was seen to use its beak like a Parrot in climbing trees. Its cry is also said to resemble the words *Marìha* and *Tèso*, which are two of its provincial names. The forest people say that when its cry is heard the day will be wet and drizzly.

Verreaux's Coua is very rare, being only found at the extreme southerly point of the island. Serres's Coua is also rare, and is only met with on parts of the north-east coast. So also is Delalande's Coua; this bird goes from rock to rock seeking the large land-shells which form its principal food. These mollusks it takes in its beak and breaks the

shell by striking them on a stone. From this habit comes its name of *Famàkisìfotra*, "Snail-breaker," and *Famàkiakòra*, "Shell-breaker."

The two species of Cuckoo found in Madagascar are much more common than are most of the Couas, and are plentiful all over the forest-regions of the island.

The *Kànkàfotra*, the Grey-headed Cuckoo (*Cuculus poliocephalus*), comes up into the upper plateaux of the interior as the warm season approaches (as also do some of the Rollers and other birds), and its monotonous but not unpleasing cry of *kow-kow, kow-kow*, may be heard in all parts of the woods, or indeed wherever there are trees, all day long. The Malagasy make its arrival a signal for clearing their ground for planting the later crop of rice. In some of the native *Hain-tèny*, or Oratorical Adornments, the Kànkàfotra is said to *manóva ny taona*, i. e., "to change," or rather "to announce the change of the year." Its various names seem to be all more or less descriptive of its note, like the name of our English species of Cuckoo. "It keeps its note with only slight variations throughout the rainy season (unlike the English Cuckoo). It lays its eggs in the nest of the Madagascar Lark (*Alauda hova*); they are white, speckled with irregular spots" (Mr. Cory's notes). Mr. Baron also remarks: "I have twice found its egg in other birds' nests, and have in my possession one which I took from the nest of one of the Sun-birds (*Nectarinia souimanga*), along with three eggs of the latter." It is a solitary and shy bird, never seen but alone, except in the pairing-season; it has a sober livery of grey and brown tints.

The remaining bird of this family, the *Tolòho*, or Lark-heeled Cuckoo (*Centropus toulou*), is of a dark slaty-black colour, with rufous wings and extremely long tail. The wings show warm red in colour as the bird flies from tree to tree. It also comes up into the higher regions of the island, and is very common in the coast forests and plains*. Its name of

* Mr. Cory tells me: "I have shot grey slaty-coloured specimens of the Tolòho Cuckoo on the coast, but have not seen such up here in the interior. I dare say there are two varieties, and am taking skins to England for

Tolòho is imitative of its mellow flute-like whistle, which consists of several notes running down the scale. M. Grandidier says it may be seen about the villages leaping, or rather gliding, from branch to branch in the clumps of bamboos or in the spiny bushes, cocking its tail and expanding its short wings. It seeks damp and marshy places by rivers, where it finds its food of insects, larvæ, and mollusks. But it also feeds on small birds and quadrupeds. Its flight is heavy, but it is an indefatigable climber, its thick plumage serving as armour against the spiny branches of the shrubs. The voice of the female bird is deeper and stronger than that of the male. Its nest is a ball, or rough and dome-shaped, with a lateral opening, hardly big enough for the bird to go in and out. The eggs, five or six in number, are small and like those of a Starling's, long and of a uniform white.

This Cuckoo is considered a sacred bird by one of the principal tribes of Mènabé (west coast). M. Grandidier says that having on one occasion shot one of these birds at Tsimànandrafòzana, he was obliged, in order not to grieve the family, to leave the body of the bird, which was immediately reverently buried. The reason of the extreme respect in which these Sàkalàva hold the Tolòho is as follows: "One of their ancestors, who was fearlessly swimming across the river Tsìjobònina, was caught on the way by a crocodile. It is well known that these fearful reptiles do not devour their prey on the shore, but carry it to their lurking-places under or close to the water, so that it may become half putrid before being eaten there. Our hero was carried, quite senseless, to a large hole in the bank of the stream, which served as the habitual retreat of the monster, and which the ebbing tide had left partly dry. It was from this fortunate chance that the victim's head was left just above the surface of the water. Suddenly he was roused from his torpor by the

identification. It is not at all uncommon in Imèrina. The cry of the two varieties is the same. There is a Bétsimisàraka saying that 'if you throw a Tolòho over the house, you will be able to roast it.' If you do not do this, they say, it all runs to grease, and you only get the bare bones."

repeated cry of a Tolòho. Now we know, from what has been already said of the habits of this Cuckoo, that it chooses damp places, and hops about from bush to bush on the river-banks; it was then very natural that the loud mellow notes of the Tolòho should reach the ears of a man who was lying only a slight depth underground. Starting out of his lethargy, it was not long before he comprehended that he was not buried very deeply, since the notes of the bird could be recognized; and so, without waiting for the return of the reptile, which was waiting patiently at the entrance of the cave, he used his hands and nails to such effect that in a little time he saw daylight. He was saved. In recognition of the service, all unconscious and involuntary as it was, which the bird had rendered to their ancestor, his children and grandchildren vowed that neither they nor their descendants would ever kill a Tolòho; and so that is why the Paris Museum has one specimen less of the *Centropus madagascariensis*."

In Malagasy folk-lore there is an amusing fable about this bird and the *Tàkatra*, or Brown Stork*, in which the former is described as being invited to a feast at the nest of the latter; but he disgracefully repays the hospitality of the Tàkatra by turning him out of house and home and taking possession of it himself. From this fable (which probably embodies some facts as to these birds), it would appear that this Cuckoo, like the Kànkàfotra, has also something of the habits of its European cousin in making use of other birds' nests. Perhaps this habit is also referred to in one of its provincial names of *Abìlimbòrona*, i. e., "Base (or Slavish) bird."

II. The Wide-gaping Birds.—The second Suborder of the Picariæ, that of the Fissirostres or Wide-gaping Birds, includes, according to Mr. R. B. Sharpe, twelve families, six of which are represented in Madagascar. These are the Kingfishers, Hoopoes, Bee-eaters, Rollers, Goatsuckers, and Swifts. For the other six, the Jacamars, Puff-birds, Horn-

* See 'Folk-lore and Folk-tales of Madagascar' (Antananarivo), pp. 113–117.

bills, Motmots, Trogons, and Humming-birds, we must go to other parts of the world.

1. The Kingfishers are represented by two species, the first of which (*Corythornis cristata*), of lovely purplish blue, with yellow and buff breast and belly, is very common wherever water is to be found. With short blunt tail and long beak, it may be seen perched on the *zozòro* or other aquatic plants, or darting over the streams and marshes, flying in a curious jerking manner, like a flash of purple light, pursuing the insects which form its food. In colouring this Kingfisher is not very unlike our English species. Mr. Cory notes here that "the Madagascar Kingfisher is much less attached to the water than is the English species. I have seen it sitting happily in a gum-tree in our garden, and have once seen one caught in a spider's web a long way from the water."

Its very general name of *Vìntsy* does not throw much light on the habits or peculiarities of this beautiful little Kingfisher. By some tribes it is also called *Vòrombòla*, "Money (or Silver)-bird;" and some native superstitions have become connected with it; thus we find it said that, "The Vìntsy and the black moth are dead people who have been changed into animals. The common people reverence them and say that they are their ancestors"*. And again, they say: "If you take the nest of a Vìntsy you become bald; if that of a *Tàkatra* (the Tufted Stork) you become a leper."

The other Madagascar species of this family, the Rose-cheeked Kingfisher, is a little bird in a livery of bright yellowish red, the throat and underparts of the body being white. Its tail and wings are almost comically short, and it is much less common than its purple cousin, being only found in certain parts of the island, and in the woods, as its name of *Vìntsiàla* ("forest" *Vìntsy*) denotes. By the Taimòro its name is personified by the prefix *Ra-*, *Ravìntsy*.

2. The single species of Hoopoe found in Madagascar (*Upupa marginata*) is, like others of the same genus found in the Old World, a handsome bird, both from its beautiful colouring and its prominent crest of feathers. But it does

* See 'Specimens of Malagasy Folk-lore' (Antananarivo), p. 292.

not appear to differ in any marked degree in habits from our European Hoopoe, nor is anything further known of it to require a longer notice here.

3. The Madagascar Bee-eater (*Merops superciliosus*) is one of the most beautiful birds found in the island, both in elegance of form and from its bright colouring. It has a very long curved beak and an extremely long tail, with two feathers extending beyond the others; its colours are various shades of green. Its name of *Tsikiríoka*, found with slight variations in several dialects, is no doubt imitative of its cry of *kiriò, kirìo*. M. Pollen mentions finding a number of the nests of this bird, excavated about a foot deep in a sand-bank, on the margin of the river Ambasòana.

4. Coming to the next family of the Suborder, that of the Rollers, we meet with some of the most interesting and curious of all the birds found in Madagascar. These belong to the kind called Ground-Rollers, which live entirely on the ground, and only come out at dusk. Their flight is said by M. Grandidier to be very weak, so that the birds are never found above the lowest branches. They are rather local in their habitat, but where they do occur seem to be not uncommon.

The Vòrondrèo, or Kiròmbo Roller (*Leptosoma discolor*), has at first sight much the appearance of a Cuckoo, of which family it was for many years considered to be a member. The head is extremely large in this bird, and the region of the nostril densely plumed. M. Pollen says: "The natives of the north-west of Madagascar give this bird the name of *Kiròmbo*. It has the curious habit of hovering in the air and uttering a very loud note, striking its wings against the body as it calls. This cry, resembling the syllables *tu-hou, tu-hou, tu-hou*, goes on increasing in strength. Nowhere have we seen this bird in greater numbers than in the forests of the south-west of Mayotta. The racket they make throughout the day is truly wearisome. Although very active as regards voice, these birds are lazy and stupid. Immediately they perch on the branch of a tree, they remain, so to say, immovable and in a perpendicular position, so that it is very easy to see and to shoot them. When seen in this position they look just

like birds impaled on the branches. I suppose they must live in polyandry, because one always sees three times as many males as females. I have often met with three males in company with one female, and they have all allowed themselves to be killed one after another. In fact, when one is killed the others do not fly away, but content themselves with merely moving from one branch to another. These birds live principally on grasshoppers, but they also devour chameleons and lizards. When they cry they puff out the throat, so that this portion of the body has the appearance of a pendent bag. The Vòrondrèo plays a great part in the chants and religious recitations of the Malagasy." This Roller is considered by the people as bringing ill luck; and it is said that if one of them settles on a house the owners will leave it.

Certain native names for these birds show, as in other cases, some native notions as to their habits and peculiarities. Thus, the Vòrondrèo is also called *Vòrontsìo*, probably the "Whistling-bird;" Crossley's Ground-Roller is called *Vòrontràndraka*, "Hedgehog-bird;" the Pitta-like Roller is called *Sakóka* and *Tsikòko*, probably from *sakóko*, "dejection," "melancholy;" and also *Avòka*, perhaps from *vókaka*, "lifted from the ground;" and also *Rèniangàly*, which literally means "Mother-(or source)-of-capriciousness." The Broad-billed Roller (*Eurystomus glaucurus*) is known by several names which are variations of the word *Hàrakàraka*, probably from the root *kàrakàra*, meaning "minute investigation," and so referring to the habits of the bird when searching for its food. It is also called *Vòronkàka*, which would appear to mean "Enemy," although this name may be only imitative of its cry.

As remarked by M. Pollen (in words just quoted), the Vòrondrèo is frequently referred to in the folk-lore and folk-tales of the Malagasy. In the 'Antanànarivo Annual,' no. 3, p. 110 (reprint, p. 369) a translation is given of one of the series of tales referring to a strange monster called Itrímobè, and in this the Vòrondrèo appears and delivers the heroine from danger, as follows:—

"After that a Rèo bird came, repeating its cry '*Rèo, rèo, rèo,*' which when Ifàra saw, she called to it thus:—

'O yonder Rèo, O yonder Rèo!
Take me to father's well,
And I will smooth thy tail.'

"'*Rèo, rèo, rèo,*' said the bird, 'come, let me carry you, my lass, for I feel for the sorrowful.' So the bird took her away and placed her on a tree just above the well of her father and mother"*.

The Vòrondrèo also figures to advantage in the following piece, entitled "Don't send a Fool on an Errand":—

"The Weaver Finch (*Tsikirìty*) longs for, and the Sun-bird (*Soy*) is sorrowful,—but don't send the Warbler (*Fìtatra*), for when he goes into the plantation he will be off. The Weaver Finch longs for, and the Sun-bird is sorrowful,—but don't send the Cardinal-bird (*Fòdy*), for when he meets a friend he will forget all about it. The Weaver-bird longs for, and the Sun-bird is sorrowful,—so send the Vòrondrèo, for he will both chirp and deliver his message"†.

5. The fifth family of the Wide-gaping Birds found in Madagascar, that of the Goatsuckers—from which, indeed, the Suborder takes its name—is represented here by two species. Of the first of these (*Caprimulgus madagascariensis*), called *Fandìkalàlana*, i. e., "Road-crosser," M. Pollen says that it is pretty common on the north-west coast. After sunset these birds leave the recesses of the forest, where they rest during the day in the grass, and begin a rapid flight along the border of the woods, as well as over the surface of the water. They have the habit of sometimes rising, from a slight elevation above the ground, straight into the air; then they let themselves suddenly fall, to resume their ordinary mode of flight. They feed exclusively on nocturnal insects, chiefly moths and beetles. The note of these birds is monotonous, resembling the syllables *tar-tar-ta-ro*, from which comes the names of *Tatàro* and *Tartàrolèpeka*, given to them by the northern Sàkalàva.

The other species of Goatsucker (*C. enarratus*) has appa-

* See also "The Oratory, Songs, Legends, and Folk-tales of the Malagasy," by the present writer, in 'The Folk-lore Journal,' vol. i. (1863), p. 236.

† See 'Specimens of Malagasy Folk-lore,' p. 30.

rently the same habit of reposing during the day as its relative, for it seems only known by the name of *Matòriàndro*, i. e., "Day-sleeper," in three or four dialects. Both birds are beautifully mottled with various shades of brown, no doubt a protective resemblance, corresponding with the colour of their surroundings.

6. The last of the six families of this Suborder found in Madagascar, viz. the Swifts, comprises three species of these attractive and useful birds. These Swifts do not differ much from those of Europe as regards their appearance. M. Pollen says that they catch daily thousands of mosquitos, and that he has observed them in considerable numbers perched on the large-foliaged trees*. Their flight is extremely rapid, like that of an arrow from a bow; and from this comes their name of *Sìdintsìdina*, "The Flier," *par excellence*. (Or possibly the verb comes from the bird's name.) The Small Swift (*Cypselus parvus*) has extremely long pointed wings and a forked tail; but Grandidier's Swift has a square tail. While the Goatsuckers are known to the natives as nocturnal birds, the Swifts, on the contrary, are recognized as diurnal in their habits, and so are called *Fitòliàndro*, "Day-watchman;" *Vòronàndro*, "Day-bird;" and *Manàviàndro*, "Day-Bat."

The third Swift (*Collocalia francica*) is nearly allied to the Edible-nest-building Swiftlet of the East Indies. Its nest, however, is not made chiefly of the glutinous secretion from the bird's saliva, but largely of a species of grey lichen (*Usnea*) which grows abundantly on the trees, cemented together with the gelatine from the bird's mouth. In Réunion the nests are bought by the Chinese traders, but they are much inferior to those of the East-Indian species. These

* Mr. Cory remarks: "Swifts never settle on trees in England, hence a great difference in habits. I have taken notes of the migration of the Swifts, and give these herewith:

Westwards.	*Eastwards.*
1885, Jan. 12, large flights.	Many going in this direction, but only in small detached flights.
1886, Feb. 15, do.	
1888, Feb. 23, do.	1887, Sept. and Oct.
1889, Jan. 30, do.	1889, August."

Swiftlets build their nests crowded together on the face of steep and almost inaccessible cliffs, so that it is very difficult and dangerous to obtain them. M. Pollen observes that in the nests both eggs and young birds in all stages of development may be found. One of this bird's names is *Vòromaola*, "Frolicsome-bird" (or possibly "Mad-bird"), probably from its wild dashing flight as it darts after its insect prey.

[To be continued.]

XXII.—*Some Comparative Osteological Notes on the North-American Kites.* By R. W. Shufeldt, C.M.Z.S.

Very recently the writer has been engaged in making comparisons of the characters presented in the skeletons of nearly all the genera of the Accipitres found north of the northern boundary of Mexico. By the Accipitres I mean the Cathartidæ, the Falconidæ, and *Pandion*, but not the Striges. For the most of my material I am indebted to the Department of Comparative Osteology of the U.S. National Museum, though my own collections are not inextensive, affording as they do certain specimens not in the possession of the above-named institution.

The true Raptores, including *Pandion*, offer us many osteological characters of good classificatory value; but when we come to consider the skeletons of the Kites of North America many perplexing points confront us.

Of these latter birds I have carefully examined and compared the skeletons of *Elanoides forficatus*, *Elanus leucurus*, and *Ictinia mississippiensis*, but up to the present time no opportunity has been afforded me for studying the osteology of the Everglade Kite (*Rostrhamus sociabilis*). Not only have the skeletons of these species been intercompared, but comparisons have also been made with the skeletons of many raptorial birds of other countries, as well as with the osteological characters of *Circus* and *Accipiter* (several N.-American species), of many species of *Buteo* and *Falco*, of *Urubitinga anthracina* and *Asturina plagiata*, of American species of

Archibuteo and *Haliaëtus*, and finally with examples of two species of *Polyborus* and of *Pandion*.

In so far as their osteological characters are concerned, our Kites differ most markedly among themselves. As for instance, with respect to this part of its structure, *Ictinia mississippiensis* might almost at once be dismissed by saying that in all essential particulars its skeleton is buteonine in character—it is a miniature *Buteo*, such as, for example, *Buteo lineatus*. In it, however, the basipterygoid processes are hardly discernible, or most often quite absent, while it presents the rather remarkable character in that the short basal joint of the second toe permanently fuses with the joint next beyond it. This latter condition I have also found to exist in *Haliaetus leucocephalus*; it is never present in any typical *Buteo* or in any of the other Kites.

All these Kites generally have the osseous nasal septum entire, but the superior osseous mandible is not laterally toothed.

Passing to *Elanoides forficatus*, we find its skeleton entirely different from the corresponding parts in *Ictinia*; and we are struck with the unusual number of important skeletal characters it holds in common with no less a distantly related form than *Pandion*. *Elanoides* agrees very closely with *Pandion* in the pattern of its sternum; in its having a *complete* fibula (a very unusual character); in its having the supraorbital parts of the lacrymals much reduced and the accessory piece in either bone absent (?); in its having a similar hypotarsus to its tarso-metatarsus (a still more uncommon feature), and in other minor points.

It is to be noted here that, although the supraorbital process of the lacrymal is short in *Elanoides*, with a probable absence of the terminal accessory piece, such is not the case in either *Ictinia* or *Elanus*, where it is long and has the accessory piece well developed, especially so in *Elanus*. The descending portion of a lacrymal does not articulate with the outer border of the *pars plana* in *Elanoides*, while it does so in *Elanus*. All have the *vomer* present, varying somewhat in form.

Elanoides agrees with *Ictinia* in being *desmognathous* much

after the fashion of other Raptores; as we pass next to consider *Elanus*, however, we find that it is absolutely *non-desmognathous*, as its maxillo-palatines neither unite across the middle line nor come in contact either with the vomer or with the nasal septum. Thus this Kite, in so important a particular, forms an exception to Huxley's definition for his Aetomorphæ. *Elanus* differs in its skeleton in many other respects from the corresponding parts of this portion of their structure in both *Ictinia* and *Elanoides*. In it the basipterygoid processes are present, and in it we are at once struck with the notably broad post-palatines, which are comparatively narrow in *Ictinia*. In this last-named Kite, too, the mandible is fairly strong and lacks a ramal vacuity upon either side, whereas the bone in *Elanus* is characterized by being most remarkably weak and slender in its structure.

In all of these birds the inferior clavicular union is seen to be more feeble than it is in any others of the Accipitres, and the *furcula* is further characterized by having the hypocleidium absent in *Elanus* and only rudimentary in *Ictinia*. In all, again, the scapular process of a coracoid does not reach the clavicle.

The *sternum*, varying to no small degree in its general pattern in all these Kites, always has its manubrium very small, and the carina may extend the entire length of the sternal body, as in *Ictinia* and *Elanoides*, or the reverse of this may be the case, as in *Elanus*.

The xipho-sternum may be profoundly notched as in *Ictinia*, or once-fenestrated upon either side of the keel (*Elanus*), or it may exhibit a shallow emargination upon either side only, as in *Elanoides*.

As in other representatives of this group of birds, the ribs and vertebræ are very liable to vary, and that even in the same species. Coming to the pelvis, we find in these Kites, as a fairly constant character, that the ilia are not in contact anteriorly over the sacral crista, nor in the post-acetabular region is the bone, as a whole, especially bent downwards and forwards, as we so commonly see it in *Buteo*. The post-pubic element of the pelvis is always interrupted.

In the skeleton of the leg the fibula is long, or, as we have said above, it may be complete, as in *Elanoides*. Accipitres as a rule, however, usually have the fibula long, so that counts but for little in most cases. We have seen how the hypotarsus of the tarso-metatarsus in *Elanoides* has a subcubical form, in one piece, and once-perforated for tendons, the whole practically agreeing with *Pandion*; but now in *Ictinia* the hypotarsus is represented by two small processes, much as we find it in most ordinary Hawks.

Usually the anterior aspect of the tarso-metatarsus of Hawks, Kites, &c. is longitudinally grooved down the shaft, especially for its proximal half. Now upon the upper third of this surface is seen an elongated tubercle for the insertion of the distal end of the tendon of the tibialis anticus muscle.

It is interesting to note, and the character is a good one, that in all the Falconinæ this tubercle is situated upon the *inner* side of the aforesaid groove, it being on the *outer* side in the *Buteoninæ*; while among the Kites it is seen in the *middle* of the groove, or, if this latter is but faintly marked, at least in the *middle* of the shaft.

Remarkable differences are found in the digits of the pes in all of the Kites here examined, for although in all the first three joints of the fourth toe are subequally abbreviated, the distal one of the three may be quite rudimentary, as we find it in *Elanus*; again, the prebasal joint of the third toe is more or less shortened, and the basal joint of the second toe is always much abbreviated, while in *Ictinia*, as we have seen above, it permanently fuses with the joint next beyond it.

When we come to be thoroughly acquainted with the entire structure, in each case, of the three genera of Kites of which we have presented in brief the osteological characters above, there is no doubt that we shall find them amply supported by the remaining systems in their economies. Indeed, in so far as the systematists have pointed out the external characters of these birds, it would seem to go far towards demonstrating such a matter.

Concluding Remarks.

Some very extraordinary classification has been adopted by American ornithologists for the four different kinds of Kites in the United-States avifauna. The official 'Check-List' of the American Ornithologists' Union groups them as so many genera along with the Buzzards, Hawks, Goshawks, and Eagles, without any special dividing line. Ridgway has also adopted this arrangement. Coues, in his 'Key,' makes a subfamily for them, Milvinæ, which is much better, though his definition for the same is very faulty. I have never had the opportunity of examining any of the genus *Milvus*, but the last-named author believes it stands near our *Elanoides*.

Further, it is the opinion of the present writer that we shall not be enabled to define, with any degree of accuracy, the position in the system of any of these birds until we are in possession of a far more exact knowledge of the morphology of the entire group to which they belong. Provisionally they ought at least to constitute a Family, thus :—

Family.	Subfamilies.
Milvidæ.....	Ictiniinæ.
	Elanoidinæ.
	Elaninæ.
	Rostrhaminæ (?), not examined.

It means something that *Elanoides* should have so many osteological characters in common with *Pandion*, and such important ones. Not that *Pandion* and *Elanoides forficatus* belong together, but simply that it points to something the hidden meaning of which is not as yet in our possession. It means something else that nearly all the osteological characters of *Ictinia* are so strictly *Buteonine* and so utterly different from the corresponding ones of *Elanoides*. Finally, it surely means something more that the non-desmognathous *Elanus leucurus* presents an entirely different set of osteological characters from both the first two mentioned Kites, and that a set which, in our present state of knowledge of the subject, leaves us very much in doubt as to its true affinities.

We stand in need of a little more light along the lines indicated, and such a task will well repay the ornithotomist.

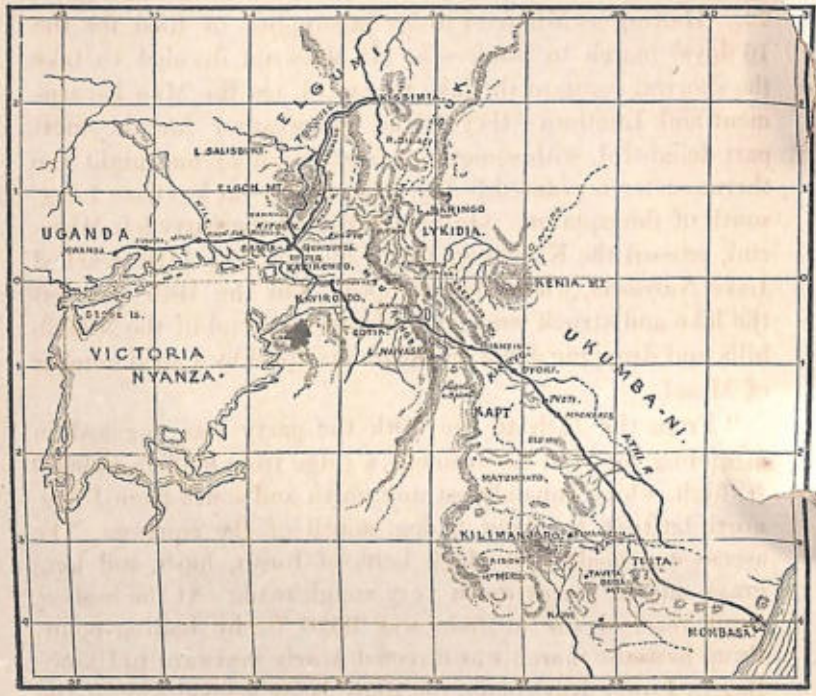
XXIII.—*On the Birds collected by Mr. F. J. Jackson, F.Z.S., during his recent Expedition to Uganda through the Territory of the Imperial British East-African Company.* By R. Bowdler Sharpe, LL.D., F.Z.S., &c. *With Notes by the Collector.*—Part I.

(Plates IV.–VI.)

It is with great pleasure that I lay before the readers of 'The Ibis' an account of one of the most interesting collections of birds that have ever been sent from Africa. Mr. Jackson is already well known to us from the good scientific work that he has done in the Kilimandjaro district and on the Lamu coast (*cf.* Shelley, Ibis, 1888, pp. 287–307). But the present collection comes as quite a surprise upon all students of African Ornithology, for it seems to open up a totally new idea of the affinities of the fauna of this part of the continent. After studying it I am indeed afraid that all our notions as to the existence of definite zoological subregions in Africa will have to be reconsidered.

The following outline of Mr. Jackson's route during the journey upon which the present collection was made is slightly abbreviated from the account of it given in the 'Morning Post' of Jan. 2, 1891 :—

"Mr. Jackson started from Mombasa in the summer of 1889, and left the important station of Machakos, on the Kikuyu frontier, on the 7th of August. Machakos is about 250 miles from the coast, and is situated in lat. 1 deg. 27 min. south, and long. 37 deg. 20 min. east. Instead of taking the regular route thence by Ngongo, Mr. Jackson shaped his course north-west through the hitherto unattempted Kikuyu country. After crossing the intervening undulating grassy plain, the Kikuyu forest—the stronghold of the Wa-Kikuyu—was entered, and to the surprise of the party, 'from the very first the people were most friendly in every way, brought in large quantities of food, and, with one exception, never made an attempt to steal.' Having made 'blood brothers' with the Kikuyu chief, Mr. Jackson marched out of the forest and over 'immense tracts of land which were probably once covered



Map of Mr. Jackson's Route.

with dense forest, but are now in the most wonderful state of cultivation.' Indian corn, sweet-potatoes, yams, two or three kinds of beans, bananas, and sugar-cane flourish in immense quantities, and all these products are very cheap and abundant. These Wa-Kikuyu are a people to whom, for the best of reasons, the neighbouring tribes of Masai give a very wide birth.

"The weather (August) was cold and misty. Many species of the English flora were recognized on the march through this interesting country, 'amongst them the common bracken in large bushes, in some places growing from 6 ft. to 8 ft. high.' They also met with white clover, forget-me-nots, and other familiar flowers.

"Mr. Jackson continued in this country from August 11 until he reached Mianzini (east of Lake Naivasha) on August 22. Halting at Mianzini to lay in supplies of food for the 16 days' march to Sotik—for Mr Jackson decided to take the shortest route to the lake westward, *vid* the Mau Escarpment and Lumbwa—they found the weather for the most part delightful, with sometimes frosty nights; one night the thermometer registered 6 deg. Fahrenheit—at less than 1 deg. south of the equator. On September 10 the party left Mianzini, crossed the Kinangop plain, and on the 11th reached Lake Naivasha, where they camped. On the 16th they left the lake and struck west, crossing over the end of the Ndabib hills and dropping down on a plain occupied by a good number of Masai.

"From the 17th to the 20th the party was engaged in ascending the Mau Escarpment, a ridge from 8000 ft. to 9000 ft. high, which runs almost due north and south from 1 deg. north latitude to about 2 deg. south of the equator. The ascent was made over thick belts of forest, bush, and long grass, and in places was a very rough road. At the highest point reached the altitude was 9620 ft. by boiling-point. From here the march was directed nearly westward to Ukowe Bay in Lower Kavirondo, the route being a good way to the north of that taken by Dr. Fischer. After two days' marching over rolling grassy hills and boggy hollows, the edge of the forest was reached. The march through this trackless forest was very trying. Some of the trees were truly colossal. For the most part the weather was wet and miserable, but when the sun shone through the trees down into the gorges and ravines the scenery was magnificent.

"The Sotik country is open, but hilly. Lumbwa, the district next to Sotik, is open and undulating, and crossed by several large streams.

"On October 20 Kavirondo was entered, and here the change from the cool air of the uplands of Sotik and Lumbwa proved trying to men and beasts alike. No news of Stanley (who was then supposed to be on the east side of the Lake) could be had, and Dr. Fischer was the only white man who

had ever passed through the country. The people were noisy, the men mostly in a semi-drunken state from the effects of bang and smoking. On October 26 the party arrived at the Lake, and on November 7 Qua Sundu (now known as Mumiyas) was reached—the same place where Thomson arrived in December 1883 and Fischer in March 1886—about 30 miles from the north-east corner of Victoria Nyanza.

"From Qua Sundu Mr. Jackson, leaving a party there to await his return, marched northward to explore the Suk country, passing the inhabited district of Kitosh (where iron-ore is plentiful and worked by the natives), into the wilderness skirting the eastern slopes of Mount Elgon. Water here is abundant and deliciously cool, the hills very rough and stony, 'with beautiful white quartz showing through the surface and scattered about in loose pieces.' Ivory is very cheap and plentiful, as the people have no use for it except to make armlets, &c.; a 16-lb. tusk can be had for six strings of beads. Fish is plentiful in the rivers and excellent. It was Mr. Jackson's purpose to proceed as far as Lake Rudolf (which Count Teleki had lately visited), but on reaching Ngoboto, where he had calculated on getting food-supplies, he found the people so hostile, on account of the looting and raiding of Teleki's men, that he was forced to return.

"On the return journey a good-sized lake was sighted some 30 miles off to the north-west; this was named Lake Salisbury. Mount Elgon was visited and explored with interesting results. Ascending from the district of Savé on the north side, a dense forest was passed through from 6000 ft. to 9000 ft., after which they entered open ground with bushes dotted about, heaths, and coarse grass. From 11,000 ft. to 13,000 ft. 'a curious tree, with straight rough stem and large leaf-top,' grows in abundance. On the 17th of February, 1890, Mr. Jackson and his party entered the crater of Mount Elgon and encamped there for the night. The crater is from eight to nine miles in diameter, and the bottom appeared boggy and swampy. 'Here the River Angalul rises and flows through the exceedingly precipitous break in the side of the crater;

also the River Sum, flowing N.W. into Lake Salisbury.' The cold was very great; but fortunately there was no rain, and only two men died from cold and exertion. The highest point reached was (by boiling-point) 14,894 ft., and none of the other peaks were more than 50 ft. higher. On descending the south side of the mountain the first of the celebrated caves was met with at a height of 7500 ft.

"On arriving again at Qua Sundu or Mumiyas, Mr. Jackson and his friends were astonished to hear that the redoubtable Dr. Peters had passed by a month before and had hoisted his flag all over the country. Mr. Jackson pulled down Dr. Peters's flag and hoisted the Company's instead, and after buying a supply of food, started for Uganda by the north side of the lake—along the track of Bishop Hannington. The most interesting experience of this part of his travels was his acquaintance with the country of Wakoli, in Usoga. The change is described as marvellous. They marched 'through vast groves of bananas' up to Wakoli's capital. Here they were received with the most bounteous hospitality.

"On March 26 they left this land of friendship and abundance, and on April 5 reached the Nile, which was crossed on the following day, and Mwanga's capital, Mengo, reached on the 14th.

"On June 24 Mr. Jackson left Mumiyas (Qua Sundu) in charge of a headman and party, and marched coastward by way of Kabaras, Elgeyo, and Lake Baringo to the north end of Lake Naivasha, which was reached on the 27th. On the 8th of August he arrived at Machakos after an absence of eleven months. The party returned to Mombasa on September 3, after accomplishing the longest and most successful tour of exploration yet made in those regions."

The accompanying sketch of Mr. Jackson's route (p. 234) has been taken, by permission, from the large map prepared by the Royal Geographical Society for the illustration of the narrative of Mr. Jackson's journey, read before that Society, February 9th, 1891 (see Proc. R. G. S. for this year).

I now proceed with a systematic account of the collection made during this journey, and commence with the Passeres

of the families Corvidæ, Sturnidæ, Oriolidæ, Ploceidæ, Fringillidæ, and Alaudidæ. It will be noticed that Mr. Jackson has furnished me with some very interesting details and particulars as to soft parts, habits, and other particulars.

I have given frequent references to the following papers which treat of the Ornithology of the adjoining districts of Eastern Africa:—

(1) Fischer, G. A. "Uebersicht der von Dr. G. A. Fischer auf seiner im Auftrage der Hamburger Geographischen Gesellschaft unternommenen Reise in das Masai-Land gesammelten und beobachteten Vogelarten," Zeitschr. ges. Orn. i. pp. 297–396, pls. 19, 20 (1884).

(2) Salvadori, T. "Spedizione Italiana nell' Africa Equatoriale.—Resultati Zoologici: Uccelli dello Scioa e della regione fra Zeila e lo Scioa," Ann. Mus. Civic. Genov. (2) i. pp. 7–276 (1884).

(3) Fischer, G. A. "Uebersicht der in Ostafrika gesammelten Vogelarten, mit Angabe der verschiedenen Fundorten," J. f. O. 1885, pp. 113–142, Taf. 1.

(4) Reichenow, A. "Dr. Fischer's ornithologische Sammlungen während der letzten Reise zum Victoria Niansa; mit Benutzung der Tagebücher der Reisenden bearbeitet," J. f. O. 1887, pp. 38–78.

(5) Salvadori, T. "Catalogo di una Collezione di Uccelli dello Scioa fatta dal Dott. Vincenzo Ragazzi negli anni 1884–86," Ann. Mus. Civic. Genov. (2) vi. pp. 185–326 (1888).

(6) Shelley, G. E. "List of Birds collected in Eastern Africa by Mr. Frederick J. Jackson, F.Z.S., with Notes and an Introduction by the Collector," Ibis, 1888, pp. 287–307, pls. vi., vii.

(7) ——. "On the Birds collected by Mr. H. C. V. Hunter, F.Z.S., in Eastern Africa," P. Z. S. 1889, pp. 356–372, pls. xl., xli.

Order PASSERES.

Fam. Corvidæ.

1. Heterocorax capensis.

Heterocorax capensis (Licht.); Sharpe, Cat. B. Brit. Mus. iii. p. 12 (1877); Salvad. Ann. Mus. Civic. Genov. (2) vi. p. 301 (1888; Shoa).

Corvus capensis minor, Heugl. Orn. N.O.-Afr. i. p. 499 (1870).

Corvus capensis, Salvad. Ann. Mus. Civic. Genov. (2) i. p. 204 (1884).

♂ ♀. Nos. 124, 125. Kavirondo, Dec. 12, 1889.—Iris brown; bill and legs black. Always seen in pairs.

These birds probably belong to the small race which Heuglin called *Corvus capensis minor*, for the bill is remarkably small when compared with that of typical specimens of *H. capensis* from the Cape Colony. The Shoa specimen in the Museum is identical in colour and size of bill with South-African examples, and it is curious that the Kavirondo birds should differ so perceptibly in the smaller size of the bill. The wings in Mr. Jackson's pair measure 12·5 to 12·7 inches. If the smaller bill be considered sufficient character, the race will have to stand as *Heterocorax minor* (Heugl.).

2. Rhinocorax affinis.

Rhinocorax affinis (Rüpp.); Sharpe, Cat. B. Brit. Mus. iii. p. 46 (1877); Salvad. Ann. Mus. Civic. Genov. (2) vi. p. 301 (1888; Shoa).

Corvus affinis, Heugl. Orn. N.O.-Afr. i. p. 502 (1870).

No. 133. Turquel, Suk, Dec. 23, 1889.—Iris brown. A pair seen. Plentiful in Kavamoja, together with *C. scapulatus* and *Corvultur albicollis*.

3. Corvus scapulatus.

Corvus scapulatus, Daud.; Sharpe, Cat. B. Brit. Mus. iii. p. 22 (1877); Fischer, Zeitschr. ges. Orn. i. p. 337 (1884; Pangani); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 305 (1884; Shoa), vi. p. 301 (1888); Fischer, J. f. O. 1885, p. 131 (Zanzibar, Bagamoyo, Mombasa, Malindi); Reichen. J. f. O.

1887, p. 66 (Usegua, Usandawi, Ussure, Usukuma, Victoria Nyanza).

No. 119. Victoria Nyanza, Oct. 29, 1889.

Fam. Sturnidæ.

4. Pholidauges verreauxi.

Pholidauges verreauxi, Bocage; Sharpe, Cat. B. Brit. Mus. xiii. p. 123 (1890); Fischer, Zeitschr. i. p. 335 (Maurui, Pangani, Paré); id. J. f. O. 1885, p. 132 (Zanzibar, Lindi, Bagamoyo, Wapokomoland); Reichen. J. f. O. 1887, p. 66 (Msingissua, Schasche).

Nos. 221, 222. ♂ ad. Savé, Mount Elgon, Feb. 4, 1890; 6000 feet.—Irides bright yellow, pupil very large; legs dull olive-black; bill black. Plentiful in twos and threes in the shambas. First seen in Kitosh.

Nos. 235, 239. ♀ ad. Savé, Feb. 8, 1890.—Legs dusky olive; irides yellow, duller than in the male.

5. Lamprotornis porphyropterus.

Lamprotornis purpuroptera, Rüpp. Syst. Nat. pp. 64, 75, taf. 25 (1845); Fischer, Zeitschr. i. p. 336 (Nguruman); id. J. f. O. 1885, p. 132 (Pangani, Witu, Wapokomoland, Lamu); Reichen. J. f. O. 1887, p. 66 (Simiu River, Kagehi, Nassa on Speke Gulf).

Urauges porphyropterus (nom. emend.); Cab. Mus. Hein. Th. i. p. 200 (1850).

Lamprotornis porphyropterus, Heugl. Orn. N.O.-Afr. i. p. 511 (1870); Sharpe, Cat. B. Brit. Mus. xiii. p. 156 (1890); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 199 (1884; Shoa).

Nos. 211, 212. ♂ ♀ ad. Turquel, Suk, Jan. 28, 1890.—Irides pale yellow; legs and feet black: small ants, &c., in stomach. Plentiful in small flocks; song very sweet.

The male has the wing 6·2 inches, the female 5·6 inches. The female has also a shorter tail than the male, and therefore the differences alluded to by me in the 'Catalogue' may be partly sexual, though Mr. Jackson's birds have not such long tails as the Abyssinian examples. The tail in the male bird from Suk measures 7·1 inches, and in the female 6 inches.



J. G. Keulemans del. et lith.

Mintern Bros. imp.

GALEOPSAR SALVADORII.

6. Cosmopsarus regius.

Cosmopsarus regius, Reichen.; Sharpe, Cat. B. Brit. Mus. xiii. p. 160 (1890); Fischer, Zeitschr. i. p. 336 (Paré); id. J. f. O. 1885, p. 132 (Massa).

No. 89. ♀ ad. Wilderness Mts., Ndai, River Tskro, Aug. 22, 1890.—Iris white; bill and legs black. Plentiful in small flocks of from four to eight in the wilderness.

Galeopsar, gen. n.

Affine generi *Cinnamoptero*, caudâ longissimâ et valde graduatâ; sed rostro curvato, et plumis frontalibus et verticalibus densis, setosis, quasi galeam formantibus, distinguendum.

7. Galeopsar salvadorii, sp. n. (Plate IV.)

Adult female. General colour above glossy black, with a steel-blue or steel-green gloss, the green shade being more apparent on the secondaries and wing-coverts; primaries chestnut, with a band of glossy black at the ends, increasing in extent towards the outermost, occupying the terminal third of the second quill, the first short primary being entirely blackish, chestnut only at the extreme base; tail-feathers black, glossed externally with steel-green; head, neck, and entire underparts black glossed with steel-green; the recurved feathers on the forehead velvety black with a green gloss. Total length 15 inches, culmen 0·9, wing 6·1, tail 9, tarsus 1·3.

No. 161. Turquel, Suk, Jan. 15, 1890.—Legs and bill black; irides crimson. The first and only one seen.

The accompanying Plate (Pl. IV.) will give ornithologists a better idea of this extraordinary new genus of Starlings than an elaborate description. The form is very like *Cinnamopterus* in general appearance, but the plumage is green above and below instead of purple, and the dense patch of bristly feathers on the forehead and fore part of crown distinguishes it from his and all other allied genera.

I have named this species after my old and valued friend Count Salvadori, who has taken the greatest interest in Mr. Jackson's collection, and whose assistance, it is needless to

say, in determining some of the species has been most gratefully accepted.

8. Amydrus elgonensis, sp. n.

A. similis *A. walleri*, Shelley, sed minor, pileo griseo, plumis medialiter chalybeo-nigris; facie laterali et gutture toto clare griseis, gutture imo et præpectore chalybeo maculatis. Long. tot. 8·2 poll. Angl., culm. 0·8, alæ 4·65, caudæ 3·3, tarsi 0·9.

No. 300. ♀ ad. Mt. Elgon, Feb. 23, 1890.

This is a species closely allied to *Amydrus walleri* of Shelley (*cf.* Sharpe, Cat. B. Brit. Mus. xiii. p. 165) from the Usambara Hills; but it nevertheless appears to be distinct, and Count Salvadori, who has seen the bird, confirms my opinion. It is smaller than *A. walleri*, purer grey on the head, sides of face, and throat; the nape and hind neck, as well as the lower throat, are mottled with mesial spots of steel-green.

9. Amydrus morio.

Amydrus morio (L.); Sharpe, Cat. B. Brit. Mus. xiii. p. 161 (1890).

No. 43. ♂ ad. Ulu, Ukambani, Jan. 3, 1889.

No. 172. ♂ ad. Turquel, Suk, Jan. 14, 1890.—Irides crimson. Common.

No. 308. ♀ ad. Mount Elgon, Feb. 24, 1890.—Irides crimson; feet and bill black. Plentiful in flocks.

10. Lamprocolius chalybeus.

Lamprocolius chalybeus (Ehr.); Sharpe, Cat. B. Brit. Mus. xiii. p. 176 (1890); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 199 (1884; Shoa), vi. p. 297 (1888).

No. 51. Ad. Lake Naivasha, Sept. 10, 1889.

11. Lamprocolius melanogaster.

Lamprocolius melanogaster (Swains.); Sharpe, Cat. B. Brit. Mus. xiii. p. 182 (1890); Fischer, Zeitschr. i. p. 335 (1884; Pangani); id. J. f. O. 1885, p. 132 (Lindi, Bagamoyo, Usaramo, Kipini, Witu, Zanzibar).

Ad. Probably obtained near the coast, as no ticket is attached to the specimen.

12. Spreo superbus.

Spreo superbus (Rüpp.); Sharpe, Cat. B. Brit. Mus. xiii. p. 189 (1890).

Notauges superbus, Fischer, Zeitschr. i. p. 335 (1884; Little Aruscha, Nguruman); id. J. f. O. 1885, p. 132 (Barawa); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 199 (1884; Shoa), vi. p. 298 (1888); Reichen. J. f. O. 1887, p. 66 (Irangi, Loeru).

No. 101. ♂ ad. Machako's, March 20, 1889.

13. Dilophus carunculatus.

Dilophus carunculatus (Gm.); Sharpe, Cat. B. Brit. Mus. xiii. p. 61 (1890); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 197 (1884, Shoa), vi. p. 297 (1888); Reichen. J. f. O. 1887, p. 66 (Irangi, Wembaere, Simiu River).

No. 349. ♂ ad. Kitosh, March 2, 1890.—Bill dull fleshy white; bare skin yellow; legs transparent brown.

No. 82. Juv. Masai Plains, Lake Naivasha, July 30, 1889.—Very plentiful all round Naivasha and north to Kisidong, in large flocks. Bill dusky brown; bare skin of face &c. yellow; legs brown; irides brown.

14. Buphaga erythrorhyncha.

Buphaga erythrorhyncha (Stanley); Sharpe, Cat. B. Brit. Mus. xiii. p. 196 (1890); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 196 (1884; Shoa), vi. p. 297 (1888); Fischer, J. f. O. 1885, p. 132 (Mombasa, Aruscha, Sigirari, Mossiro, Witu, Maurui); Reichen. J. f. O. 1887, p. 66 (Usegua).

No. 45. ♂ ad. Ulu, Ukambani, Jan. 3, 1889.

No. 350. ♀ ad. Kitosh, March 2, 1890.—Irides bright orange-red; eyelids yellow; bill vermilion; legs olive-green.

Fam. Oriolidæ.

15. Oriolus larvatus.

Oriolus larvatus, Licht.; Sharpe, Cat. B. Brit. Mus. iii. p. 217 (1877).

No. 154. ♀ ad. Turquel, Suk, Jan. 5, 1890.—Bill dusky carmine; legs scaly slate-colour.

No. 301. ♀ ad. Mount Elgon, Feb. 23, 1890.—Irides

crimson; legs scaly horn-blue; bill dull carmine. In thick forest.

No. 324. ♀ ad. Mount Elgon, Feb. 25, 1890.—Bill dull rose-brown; legs dark horn-blue; irides crimson.

Fam. Ploceidæ.

16. Vidua principalis.

Vidua principalis (L.); Sharpe, Cat. B. Brit. Mus. xiii. p. 203 (1890); Fischer, Zeitschr. i. p. 325 (Pangani, Maurui, Aruscha, Nguruman); id. J. f. O. 1885, p. 135 (Bagamoyo, Lamu, Usegua, Wapokomoland); Reichen. J. f. O. 1887, p. 70 (Kagehi, Loeru).

Vidua erythrorhyncha (Sw.); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 181 (1884; Shoa), vi. p. 255 (1888).

No. 65. ♂. Nzoni, Feb. 11, 1889.

17. Chera procne.

Chera procne (Bodd.); Sharpe, Cat. B. Brit. Mus. xiii. p. 213 (1890).

No. 54. ♂ ad. River Bogonoto, Masai Land, July 20, 1890.—Bill pale horn-blue; legs dark "shrimp"-brown; irides brown. A few seen in a swamp amongst the grass two camps after Doreta on our downward march. The females were more plentiful than the males.

This is a remarkable occurrence of a South-African species far away from its supposed habitat. There is not the least doubt, however, that Mr. Jackson's Masai specimen is the true *Chera procne*; it is identical with a male from Natal in the British Museum. Some of the males in black plumage have orange shoulder-spots, followed by a broad band of buff across the median coverts, whereas others have the shoulder-spot scarlet and the median coverts white. Mr. Jackson's specimen has the scarlet shoulder-patch, and this is, I think, the sign of an older bird.

18. Penthetria ardens.

Penthetria ardens (Bodd.); Sharpe, Cat. B. Brit. Mus. xiii. p. 215 (1890).

Coliostruthus ardens, Fischer, J. f. O. 1885, p. 135 (Nguru Mountains); Shelley, Ibis, 1888, p. 293 (Kilima-njaro).

Nos. 14, 15, 21. Mararu, Teita, Dec. 12 and 13, 1888.

19. Penthetria laticauda.

Penthetria laticauda (Licht.); Sharpe, Cat. B. Brit. Mus. xiii. p. 218 (1890); Fischer, Zeitschr. i. p. 326 (Komboko, Súsua, Great Aruscha, Naivasha); id. J. f. O. 1885, p. 135.

Coliuspasser laticauda, Salvad. Ann. Mus. Civic. Genov. (2) i. p. 182 (1884; Shoa), vi. p. 286; Reichen. J. f. O. 1887, p. 70 (Ukira); Shelley, Ibis, 1888, p. 293 (Kilima-njaro).

No. 13. ♂ ad. Elgeyo, July 4, 1890; alt. 8000 to 9000 feet.—Only seen in long reeds and bulrushes at the swampy end of the small lake on the top of Elgeyo. Evidently breeding.

No. 61. ♂ ad. Lake Nahuro, Masai, July 23, 1890.—Bill and legs black; irides brown. Very plentiful in the long grass near Lake Nahuro.

"This bird has a curious habit of making a playground for itself. I noticed several in the long grass, and I saw the male evidently playing, as it darted several times into the air to a height of about four feet, and then darted down again. Their 'playing-ground' is evidently a work of some time, as the grass is all worn away in an irregular circle, with the exception of a small tuft left in the centre with two or three little recesses at the base, which are evidently the result of the birds' play."

No. 90. ♂ juv. Lumbwa, Oct. 8, 1889.—Irides brown; legs slaty flesh-colour.

I have not had a sufficient number of young birds of *P. laticauda* for a comparison with this specimen, which may after all be a young of *P. ardens*, though it is almost impossible to distinguish the immature birds of these two allied species.

20. Penthetria eques.

Penthetria eques (Hartl.); Sharpe, Cat. B. Brit. Mus. xiii. p. 220 (1890); Fischer, Zeitschr. i. p. 326 (Maurui).

Urobrachya eques, Fischer, J. f. O. 1885, p. 135 (Maurui).
Coliuspasser eques, Shelley, Ibis, 1888, p. 293 (Kilimanjaro).

No. 34. ♂ ad. Kikumbuliu, on the march, Dec. 26, 1888.
Nos. 39, 40. ♂ ad. Kikumbuliu, Dec. 29, 1888.
Nos. 51, 52. ♂ ♀ ad. Ulu, Ukambani, Jan. 7, 1889.

DREPANOPLECTES, gen. n.

Generi *Penthetria* affine, sed rectricibus latioribus et versus apicem decurvatis distinguendum.

21. DREPANOPLECTES JACKSONI, sp. n. (Plate V.)

Adult male. Entirely black above and below, the head crested and the hind neck with a large frill reaching to the mantle; the tail-feathers curved and with a ribbed appearance of transverse bars under certain lights; wings browner than the back, and edged externally with lighter or reddish brown; bastard-wing and primary-coverts blackish, with an external fringe of light brown; the inner secondaries black with brown edges; a shoulder-patch of light olive-brown, the lesser wing-coverts being of this colour, the greater series blackish with tawny buff edges, the greater coverts, bastard-wing, primary-coverts, and quills brown, narrowly margined with whity brown, the inner secondaries black with whity-brown margins; under wing-coverts and axillaries deep tawny buff; quills light brown below. Total length 11·5 inches, culmen 0·7, wing 3·4, tail 7·0, tarsus 1·15.

Adult female. Different from the male and resembling a female *Penthetria*, light brown, streaked with black, the tail round and slightly graduated; no light shoulder-patch, the lesser wing-coverts being like the back; a distinct eyebrow of tawny buff slightly tinged with orange; lores and a streak below the eye whitish, with a tinge of orange on the cheeks; under surface of body light tawny buff, a little washed with orange on the breast, which is streaked with black like the sides of the body; the centre of the abdomen whitish; under wing-coverts tawny. Total length 6·4 inches, culmen 0·7, wing 3·5, tail 2·2, tarsus 1·2.

No. 122. ♂ juv. Kikuyu, Oct. 14, 1889.



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DREPANOPLECTES JACKSONI.

No. 56. ♂ ad. Masai Land, July 22, 1890.—Bill pale pea-green, the base of the lower mandible up to the nostril black; legs dark "shrimp"-brown; iris brown. Seen in flocks in the long grasses.

No. 57. ♂ juv. Masai Land, July 22, 1890.—Legs pale brown; bill pale horn-brown, lower mandible whitish brown; iris brown.

Nos. 58, 59. ♀ ad. Masai Land, July 22, 1890.—Seen in flocks in the long grasses in the vicinity of old sites of villages in the Masai country north of Lake Nahuro.

No. 60. ♂ ad. Masai Land, July 23, 1890.—Soft parts as in No. 56.

22. Penthetriopsis soror.

Penthetriopsis soror, Reichen. J. f. O. 1887, p. 70 (Kawanga); Sharpe, Cat. B. Brit. Mus. xiii. p. 223.

No. 12. ♂ ad. Kavirondo, June 24, 1890.—Legs black; bill black, edge of lower mandible pale horn-blue; irides brown. Plentiful in the long grassy hollows.

This species is barely separable from *P. macrocerca*, but is a trifle smaller, and has the wing-spot rather more of a lemon-yellow.

23. Urobrachya phœnicea.

Urobrachya phœnicea (Heugl.); Sharpe, Cat. B. Brit. Mus. xiii. p. 225 (1890).

Penthethria phœnicea, Reichen. J. f. O. 1887, p. 70 (Kagehi, Magu, Ukira).

Penthethria (*Urobrachya*) *zanzibarica*, Fischer, Zeitschr. i. p. 326 (1884; Maurui).

Urobrachya zanzibarica, Fischer, J. f. O. 1885, p. 134 (Maurui, Tschara, Engatana).

Nos. 114, 115, 116. ♂ juv. Victoria Nyanza, Oct. 26, 1889.—Bill horn-blue, dusky at base; legs pale brown, with a slaty tint.

No. 126. ♀ ad. Victoria Nyanza, Oct.

24. Pyromelana flammiceps.

Pyromelana flammiceps (Swains.); Sharpe, Cat. B. Brit. Mus. xiii. p. 228 (1890).

Euplectes flammiceps, Fischer, Zeitschr. i. p. 327 (Pangani, Maurui, Aruscha, Nguruman); id. J. f. O. 1885, p. 134 (Lindi, Zanzibar, Bagamoyo to Lamu, Ngauru Mountains).

No. 11. ♂ ad. Dindi, Kavirondo, June 16, 1890.—Bill black; irides brown. Rather scarce. Breeding. Found in the long grass in swampy places.

25. Pyromelana franciscana.

Pyromelana franciscana (Isert); Sharpe, Cat. B. Brit. Mus. xiii. p. 233 (1890).

Euplectes franciscanus, Salvad. Ann. Mus. Civic. Genov. (2) i. p. 184 (Shoa), vi. p. 288 (1888).

No. 27. ♂ ad. Elgeyo, July 8, 1890.—Legs flesh-colour; bill black; irides brown. Shot in swamp.

26. Pyromelana diademata.

Pyromelana diademata (Fisch. & Reichen.); Sharpe, Cat. B. Brit. Mus. xiii. p. 236; Shelley, Ibis, 1888, p. 302 (Jipi).

Euplectes diadematus, Fischer, Zeitschr. i. p. 327 (1884; Pangani); id. J. f. O. 1885, p. 134 (Malindi, Wapokomoland, Lamu).

No. 127. ♂ ad. Teita, April 19, 1889.

No. 37. ♂ ad. Njemps, Lake Baringo, July 13, 1890.—Irides brown; legs brownish flesh-colour, claws dusky. Plentiful in the long grass on the river Tigrish at Njemps, Baringo.

Considerable difference is shown in the extent of the spot on the forehead, which is also more scarlet than was the case with the specimen procured by Mr. Jackson at Lamu (*cf.* Sharpe, *l. c.*).

27. Pyromelana xanthomelæna.

Pyromelana xanthomelæna (Rüpp.); Sharpe, Cat. B. Brit. Mus. xiii. p. 239 (1890).

Orynx capensis (L.); Fischer, Zeitschr. i. p. 326 (Susua, Great Aruscha, Pangani); id. J. f. O. 1885, p. 134 (Lindi, Bagamoyo, Lamu).

Euplectes xanthomelas, Salvad. Ann. Mus. Civic. Genov. (2) i. p. 186 (1884; Shoa), vi. p. 289.

Coliuspasser xanthomelas, Shelley, Ibis, 1888, p. 293 (Between Taveta and Moshi).

No. 15. ♂ ad. Mararu, Teita, Dec. 12, 1888.

No. 259. ♂ juv. Savé, Elgon, 6000 feet, Dec. 13, 1890.—Iris brown; legs pale fleshy brown; the lower mandible pale horn-colour.

No. 14. ♂ ad. Elgeyo, July 6, 1890.—Iris brown; legs brown; bill bluish horny white. Plentiful along the hill-side. Evidently breeding.

No. 21. ♂ ad. Elgeyo, July 7, 1890. Legs dark brown; irides brown; bill horn-blue.

28. Pyromelana taha.

Pyromelana taha (Smith); Sharpe, Cat. B. Brit. Mus. xiii. p. 242.

No. 55. ♂ ad. Masai Land, July 20, 1890.—Irides brown; bill black; legs "shrimp"-brown. Breeding in small numbers in a swamp two marches south of Doreta.

This is a small form of *P. taha*, with smaller measurements, and having the golden yellow of the head and back paler, but I do not propose to separate it specifically, as, if *Chera procne* extends to the interior of Eastern Africa, why should not also *P. taha*?

29. Philetærus emini.

Nigrita emini, Reichenow, J. f. O. 1891, p. 4.

The four specimens sent by Mr. Jackson are certainly paler than in *P. arnaudi*, and have the head lighter pearly grey. I expected that they would have proved to be *P. dorsalis* of Reichenow (J. f. O. 1887, p. 71), but the latter gentleman has just forwarded me (March 6, 1891) a printed separate copy of his paper on Emin Pasha's last collection, and I find that he has called this species *P. emini*.

30. Quelea cardinalis.

Quelea cardinalis (Hartl.); Sharpe, Cat. B. Brit. Mus. xiii. p. 256 (1890).

Hyphantica cardinalis, Fischer, J. f. O. 1885, p. 134 (Nguruman).

Nos. 35, 36. Njemps, Baringo, July 13, 1890.—Bill black; legs pale yellowish brown; irides brown. Very plentiful in the long bushy grass.

No. 50, ♀ of No. 35. Njemps, July 16, 1890.—Feet pale brownish grey; bill dusky, the lower mandible dusky yellow; iris brown.

31. Quelea æthiopica.

Quelea æthiopica (Sundev.); Sharpe, Cat. B. Brit. Mus. xiii. p. 259 (1890); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 193 (1884; Shoa), vi. p. 293 (1888).

No. 16. ♀ juv. Mararu, Teita, Dec. 12, 1888.

No. 103. ♂ ad. Machako's, March 21, 1887.

Hyphantica æthiopica, Fischer, Zeitschr. i. p. 327 (1884; Ngare Kiti); id. J. f. O. 1885, p. 134 (Pangani, Kipini, Massa, Paré, Nguruman); Reichen. J. f. O. 1887, p. 70 (Kagehi).

32. Ploceipasser melanorhynchus.

Ploceipasser melanorhynchus, Rüpp.; Sharpe, Cat. B. Brit. Mus. xiii. p. 246; Salvad. Ann. Mus. Civic. Genov. (2) i. p. 177 (Shoa), vi. p. 295 (1888).

Philagrus melanorhynchus, Fischer, J. f. O. 1885, p. 134 (Nguruman).

No. 55. ♂ ad. Kitua, Jan. 21, 1889.

No. 124. ♂ ad. Machako's, Ukambani, April 9, 1889.

33. Coccopygia kilimensis.

Coccopygia kilimensis, Sharpe, Cat. B. Brit. Mus. xiii. p. 307.

No. 72. ♂ ad. Sotik, Oct. 3, 1889.—Iris brown.

34. Hypochæra ultramarina.

Hypochæra ultramarina (Gm.); Sharpe, Cat. B. Brit. Mus. xiii. p. 309 (1890); Fischer, J. f. O. 1885, p. 135 (Kipumbui, Paré, Nguruman, Usegua, Lindi); Reichen. J. f. O. 1887 p. 70 (Kagehi).

Hypochæra nitens, var. *ultramarina*, Fischer, Zeitschr. i. p. 325 (1884; Paré, Aruscha, Nguruman).

Hypochæra nitens (nec Gm.); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 181 (Shoa).

No. 36. ♂ ad. Kikumbuliu, Ukambani, Dec. 28, 1888.

No. 43. ♂ ad. Njemps, Lake Baringo, July 15, 1890.—Bill white horn-colour; legs pink; irides brown.

Agreeing with the series in the British Museum from Abyssinia and the White Nile.

35. NIGRITA SCHISTACEA.

Nigrita schistacea, Sharpe, Ibis, 1891, p. 118.

No. 74. ♀ ad. Sotik, Oct. 3, 1889.—Iris yellow; legs brown; bill black. Only saw one other specimen, on the edge of the Mau Forest.

I have pointed out (above, p. 118) the characters which distinguish this new species from *N. emiliæ*.

36. UROLONCHA CANICEPS.

Uroloncha caniceps (Reichen.); Sharpe, Cat. B. Brit. Mus. xiii. p. 356.

Spermestes caniceps, Fischer, J. f. O. 1885, p. 136 (Massa); Reichen. J. f. O. 1887, p. 71 (Wembaere, Nassa).

No. 177. ♀. Turquel, Suk, Jan. 16, 1890.—Bill and legs horn-blue; iris brown. First seen in small flocks of from eight or ten at Karakau, in Suk. Feeds on the minutest grass-seeds.

37. ESTRILDA MINOR.

Estrilda minor (Cab.); Sharpe, Cat. B. Brit. Mus. xiii. p. 394.

Adult. Ukambani.

38. ESTRILDA PHŒNICOTIS.

Estrilda phœnicotis, Swains.; Sharpe, Cat. B. Brit. Mus. xiii. p. 400.

Urœginthus phœnicotis, Fischer, Zeitschr. i. p. 324 (1884; Pangani, Aruscha, Nguruman); id. J. f. O. 1885, p. 135 (Bagamoyo, Usegua, Mombasa); Reichen. J. f. O. 1887, p. 71 (Wembaere Steppes, Kagehi); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 177 (Shoa), vi. p. 278 (1888).

No. 38. ♂. Kikumbuliu, Dec. 28, 1888.

39. SPOROPIPES FRONTALIS.

Sporopipes frontalis (V.); Sharpe, Cat. B. Brit. Mus. xiii. p. 409 (1890).

No. 25. ♂ ad. Elgeyo, July 8, 1890.—Bill dusky horn-blue; legs bluish flesh-colour; irides brown. First seen at Elgeyo, breeding.

No. 26. ♀ ad. Elgeyo, July 8, 1890.—Soft parts as in the male. Found breeding in an acacia tree. Makes a large nest of dried grass, not unlike that of our Common Sparrow.

40. HETERHYPHANTES REICHENOWI.

Heterhyphantes reichenowi (Fischer); Sharpe, Cat. B. Brit. Mus. xiii. p. 418 (1890).

Hyphanturgus reichenowi, Fischer, Zeitschr. i. p. 331 (1884; Great Aruscha, Naivasha, Sigirari); id. J. f. O. 1885, p. 132.

No. 243. ♂ ad. Savé, Mt. Elgon, Feb. 10, 1890, 6000 feet.—Irides cream-colour; bill black; legs brownish flesh-colour.

No. 16. ♀ ad. Elgeyo, July 6, 1890.—Bill black; legs brownish flesh-colour; iris straw-colour.

No. 66. ♂ ad. Elmekita, Masai Land, July 25, 1890.—Bill black; legs pale brownish flesh-colour; irides cream-colour.

No. 4. ♂ juv. Kikuyu Shambos, Aug. 13, 1889.—Young of Black-backed and Black-headed Weaver with white irides.

Young male. Entirely different from the adults. General colour above olive-yellow, the mantle and upper back streaked with black centres to the feathers; crown of the head and sides of the face more olive-greenish, with an obsolete superciliary streak of olive above the ear-coverts; wing-coverts black, externally edged with olive-yellow, the median and greater series golden yellow towards their ends; quills also black, edged with olive-yellow, inclining to golden yellow towards the end of the outer web; the inner secondaries broadly edged with yellowish white, with an outer fringe of olive-yellow; tail olive, yellowish along the outer margin; cheeks, sides of neck, and entire under surface of body bright golden yellow, the breast and sides of body slightly



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1. SYCOBROTUS INSIGNIS.
2. HETERHYPHANTES STEPHANOPHORUS

inclining to orange; under wing-coverts yellow; quills olive-brown below, yellowish along the inner web. Total length 6·1 inches, culmen 0·7, wing 3, tail 2·2, tarsus 0·85.

No. 4. ♂ juv. Kikuyu, Aug. 13, 1889.

I have described the young bird, as it is so very different from the adults in colour that it would have been difficult to determine that it belonged to this species. Mr. Jackson, however, settles the question in his notes, when he says that it is the "young of the black-backed and black-headed Weaver with the white irides."

41. Heterhyphantes stephanophorus. (Plate VI. fig. 2.)

Heterhyphantes stephanophorus, Sharpe, Ibis, 1891, p. 117.

I have already described this species (*anteà*, p. 117). It is one of the interesting evidences of the presence of a West-African element in the avifauna of Central East-Africa.

42. Sycobrotus insignis. (Plate VI. fig. 1.)

Sycobrotus insignis, Sharpe, Ibis, 1891, p. 117.

43. Hyphantornis abyssinicus.

Hyphantornis abyssinicus (Gm.); Sharpe, Cat. B. Brit. Mus. xiii. p. 453 (1890); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 187 (1884; Shoa), vi. p. 289 (1888).

Nos. 28, 30. ♂ ad. River Elgeyo, July 9, 1890.—Legs pale bluish flesh-colour; irides pale orange-red; bill black. A colony in a swamp; breeding.

44. Hyphantornis nigriceps.

Hyphantornis nigriceps, Layard; Sharpe, Cat. B. Brit. Mus. xiii. p. 456 (1890); Fischer, Zeitschr. i. p. 331 (Pangani); id. J. f. O. 1885, p. 133 (Bagamoyo, Wapokomoland, Barawa).

Ploceus nigriceps, Shelley, Ibis, 1888, p. 302 (Tangani).

No. 64. ♂ juv. Makarunga, Feb. 1, 1889.

45. Hyphantornis jacksoni.

Hyphantornis jacksoni, Shelley, Ibis, 1888, p. 293, pl. vii.

Hyphantornis dimidiatus (*nec* Salvad.), Sharpe, Cat. B. Brit. Mus. xiii. p. 459 (1890).

No. 29. ♂ ad. Elgeyo, July 9, 1890.—Legs pale "shrimp"-brown; bill black; irides orange-red. Breeding in swamp.

No. 31. Elgeyo, July 9, 1890.

Count Salvadori thinks that I am wrong in having united *H. jacksoni* to *H. dimidiatus*, as the black on the head apparently extends further on to the nape in the former species.

46. Hyphantornis vitellinus.

Hyphantornis vitellinus, Sharpe, Cat. B. Brit. Mus. xiii. p. 462 (1890); Fischer, Zeitschr. i. p. 331 (1884; Nguruman); id. J. f. O. 1885, p. 133.

Nos. 33, 34. ♂ ♀ ad. Kamassia, July 12, 1890.—The male has the bill black; legs pale lilac flesh-colour; irides crimson. Found this pair building a nest. In the female the bill was "dusky, the legs flesh-colour, the irides pale crimson."

This is not *H. reichardi* of Reichenow, as I expected it would be; but at the same time it is not quite true *H. vitellinus*, as it has somewhat more black at the base of the forehead.

47. Hyphantornis spekii.

Hyphantornis spekii, Heugl.; Sharpe, Cat. B. Brit. Mus. xiii. p. 469 (1890); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 188 (Shoa).

No. 97. ♂ juv. Machako's, March 20, 1889.

No. 100. ♂ ad. Machako's, March 20, 1889.

The young male is described by me in the 'Catalogue' (*l. c.*).

48. Cinnamopteryx rubiginosa.

Cinnamopteryx rubiginosa (Rüpp.); Sharpe, Cat. B. Brit. Mus. xiii. p. 473 (1890); Fischer, J. f. O. 1885, p. 133 (Mambrui, Barawa).

♂ ad. Gulu gulu, Nov. 9, 1888.—Irides red-brown; legs pale grey.

No. 39. ♂ ad. Njemps, Lake Baringo, July 13, 1890.—Bill black; irides bright reddish brown; legs pale horn-blue. Very plentiful; breeding in great numbers in the thorn-trees.

No. 40. ♀ of above. Njemps, July 13, 1890.—Legs pale horn-blue; bill dusky; irides bright reddish brown.

No. 51. ♀ ad. Njemps, July 16, 1890.—Bill dusky black; other soft parts as in No. 40.

49. Dinemellia dinemelli.

Dinemellia dinemelli (Rüpp.); Sharpe, Cat. B. Brit. Mus. xiii. p. 506 (1890).

Textor dinemelli, Fischer, Zeitschr. i. p. 333 (Paré); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 194 (1884; Shoa); Fischer, J. f. O. 1885, p. 132 (Wapokomoland, Barawa); Shelley, P. Z. S. 1889, p. 368 (Useri river).

Dinemellia leucocephala, Salvad. Ann. Mus. Civic. Genov. (2) vi. p. 296 (1888).

No. 4. ♂ ad. Butzsuma, Teita, Dec. 3, 1888.

50. Textor scioanus.

Textor scioanus, Salvad. Ann. Mus. Civic. Genov. (2) i. p. 195 (1884; Shoa), vi. p. 296 (1888); Sharpe, Cat. B. Brit. Mus. xiii. p. 511.

Ad. Kikuyu country.

Fam. Fringillidæ.

51. Crithagra albifrons.

Crithagra albifrons, Sharpe, Ibis, 1891, p. 118.

No. 44. ♂. Kikuyu, Aug. 5, 1889.—Irides brown; bill dusky horn; legs brown.

No. 323. ♂. Mount Elgon, Feb. 25, 1890.—Irides brown; bill dark horn-brown; legs pale brownish horn. In thick forest.

I append a full description of the typical specimen.

Adult male. General colour above brown, with a wash of olive-green; wing-coverts dusky brown edged with olive, the greater series with a narrow whitish tip; the median coverts with a larger whitish spot at the ends, forming a double wing-bar; primary-coverts and quills blackish brown, edged with olive-yellow, the inner secondaries with whitish; tail-feathers dark brown with olive-yellow edges; head rather more dusky than the back; forehead white across the base; eyelid white;

sides of face dusky brown, with a patch of white below the ear-coverts; the chin dusky grey; the cheeks and throat mottled with white; lower throat, fore neck, and chest dusky brown, becoming more ashy on the latter; lower breast and abdomen pale ochreous buff, becoming whiter on the under tail-coverts; sides of body dusky brown and streaked with brown; thighs dusky brown; axillaries and under wing-coverts ochreous olive, as well as the margin of the wing.

Another male is rather browner than the one described and may be a younger bird. The bands on the wing are ochreous buff, and the olive on the quills has a brownish tinge. Underneath the colour is rather more rufescent and the dusky streaks on the flanks are less pronounced.

52. Passer ruficinctus.

Passer ruficinctus, Fischer & Reichenow, J. f. O. 1884, p. 55; Fischer, Zeitschr. ges. Orn. i. p. 319 (Naivasha); Reichen. J. f. O. 1887, p. 72 (Loeru, Masai Land); Sharpe, Cat. B. Brit. Mus. xii. p. 325.

No. 55. ♂. Kikuyu, Sept. 14, 1889.—Irides brownish white; legs dull dusky brown.

Nos. 56 & 57. ♀. Kikuyu, Sept. 14, 1889.

Nos. 68 & 69. ♂ ♀. Masai Land, July 26, 1890.—Legs pale brown; bill dusky horn; irides creamy yellow. Very plentiful in the vicinity of kraals. At present breeding. Builds nest like that of our Common Sparrow, large and very rough, of dry grass, lined with feathers; nest placed in any small tree or bush.

This is evidently the true *Passer ruficinctus* of Reichenow, and the bird so named by Captain Shelley from Lado (P. Z. S. 1888, p. 36) is distinct. It is a smaller and paler bird, with white cheeks like *P. motitensis*, but differing both from that species and from *P. ruficinctus* in having a black patch behind the ear-coverts. It may thus be diagnosed:—

Passer shelleyi, sp. n.

P. similis *P. motitensi*, sed valde minor, et plagâ postauriculari nigrâ facile distinguendus. Long. tot. 5·3, culm. 0·5, alæ 2·75, caudæ 1·8, tarsi 0·65.

Hab. Lado (*Emin Pasha*).

The female of *P. ruficinctus* resembles the same sex of *Passer motitensis*, but is much smaller, and is distinguishable by the ashy grey throat and ear-coverts as well as by its dark brown flanks. Total length 5·7 inches, culmen 0·5, wing 2·9, tail 1·75, tarsus 0·7.

53. Passer emini.

Passer emini, Sharpe, Cat. B. Brit. Mus. xii. p. 332 (Lado), p. 827 (Redjaf).

Sorella emini, Hartlaub, Abhandl. nat. Ver. Bremen, vii. p. 104 (Lado), viii. p. 201 (Lado); Fischer, Zeitschr. ges. Orn. i. p. 322 (Nguruman); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 174 (Shoa); Reichen. J. f. O. 1887, p. 72 (Wembaere).

No. 38. ♂ ad. Njemps, Baringo, July 13, 1890.—Irides brown; bill dullish brown-black; legs dusky flesh-colour. Very plentiful.

Nos. 47 & 48. ♀ ad. Njemps, July 16, 1890.—Bill dusky horn-brown; legs pale horn-brown; irides brown.

No. 49. ♂ ad. Njemps, July 16, 1890.

No. 52. ♀ ad. Njemps, July 16, 1890.—Legs pale brown; bill dusky horn; irides brown.

54. Passer swainsoni.

Passer swainsoni (Rüpp.), Salvad. Ann. Mus. Civic. Genov. (2) i. p. 176 (Shoa); Sharpe, Cat. B. Brit. Mus. xii. p. 334; Fischer, J. f. O. 1885, p. 136 (Malindi, Wapokomoland, Aruscha, Naivasha); Reichen. J. f. O. 1887, p. 72 (Kagehi, Magala).

Nos. 47 & 48. ♂ ♀ ad. Ulu, Ukambani.

55. Serinus flavivertex.

Serinus flavivertex (Blanf.), Sharpe, Cat. B. Brit. Mus. xiii. p. 351; Salvad. Ann. Mus. Civic. Genov. (2) vi. p. 274 (Shoa).

Crithagra flavivertex, Fischer, Zeitschr. ges. Orn. i. p. 322 (Great Aruscha).

No. 24. ♂. Kikuyu, Aug. 26, 1889.—Irides brown; legs dark horn-brown.

No. 29. ♀. Kikuyu, Aug. 29, 1889.—Irides brown; legs dark horn-brown.

No. 42. ♂ ad. Kikuyu, Sept. 4, 1889.—Legs dark brown; irides brown.

56. Serinus striolatus.

Serinus striolatus (Rüpp.); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 171 (Shoa), vi. p. 271 (1888); Sharpe, Cat. B. Brit. Mus. xii. p. 363; Shelley, P. Z. S. 1889, p. 367 (Kilima-njaro, 5000 ft.).

Poliospiza striolata, Fischer, Zeitschr. i. p. 231 (Great Aruscha).

Crithagra striolata, Fischer, J. f. O. 1885, p. 136.

No. 6. ♀. Kikuyu, Aug. 14, 1889.—Irides brown; legs dusky brown; bill dusky.

No. 39. ♀. Kikuyu, Sept. 4, 1889.—Irides brown; legs dusky brown.

No. 275. ♂. Mount Elgon, camp at 11,000 feet, Feb. 16, 1890.—Irides brown; legs dark olive-brown, almost black; bill dusky horn-brown. First noticed at 11,000 feet.

No. 277. ♀. Shot inside the large crater of Elgon, 13,200 feet, Feb. 17, 1890.—Irides brown, as in No. 275; generally in pairs.

Taken as a whole the members of the present series, as well as the Kilimanjaro birds in the British Museum, are darker than Abyssinian examples.

57. Poliospiza striatipectus, sp. n.

Adult male. Above light brown, the back slightly streaked with white, the rump also mottled with white; wings darker brown, the median and greater coverts tipped with whitish and the quills margined with ashy white, a little broader on the secondaries; tail-feathers dark brown; head brown, streaked with white; a narrow whitish eyebrow; lores, feathers round the eye, ear-coverts, and cheeks brown, with a small streak of white along the centre of the cheeks; under surface of body dull white, with small brown streaks on the throat, becoming broader and more distinct on the

breast and flanks; thighs brown; under wing-coverts and axillaries ashy brown; quills dusky brown below, ashy along the edge of the inner web. Total length 5·5 inches, culmen 0·45, wing 3·25, tail 2·1, tarsus 0·55.

Adult female. Similar to the male. Total length 5·5 inches, culmen 0·5, wing 3·1, tail 2·15, tarsus 0·55.

Nos. 23 & 24. Elgeyo, July 8, 1890.—Irides brown; bill dusky horn; legs brown. First seen to-day. Breeding. Sings very sweetly, like a Linnet.

This species is apparently different from all the other species of *Poliospiza* by reason of the streaks on the throat and breast. In this respect it resembles the young of *P. gularis*, but is easily distinguished by its white under surface.

58. Emberiza flaviventris.

Emberiza flaviventris (Bonn. et V.); Sharpe, Cat. B. Brit. Mus. xii. p. 499; Shelley, P. Z. S. 1889, p. 367 (Useri river).

No. 32. ♂ ad. Kamassia, July 11, 1890.—Irides brown; upper mandible black, lower brownish horn; legs dusky flesh-colour.

This is a large form of *F. flaviventris* with much greyer flanks, the grey colour extending over the whole of the sides of the breast, but I cannot separate it specifically from that species.

59. Fringillaria septemstriata.

Fringillaria septemstriata (Rüpp.); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 171 (Shoa), vi. p. 209 (1888); Sharpe, Cat. B. Brit. Mus. xii. p. 559.

No. 174. ♂ ad. Turquel, Suk, Jan. 15, 1890.—Irides brown; legs pale fleshy brown. Very plentiful along the stony banks of the rivers in the hills.

60. Fringillaria tahapisi.

Fringillaria tahapisi (Smith); Sharpe, Cat. B. Brit. Mus. xii. p. 558 (1888).

Emberiza capistrata, Licht.; Reichen. J. f. O. 1887, p. 73 (Kagehi).

No. 44. ♂ ad. Ulu, Ukambani, Jan. 3, 1889.

Compared with a Transvaal specimen this bird seems to be absolutely identical.

Fam. Alaudidæ.

61. Tephrocorys cinerea.

Tephrocorys cinerea (Gm.); Sharpe, Cat. B. Brit. Mus. xiii. p. 561.

No. 47. ♂ ad. Kikuyu, Sept. 10, 1889.

Slightly darker than South-African examples, with dusky brown ear-coverts and more rufous wings, but I think not separable from *T. cinerea*.

62. Mirafra africana.

Mirafra africana, Sharpe, Cat. B. Brit. Mus. xiii. p. 607 (1890).

No. 42. ♂ ad. Ulu, Ukambani, Jan. 3, 1889.

Although this specimen is in freshly moulted plumage and looks rather different from South-African examples, I cannot separate it specifically.

[To be continued.]

XXIV.—*Letters from* Mr. J. Graham Kerr, *Naturalist to the Pilcomayo Expedition**.

S.S. 'Bolivia,' Rio Pilcomayo.
Lat. 24° 50′ S.; Long. 58° 40′ W.
June 25th, 1890.

I am afraid you will be thinking that I have vanished from the face of the earth, it is so long since I have had an opportunity of writing to you. As a canoe is being sent down the river for provisions, I take the chance of sending you a few lines, necessarily brief, as there is little time left, and I only learned quite accidentally that the canoe was to be sent off. I shall confine myself to a brief epitome of our progress so far in the Pilcomayo. We entered the river on March 12th, after having passed three most tedious months, rushing hither and thither between different parts on the Paraná.

* For previous letters see above, p. 13, and 'Ibis,' 1890, p. 350.

On passing into the Pilcomayo—this "gran rio del Norte," as some one calls it—we found it an insignificant stream, some sixty yards in width, and with about three fathoms of water in it. The banks of the river were high and steep, clothed, however, with a protective growth of rank grass and other vegetation, and betraying no symptoms of that intense erosive activity so characteristic of its fellow stream the Bermejo. Its course is extremely tortuous, its current very slow, about a quarter of a mile per hour. This extreme tortuosity proved a great hindrance to navigation, some of the bends being extremely abrupt. The waters of the river were dark and still, reflecting in their surface the innumerable Kingfishers of all three Argentine species, which darted hither and thither. So much for the appearance of the river at its mouth.

For the first week or so we made fairly good progress, frequently, however, having to wait for the other and larger vessel, the 'General Paz,' which accompanied us as an escort. She experienced great difficulty in getting round the turns, owing to her length, 120 feet. At last, upon March 18th, the 'General Paz' was quite unable to proceed further, and so Capt. Page decided to leave her behind. So we took on board the 'Bolivia' the captain of the 'General Paz,' her doctor, and twenty-five of her soldiers, along with a couple of officers. All these additions to our number of course made us draw much more water, and also proved a great strain on the engine. So at last it was found necessary to leave the soldiers behind. They were accordingly put ashore on April 1st, except half a dozen, who remained on board to assist in cutting fuel, &c., and to supplement our very weak crew. In the nearly three months since then we have, I believe, not made fifty miles in a straight line.

I said that even at its mouth the Pilcomayo was extremely small compared with what one would expect it to be from the length of its course and the extent of its draining area. Its size has been continually diminishing, until now—some 300 miles by river from the mouth, and say one fifth of the way to the Bolivian frontier—we have a mere brook, from

10 feet to 10 yards in breadth, and in depth from 6 inches to 6 feet, a mere runlet of intensely salt water. Along this we slowly progress by building dams to let the water accumulate, repeating the operation every few miles. This is the aspect of affairs in the dry season; when the rains come it will, no doubt, be very different. So much for the river itself—now for other matters.

The surrounding country is in most places of that type which is so characteristic of Gran Chaco, a dead level, clothed with grass one to four feet in height, studded with fan-leaved palms, sometimes thickly, at other times leaving open expanses of considerable extent. On all sides an endless vista of palm-trees, relieved only by an occasional solitary quebracho, a patch of brushwood, or a small stretch of "forest." Of animal life there are scarcely any signs—a Vulture soaring in endless circles far up in the sky, or a Boie's Woodpecker flying from one palm to another, are almost the only indications that life exists. Owing probably in great part to the intense cold, even insects are few in number. Such is the typical Chaco scene. Along the immediate margin of the river, however, there is more variety; there is usually a fringe of dicotyledonous trees, or a band of brushwood, bounding the river-banks, and in these one finds a greater variety of animal life, more especially of birds.

The geological structure of the region is, as in the plain tracts of most river-basins, uninteresting; so far we have found everywhere a coating of alluvium, about 15 feet in thickness, resting upon a structure of extremely fine-grained soft sandstone, below which we have, as yet, not seen anything.

Of the botanical features I am, as yet, owing to the season of the year, in a position to say but little. Most characteristic are the forests of fan-palms and the huge savannah expanses of grass. In the patches of forest one sees considerable variety of trees, in particular a very great development of arborescent Mimoseæ. As, however, none of the trees are yet in flower, I am not able to identify many of them. Amongst herbaceous plants Compositæ stand eminent

in number of species, while Bromeliaceæ are equally so as regards number of individuals—three epiphytic species of *Tillandsia*, the well-known "Caragnata" being the most abundant.

Of mammals we have encountered very few, probably owing to the extreme slowness of our progress and the terrific din made by our engines, which frightens away all the animals for miles around. *Nyctipithecus trivirgatus*, *Mycetes caraya*, *Dicotyles torquatus*, *Lepus* (*brasiliensis* ?), and a couple of species of *Hesperomys* are all that I have managed to collect. I have seen at a distance *Felis onca*, *F. jaguarondi*, *Hydrochœrus capybara* (only close to the mouth of the river), and *Cervus paludosus*. Also close to the river's mouth we observed tracks of puma, tapir, agouti, and other beasts.

Of Birds I have fortunately encountered greater numbers, having up to the present observed approximately 120 species, of which about 30 are apparently new to the Argentine fauna. I am, in particular, hoping, if we manage to reach Bolivia and its forest regions, to bring up the proportions of Argentine Woodpeckers to the normal number. I have already got five new ones.

I have a considerable number of observations recorded upon various species; and unknown species I take care to describe, lest anything should happen to the collections. I have considerable difficulties to fight against, owing to the utter want of all facilities for collecting and storing. My laboratory and store-room consist of a damp hold, unlighted except by the hatchway, and always with a couple of inches of water in the bilge. The atmosphere is thus saturated with moisture, and proves a terrible enemy to skins and plants. Whenever I am able I take up the skins and give them an airing, and so I hope to be able to bring back at least recognizable remains of them. The plants I saturate with corrosive sublimate.

I had intended to give you abstracts of my notes on some of the species, but find time will not admit; so I reserve everything for a long communication I shall have to make

you on my return. Owing to the very unexpected length of time we are staying here, I shall probably leave at once for Europe on our getting out of the river, except in the very remote contingency of that being before October or November, the season when all the plants are in flower, and which, of course, I must spend up in the Chaco, in order to complete, or rather "make," my collection of Phanerogams.

I find that, so far at least, the Pilcomayo shows nothing to point to its name meaning "Bird-river." For many days together, especially in the lower parts of the river, we have steamed along *without seeing a single bird.* Now, fortunately, things are not so bad—certain spots appearing almost alive with birds—but still there are occasional days on which I encounter very few. When there is practically no collecting to be done, I try to manage a little anatomical work; and am also endeavouring to get together a collection of well-preserved specimens for subsequent microscopical investigation. I wish especially to get a good series of specimens of arthropod eyes, and also photogenic organs, in the former of which I am specially interested. I had hoped that there might turn up a stray species of *Peripatus* or some land-planarians, or some other interesting archaic form, but none have yet appeared. Earthworms are very rare. I have searched for them at each stopping-place, but my efforts were quite unsuccessful until a few days ago, when a small species appeared, of which I have preserved a series of specimens for Mr. Beddard. I mean, if possible, to bring home specimens of those two curious Woodpeckers, *Leuconerpes candidus* and *Colaptes agricola*, preserved in alcohol. I find it a great drawback not knowing which of the more interesting birds are least known, as regards their anatomical features, and made a great mistake not inquiring into this thoroughly before I started. By-the-bye, I shot two Spoonbills with feathered heads and sexually immature, but with the tracheal structure of *Ajaja rosea.*

S.S. 'Bolivia,' Rio Pilcomayo.
Lat. 24° 50′ *approx.*
Oct. 28th, 1890.

I take this opportunity of writing you a line or two as to my doings, or rather those of the expedition. I wrote you a letter just four months ago, which was sent down by a canoe which started at that time, and which you have, no doubt, received long since. Since the writing of that letter there is little of scientific interest to chronicle. It is in the first place the winter season, and all nature has almost as lifeless an aspect as it has at home during winter. No insects, no plants; even birds are greatly diminished in numbers. As the commission starts *en route* for the Paraguay in an hour or two, I shall merely give you a bare outline of what has taken place. In the first place, we came to a full stop at this point, owing to the almost total drying up of the river, only a tiny rivulet of intensely salt water trickling down the river-bed. We had managed to reach here only by extraordinary exertions, the latter part of the way by means of building dams across the river and waiting till the water accumulated sufficiently to enable us to steam up river for a few miles. We arrived here on the 10th of June last. By this time want of provisions began to be felt, as the vessel had been provisioned for three or four months only. A party of soldiers had been sent down to bring up fresh supplies, but as there were no signs of them, it was resolved to build a canoe and send down a trustworthy person to accelerate matters. This was done, and on June 27th the canoe started under charge of Capt. Leon Zorilla, Page's second in command. This party, as we afterwards heard, got down all right, but Zorilla, finding that a revolution was going on in Buenos Aires, at once made off thither without thinking for a moment of us, or taking any means to send us provisions. As the month of July passed on Page's health began to fail, and on the 20th he started off down river in a canoe with a couple of negro servants, to make his way to Buenos Aires in search of medical treatment. The 'Bolivia' he left under charge of his son, a boy of ten; and

on board we numbered only seven able-bodied men, a force which could, of course, have made practically no resistance in the event of hostile Indians making their appearance. And no sooner had Page left than we became aware that not only were there Indians about, but that they were not afraid to come very close. The night following Page's departure the carpenter had left his tools on his bench close by the boat—several axes, box of nails, &c. In the morning all these and a lot of clothes, which had been hanging out to dry, had disappeared, while a short distance off we found in the soft mud the footprints of heavily-laden Indians. Until the beginning of September matters passed off uneventfully, except that all of us, with one exception, were getting very thin and exceedingly weak, owing to the starvation rations of food. Our lives were, I believe, saved at this period by our being able to kill a considerable number of the large deer, *Cervus paludosus*, upon which we fed for about two months. Upon Sept. 8th our doctor, Luigi Vignoli, an intelligent young Italian, who had been ailing for some time from the after effects of malarial fever, died, a victim to the bad food and to the shocking ill-treatment which he had received. Our already small number was thus still further reduced, and we were all getting into such a condition that we could not expect to last much longer. For a long time I was scarcely able to walk a hundred yards without stopping to rest. Upon Sept. 18th Indians appeared openly—only a dozen of them. They appeared friendly, and we did some little bartering with them. They stayed a couple of days, and promised to come back the next moon, bringing many of their "brothers." However, before that time came we were extricated from all our difficulties, when we had almost lost all hope. For on the morning of Oct. 4th we suddenly were surprised by a bugle-call close at hand, without any warning whatever, and a few minutes later a detachment of Argentine cavalry appeared, who had been sent off to our help, bringing a supply of live bullocks. They brought us a certain amount of news: how Page had died on his way down stream, and that the expedition was consequently at an end;

how Zorilla had behaved; and how everybody down below believed we were dead, different accounts telling how we had been killed by Indians or starved to death, while another rumour gave out that we were all down with scurvy. They brought, however, no news of the outer world. It is nearly a year since I have received any letter whatever from Europe, and I am beginning to feel how unutterably out of date I shall be in everything, especially in things scientific, when I get back to Europe. What would I not give to be able to get even 'Nature' up here every week!

It appeared, from what our rescuers told us, that an expedition of thirty men had started off to relieve us no less than three months before, but that nothing had been heard of them since, and it was supposed that they were all lost.

Our future proceedings are quite uncertain at present. The orders of the rescuing party were, if they found us, to abandon the vessel and take us down to the Paraguay. We induced them, however, to wait some time to see if any communication arrived from the owners of the vessel. In order to communicate with them, a commission of half a dozen men is to start to-day, and it is with them I send this letter. On their return they will either bring us fresh men and provisions, or else instructions to leave the vessel and go down on mule-back. I need not say how devoutly I pray for the former alternative. It was bad enough to have so many hindrances in the way of making decent collections, but to have to lose all these collections, as well as apparatus, books, *everything*, in fact, would be too horrible a climax even to this ill-starred expedition. Of course, the moment the boat is abandoned, there is no question but there will be a grand gathering of Indians for the purpose of general pillage.

For other reasons besides the mere saving of the collections already made, I am most anxious to be in the river for some months longer, as now is the spring-time, and nature is beginning to show signs of wakening after her so profound and untropical winter sleep. During the last few weeks I have been able to do absolutely the first spell of active botan-

izing since I entered the Pilcomayo, for when we came into the river, as you will remember, autumn was well advanced and but few plants were in flower. I will not attempt to give you any account of results so far, as that would be most premature, even if there were time for me to do so. I expect, if we are here for two or three months longer, the botany will present the most points of interest; next to that, perhaps, the birds. Geographically and geologically, results are *nil*.

S.S. "Bolivia,"
Rio Pilcomayo,
Dec. 22nd, 1890.

We are expecting, within a few days, to have again an opportunity of communicating with the outer world, so I take the opportunity to send you these few lines.

I have written to you twice since we entered the Pilcomayo—once in June, and again in October—each giving a summary of our personal experiences up to the date at which it was written. Since the date of the last letter there is but little to chronicle in the way of such experiences. We have remained in one locality during the whole period, there being at present not a drop of water coming down this, the eastern branch of the river. Towards the end of last month, a small and temporary rise in the river gave us, with the help of our dam, sufficient water to float down to our present position, which is merely, however, some 2½ miles in a straight line from our previous position, and in all its biological features is identical with it. We have therefore been in this particular neighbourhood for over six months—the greater part of winter, the whole of spring, and half the summer. Our having to pass the spring-time here was a great disappointment to me, as, owing to the floral poverty of the district, my botanical work was greatly curtailed. We are now patiently awaiting the rising of the river to make our way down stream. Immediately after the close of the expedition I shall return home.

I have mentioned the comparative barrenness of this dis-

trict biologically. This is attributable in great part to its intense dryness. Entirely of very recent formation, the ground consists of a deep layer of light sandy soil, beneath which appears in places a soft and slightly argillaceous sandstone. This pervious nature of the ground, combined with the great heat and the intense dryness of the atmosphere, favours evaporation to an enormous extent. As a consequence the whole soil, except where by thick forest it is protected from such evaporation, is strongly impregnated with salt. Flowing into such a region, the streams of the Andes are, during their passage across the Gran Chaco, to a great extent lost by absorption and evaporation, and in the case of most, where there is any water left in them to reach the Paraguay, it is intensely salt and bitter. During three fourths of the year scarcely a drop of rain falls, so that the scantiness of the flora is by no means to be wondered at.

In its physical appearance the Gran Chaco in this portion is an immense plain like the Pampas of Buenos Aires, or still more the Llanos of the Orinoco, covered with a growth of tall and coarse grass and thickly dotted with fan-palms, in fact a gigantic palm-forest. Only occasionally is the extent of palm-forest varied by a wide open meadow-like expanse without a single tree or shrub, by a park-like stretch of green turf with scattered trees and bushes, or by a comparatively limited patch of dicotyledonous forest. This latter is not forest of the majestic kind met with in Amazonia and other parts of S. America, but is a dense aggregate of small and slender trees some 15 to 20 feet in height, only here and there amongst which shoots up an isolated tree of respectable size. The undergrowth in such forest consists chiefly of spiny Bromeliaceæ. Of aroids and ferns and other moisture-loving plants there are few, for all is dry and parched. Such patches of forest occur on ground slightly higher than the surrounding "*palmar*," which latter occupies ground liable to apparently annual inundation, as shown by the marks of flood-level upon the palm-trunks. Bordering the western branch of the river more especially are extensive ranges of what during much of the year forms marsh and swamp; but

at present all these are dried up, and pools of fresh water are very few and far between. This has of course a very marked effect upon flora and fauna, and aquatic species are few in number.

As regards the avifauna, this appears perhaps more strikingly than in any other department, especially when one has the laguna-studded Pampas fresh in one's memory. The Anatidæ, so varied and abundant at Mate Grande, are here few as regards individuals, still fewer as regards species, for practically the only species I have met with here is the "Pato real" (*Cairina moschata*), one or two of which may occasionally be seen roosting on a tree by the river's margin, or feeding by the edge of a little pool of water. Less entirely aquatic in its habits, the Chajá (*Chauna chavaria*) is not infrequent. Of Ibises, *Theristicus caudatus*, with its terrestrial habits, is the only one to be seen at present, although, before the marshes were so completely dried up, *Harpiprion cærulescens* and *Ajaja rosea* were pretty common, while *Plegadis guarauna* has been seen passing overhead in the evenings. Of Storks the Jabiru is the most frequent, but it too has quite disappeared during the last two months. Herons also, earlier in the year so very abundant, are now scarcely seen at all. The ordinary Cormorant (*Phalacrocorax brasilianus*) is the only one of the strictly natatorial birds which is at all abundant at present, and this is no doubt due to its not having the same dislike to salt water that many of its congeners have, for it is constantly to be seen swimming about in the intensely salt water of the river. Of Rails the only one abundant is the Ypecahá, which is frequent both along the river margins and by freshwater pools. I have also lately got another Rail, unknown to me, with beautiful deep blue plumage. I have just seen a single pair of them so far. Water-hens and Coots, teeming in every pool in the Pampas, are entirely absent so far. *Aramus scolopaceus* is not common. The Cariama is frequently heard out in the open, but I have not seen any adult specimen so far. *Parra jacana* was common up till November. *Vanellus cayennensis*, *Ægialitis collaris*, and *Himantopus brasilianus* are all occasional; while several Sandpipers and the two Yellowshanks are pretty

common by the river's margin. Grebes I had collected none of until, the other night, an Indian pointed out to me something in the river close by which I fired at, and it turned out to be a Thick-billed Grebe (*Podilymbus podiceps*), a species I had met with at Mate Grande. Soon after we entered the river I saw a Rolland's Grebe in a laguna, so that up to the present I have met with two species on the Pilcomayo. The other chief family of water-frequenting birds is that of the Kingfishers, of which all three Argentine species were at first abundant. But these birds, like others, have become much less frequent during the long-continued season of drought. During this season, then, perhaps the most striking deficiencies in the avifauna compared with that met with at Mate Grande are the almost entire absence of Ducks, the absence of Coots altogether, and also of Flamingos.

I have been rather surprised to find Woodpeckers in such comparative abundance. This is especially marked as regards individuals, while of species I have collected examples of eleven or twelve, several of which I have been unable to identify. *Dryocopus erythrops* (?) I have met with pretty frequently, and I believe that I have got one or two species of *Chloronerpes*. Up to the present I have ascertained the occurrence of about 152 species of birds upon the banks of the Pilcomayo, and about 27 species of mammalia. The majority of the former I shall endeavour to bring home as skins, but the mammalia I find very difficult to get hold of. Skins of these, however, are of less importance owing to their usually much easier identification. I do not attempt to make out a list of either birds or mammals at present, as of the former there are a considerable number, and of the latter several, especially mice and bats, not yet identified. I am having much difficulty in keeping skins and plants intact, owing to the swarms of cockroaches, beetles, and ants with which the ship is constantly being invaded, as well as the damp and entire want of ventilation of the only place I have for storage of specimens. In my last letter, written in the end of October, I think I confined myself to a narrative of our past experiences, necessarily very brief, owing to the very short time at my disposal, and did not say anything about future movements. We have

now our bows turned down stream, and are at present merely awaiting the rise in the river to float us down to the Paraguay. I am in hopes that we shall be out of the Pilcomayo by the end of February, and I shall at once return to England, with perhaps a week or two's delay in Ascension and Buenos Aires.

XXV.—*On a new Finch of the Genus* Pheucticus, *from Guatemala.* By Osbert Salvin and F. DuCane Godman.

During a recent excursion to the slopes of the Volcan de Santa Maria, near Quezaltenango, in Guatemala, Mr. W. B. Richardson obtained two specimens of a Finch of the genus *Pheucticus*. Both of them are in moulting plumage, but the new feathers of the adult are sufficiently developed to show that this bird is quite distinct from its nearest ally, *P. chrysopeplus*, of Western Mexico. The presence of a *Pheucticus* in this district partially fills up a gap in the range of the genus. Hitherto it was supposed to be absent from the wide tract of country lying between Western Mexico and Costa Rica, where *P. tibialis* occurs, but now the highlands of Guatemala must be included in its range.

We propose to characterize this species as follows:—

Pheucticus aurantiacus, sp. n.

Aurantiacus, alis nigris, speculo alari, remigibus internis et secundariis in pogonio externo ad apicem albis; interscapulio nigro plumis singulis aurantiaco marginatis, uropygio nigro maculato, supracaudalibus nigris albo terminatis; cauda nigra, rectricibus duabus externis in pogonio interno late albo terminatis, tertia ab externa quoque ad apicem alba, tectricibus subalaribus aurantiacis, subcaudalibus albis; rostro nigro, mandibula basi albida.

♂ *jr.* supra multo magis nigro variegatus, plumis capitis et cervicis posticis medialiter nigris, uropygii nigris aurantiaco terminatis.

Hab. Volcan de Santa Maria, Guatemala.

Obs. *P. chrysopeplo* proximus et ejusdem staturæ, sed capite toto et corpore omnino subtus magis aurantiacis, interscapulio nigro variegato, et uropygio nigro guttato distinguendus.

XXVI.—*Description of a new Species of* Zosterops *from the Seven Islands, Japan.* By Henry Seebohm.

Zosterops stejnegeri, sp. n.

Mr. Holst has sent me three skins of a *Zosterops* which differ so much from the Japanese species that they must be regarded as specifically distinct. They were shot on the 21st of November last on the island of Fatsizio or Hatchinow-sima, one of the Seven Islands south of Yokohama. In the colour of the upper parts they resemble *Zosterops simplex* and *Zosterops japonica*, but in the colour of the underparts they are intermediate between the two species; the breast and flanks are not so grey as those of the Chinese species, but are much less ruddy than those of the Japanese species. In size they exceed both the allied species, as the following measurements prove. The Chinese species is found on the Loo-Choo Islands, where the average size is so much larger than is usual on the continent that it has been described as distinct under the name of *Zosterops loochooensis* (Tristram, Ibis, 1889, p. 229). The examples from Fatsizio are, however, much larger than this large race. Two of the skins are poor, but one is in very good condition, and shows a great deal of black on the lores and under the eye.

The culmen of the new species varies from ·75 to ·8 inch; measured from the frontal feathers from ·55 to ·59 inch.

Examples from the Loo-Choos vary from ·54 to ·6 inch; measured from the frontal feathers from ·4 to ·42 inch.

Examples from Japan and China vary from ·51 to ·61 inch; measured from the frontal feathers from ·39 to ·42 inch.

In length of wing the new species varies from 2·5 to 2·55 inches, the Loo-Choo race from 2·15 to 2·25 inches, the Japanese species from 2·2 to 2·4 inches, and the Chinese species from 2·1 to 2·25 inches.

I have named this species after my friend Dr. Stejneger because he has done so much for Japanese ornithology, and because there seems reason to think that the *Zosterops* obtained on Oshima by Mr. Namiye may belong to this species (Stejneger, Proc. U.S. Nat. Mus. 1887, p. 486).

Oshima lies 100 miles or more further north, and very near the main island of Japan; but Dr. Stejneger's measurements are :—Exposed culmen ·55 inch, wing 2·45 inches.

The examples from Fatsizio are so much larger than those from Sulphur Island that they cannot belong to the same species.

XXVII.—*Notices of recent Ornithological Publications.*

[Continued from p. 143.]

31. *Blasius on the Birds of Great Sanghir and Siao.*

[Die Vögel von Gross-Sanghir (mit besonderer Berücksichtigung der in den Jahren 1886 und 1887 von Herrn Dr. Platen und dessen Gemahlin bei Manganitu auf Gross-Sanghir ausgeführten ornitholog. Forschungen), nebst einem Anhange über die Vögel von Siao. Von Prof. Dr. Wilh. Blasius. Ornis, iv. p. 527.]

Dr. Blasius commences his essay on the birds of the Sanghir Islands, which lie between the north point of Celebes and the southern extremity of Mindanao, with a critical review of previous authorities on the subject. The last summary of the Ornis of these islands was that of Dr. A. B. Meyer, who, in 1884, assigned 62 species to Great Sanghir, and 39 to Siao. The researches of Dr. Platen and his wife on Great Sanghir have increased our knowledge of the avifauna of this island, and raised the total number of known species to 71. Of these Dr. Blasius gives us a complete account in the present memoir, with full particulars of the specimens in the Brunswick Museum. Twelve species (1 Parrot and 11 Passeres) are, so far as is yet known, restricted to Great Sanghir and the adjacent islands.

In an appendix, Dr. Blasius speaks of the birds of Siao, which lies to the south of Great Sanghir, and nearer Celebes. Here 40 species are known to occur, five of which are not found in Great Sanghir. One of these (*Pitta palliceps*) is peculiar to the island.

At the end of the memoir Dr. Blasius discusses the avifauna of the Sanghir Islands as a whole, and shows that it is really

most nearly akin to that of Celebes. Of the 50 species which remain, after deducting those of wide distribution, more than half are restricted to the Sanghir group; of the remainder, 10 are also found in Celebes, while only 3 are Philippine species. Moreover, the peculiar species in most cases have their nearest allies in Celebes.

Macropygia sanghirensis, *Zosterops nehrkorni*, and *Criniger platenæ* are figured.

32. *Chapman on Birds from British Columbia.*

[On a Collection of Birds made by Mr. Clark P. Streator in British Columbia, with Field Notes by the Collector. By Frank M. Chapman. Bull. Am. Mus. Nat. Hist. iii. p. 123.]

Mr. Streator went to British Columbia in 1889, and made a collection of about 1000 specimens of birds for the American Museum of Natural History. These are referred by Mr. Chapman to 160 species, and the collector's field-notes are given. Mr. Streator's seven localities were partly on the coast, where the rainfall is excessive and the forest is dense, and partly in the interior, east of the coast-range, where the climate is dry and the vegetation scanty. In the prefatory remarks, Mr. Chapman makes some interesting observations on the different avifaunas of these two districts, and gives a comparative table of the coast-forms and their representatives in the interior. In 31 cases these "north-west-coast forms" have been differentiated from their congeners, and have become "darker and more richly coloured, or more heavily barred or streaked."

33. *Clarke on Birds from Hudson's Bay.*

[On a Collection of Birds from Fort Churchill, Hudson's Bay. By W. Eagle Clarke. 'The Auk,' vii. p. 319.]

Mr. W. Eagle Clarke gives an account of a collection presented to the Edinburgh Museum in 1845 by Dr. Gillespie, Jr., which had been made by him during his residence at Fort Churchill, Hudson's Bay, formerly the most northerly outpost of civilized man's residence on the shores of this great inland sea. The specimens are referred to 77 species, and named according to the A. O. U. Check-list.

34. *Dubois's Report on the Ornithological Observations made in Belgium in* 1887–8–9.

[Compte rendu des Observations ornithologiques faites en Belgique pendant les années 1887 à 1889, publié sous la direction du Dr. Alphonse Dubois. Ornis, 1890, p. 287.]

The reports on the Ornithology of Belgium originally commenced in 1842, under the superintendence of M. Ad. Quetelet, were discontinued after his death in 1874. They were recommenced in 1885 by Dr. Dubois, at the request of the International Ornithological Committee, and the reports for 1885 and 1886 were published in the 'Bulletin' of the Royal Museum of Natural History of Brussels. They are now appropriately transferred to the pages of 'Ornis.' After a short description of the topography of the additional stations, observations on 194 species are given in systematic order.

35. *Godman and Salvin's 'Biologia Centrali-Americana.'*

[Biologia Centrali-Americana; or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America. Edited by F. Du Cane Godman and Osbert Salvin. (Zoology.) Parts LXVII.–XC. 4to. London: 1888–90. Published for the Editors by R. H. Porter, 10 Chandos Street, Cavendish Square, W.]

It is now nearly three years since we recorded the progress of the 'Biologia Centrali-Americana,' one of the most important zoological works of the period *. During these three years 24 parts of the Biologia have been issued, and have carried on the section relating to the Birds nearly to the end of the Oligomyodæ. The families treated of in the letterpress are the Oxyrhamphidæ (with 1 Central-American species), the Tyrannidæ (with 105 species), and the Pipridæ (with 13 species), as also the subfamily Tityrinæ of the Cotingidæ. The arrangement adopted in the fourteenth volume of the Catalogue of Birds is generally followed, but many improvements are made, as might have been expected from the authors' intimate acquaintance with their subject. Their information as regards the Central-American species

* See Ibis, 1888, p. 270.

of these groups has been vastly increased by the numerous specimens received from their collectors in every part of Mexico.

One new genus of Tyrannidæ is founded—*Myiopagis* for *Elainea placens* (vol. ii. p. 26); and two species of the same family are described as new, *Empidonax canescens* from Central Mexico (vol. ii. p. 79), and *Myiarchus inquietus* (ii. p. 88) from the State of Guerrero, Mexico. Among the Tityrinæ, two new species (*Tityra pelzelni* from Matto Grosso, Brazil, and *T. buckleyi* from Ecuador) are described in footnotes.

The following species are figured:—

Tyrannulus semiflavus; *Leptotriccus superciliaris*; *Elainea arenarum*; *Sirystes albogriseus*; *Myiarchus flammulatus*; *Myiodynastes hemichrysus*; *Contopus ochraceus*; *Muscivora mexicana*; *Myiobius capitalis*; *Empidonax albigularis*; *E. atriceps*; *Chiromachæris aurantiaca*; *Piprites griseiceps*; *Carpodectes nitidus*; *Pachyrhamphus cinereiventris*; and *P. albogriseus*.

36. *Grieg on a new Hybrid Grouse.*

[*Lagopus urogallo-albus.* Ein neuer Moorschneehuhn-Bastard. Von James A. Grieg. Bergens Mus. Aarsberetning, 1889.]

The author describes and figures a new case of hybridism in the Grouse, between *Lagopus albus* ♂ and *Tetrao urogallus* ♀. The specimen was obtained from a dealer in Bergen, who received it from the province of Nordland, Norway.

37. *Grieg on the Birds of the Husa Islands.*

[En zoologisk exkursion til Husöen. Ved James A. Grieg. Bergens Mus. Aarsberetning, 1889.]

In the summer of 1889 Mr. Grieg, accompanied by a collector, visited the Husa Islands, which lie on the extreme west coast of Norway, outside the Sogne Fiord, and obtained examples of about 40 species of birds, of which a list, with notes, is given.

38. *Hartert's Ornithological Notices.*

[Ornithologische Notizen. Von Ernst Hartert. J. f. O. 1890, p. 100.]

Herr Hartert remarks on the occurrence of *Surnia ulula* in Germany, and on its having been apparently in some cases confused with *Asio accipitrinus*. He also provides a Crested Lark from Abyssinia in the Frankfort Museum with a new name, *Galerida rueppelli*, and describes a new species of *Otocorys* from "Caffraria" as *O. berlepschi*.

39. *Heine and Reichenow on the Birds of the Museum Heineanum.*

[Nomenclator Musei Heineani Ornithologici. Verzeichniss der Vogel-Sammlung des Königlichen Oberamtmanns Ferdinand Heine, herausgegeben von Ferdinand Heine und Anton Reichenow. Royal 8vo. Berlin: 1882–90.]

Messrs. Heine and Reichenow have now finished their catalogue of the birds in the celebrated "Museum Heineanum" at Halberstadt, the first portion of which was printed in 1882. The catalogue pursues the order and nomenclature of the well-known ornithological work bearing the same title as the Museum, so far as it goes—*i. e.*, to the middle of the Scansores. After that it follows the lines of the original MS. catalogue prepared by Herr F. Heine, Senior, who, we are pleased to hear, is still active, in his 81st year—the Nestor of living ornithologists. The preface is written by Herr Reichenow. The "types" of the Heine Collection, which are many and important, are marked with an asterisk.

We regret to find, on looking through the last sheets, that the authors have troubled themselves to invent not less than 73 new generic terms, nearly all of which are exact equivalents of terms already in use. They are as follows:—

Geniates = *Chotorea*, Bp.; *Abelterus* = *Eubucco*, Bp.; *Pogonites* = *Buccanodon*, Verr.; *Dinorhamphus* = *Tucanus*, Cass.; *Machlostomus* = *Tucaius*, Bp.; *Ulocomus* = *Beauharnaisius*, Bp.; *Rhagoborus* = *Baillonius*, Cass.; *Pionites* = *Caica*, Less.; *Porphyrocephalus* = *Purpureicephalus*, Bp.; *Scototheres* = *Lempijius*, Bp.; *Nyctimene* = *Macabra*, Bp.; *Tyto* = *Myrtha*, Bp.; *Tolmerus* = *Chiquera*, Bp.; *Gen-*

nadas = *Gennaea*, Kaup; *Elasas* = *Elanoides*, Vieill.; *Halinertus* = *Haliastur*, Selb.; *Tolmolestes* = *Spiziastur*, Less.; *Alectromorphnus* = *Buteogallus*, Less.; *Oronertus* = *Phalcobaenus*, Lafr.; *Coelotreron* = *Palumboena*, Bp.; *Tryzusa* = *Turturoenas*, Bp.; *Haploenas* = *Turacoena*, Bp.; *Coccyzoenas* = *Reinwardtoenas*, Bp.; *Rhamphotreron* = *Toria*, Hodgs.; *Terenotreron* = *Thouarsitreron*, Bp.; *Phassa* = *Rhamphiculus*, Bp.; *Poecilotreron* = *Sylphidoena*, Bp.; *Leptopelia* = *Talpacotia*, Bp.; *Micropelia* = *Scardafella*, Bp.; *Pterygocys* = *Pteroclurus*, Bp.; *Areortyx* = *Areoturnix*, Bp.; *Compsortyx* = *Excalfactoria*, Bp.; *Plectroperdix* = *Hepburnia*, Bp.; *Lochmophasis* = *Gallophasis*, Hodgs.; *Hydranassa* = *Demiegretta*, Baird; *Glaucerodius* = *Florida*, Baird; *Doriponus* = *Agamia*, Rchb.; *Dupetor* = *Ardeiralla*, "Verr.," Bp.; *Sirycter*, type *S. cyanocephalus* (Mol.); *Mystrorhamphus* = *Ajaja*, Rchb.; *Parnopio* = *Hagedashia*, Bp.; *Lophophalaris* = *Lupha*, Bp.; *Pisynolimnas* = *Erythra*, Rchb.; *Sarothrura* = *Corethura*, Rchb.; *Ortygops* = *Coturnicops*, Bp.; *Donacophilus* = *Laterirallus*, Bp.; *Erythrolimnas* = *Rufirallus*, Bp.; *Galeolimnas* = *Mustelirallus*, Bp.; *Ortygonax*, type *O. rhytirhynchus* (Vieill.); *Donacias* = *Lewinia*, Bp.; *Calamodromus* = *Rougetius*, Bp.; *Compsotis* = *Afrotis*, Bp.; *Rhynchosimus* = *Terekia*, Bp.; *Aegialodes* = *Gambetta*, Kaup; *Actia* = *Arquatella*, Baird; *Lobibyx* = *Lobivanellus*, Rchb.; *Dilobus* = *Lobipluvia*, Bp.; *Hyetoceryx* = *Pluviorhynchus*, Bp.; *Rhimphalea* = *Stiltia*, Bp.; *Ptocas* = *Rufibrenta*, Bp.; *Gennaeochen* = *Radjah*, Rchb.; *Nettalopex* = *Casarca*, Bp.; *Adelonetta* = *Punanetta*, Bp.; *Ilyonetta* = *Nyroca*, Flemm.; *Prister*, type *P. brasilianus* (Vieill.); *Abeltera* = *Sula*, Rchb.; *Gripeus* = *Graculus*, Rchb.; *Enygrotheres* = *Stictocarbo*, Bp.; *Potamochelidon* = *Seena*, Bp.; *Einalia* = *Laroides*, Brehm; *Melanolarus* = *Melagavia*, Bp.; *Zalias* = *Thiellus*, Rchb.; *Cymatobolus* = *Majaqueus*, Rchb.; *Colymbetes* = *Poliocephalus*, Selby.

Out of these names, however, the following six have been already used in Zoology:—*Nyctimene*, Mammalia (1816); *Hydranassa*, Birds (1858); *Actia*, Diptera (1830); *Rhimphalea*, Lepidoptera (1863); *Colymbetes*, Coleoptera (1806); *Tolmerus*, Diptera (1849).

40. *Jameson's 'Story of the Rear Column.'*

[Story of the Rear Column of the Emin Pasha Relief Expedition. By the late James S. Jameson, Naturalist to the Expedition. Edited by Mrs. J. S. Jameson. With Portrait, Map, and Illustrations from the Author's Sketches. 8vo. London: 1890. R. H. Porter.]

Without going into the controversy about the "rear column," we may say that the plain and unvarnished tale told in the late Mr. Jameson's Journal fully explains several rather obscure points in the stories told against him. After reading it none of his brother naturalists will believe Mr. Jameson to have been guilty of the wanton cruelty that has been imputed to him, though he may have acted rather imprudently in a certain case.

An account of the collection of birds made by Jameson on the Aruwhimi has already been published by Capt. Shelley in this journal (Ibis, 1890, p. 156). In the 'Natural History Appendix' to the present volume, Mr. Sharpe gives a general account of Jameson's ornithological work, and adds a series of extracts from Jameson's diaries, which contain his field-notes on the birds of the Congo. It is stated that all the specimens considered to be of value to the British Museum have been presented by Mrs. Jameson to that institution.

41. *Leverkühn on former Pomeranian Bird-life.*

[Ueber eine alte pommersche Vogelfauna. Von Paul Leverkühn. Röhl, Zeitsch. f. Ornith. xiv. p. 134.]

The author extracts particulars as to the ancient bird-life of Pomerania from the sixth volume of Micräl's 'Alten Pommerland,' published in 1640.

42. *Leverkühn on Variations in Colour in Birds.*

[Ueber Farbenvarietäten bei Vögeln. Von Paul Leverkühn. IV. (Aus den Museen in Amsterdam, Leiden, Haarlem, und Rotterdam.) J. f. O. 1890, p. 168.]

This is Herr Leverkühn's fourth essay on colour-varieties in birds, to which the author has paid special attention. It

is a subject of much interest, but in some respects its scientific value has, perhaps, been rather overestimated. Albinism, so far as we understand it, may occur in any living creature, and we are not sure that it is necessary to record its occurrence in every case. On the other hand, the hybridism which is so prevalent among the Anseres is of great interest, and Herr Leverkühn's long list of recorded instances of this phenomenon makes a useful conclusion to his paper.

43. *Lucas on an Expedition to Funk Island.*

[The Expedition to the Funk Island, with Observations upon the History and Anatomy of the Great Auk. By Fred. A. Lucas. Rep. U.S. Nat. Mus. 1887–88, p. 493.]

Mr. Lucas visited Funk Island, on the eastern coast of Newfoundland, celebrated as one of the former breeding-places of *Alca impennis*, in the U.S. Fish-Commission steamer 'Grampus,' in July 1887, and gives us a most interesting narrative of his expedition, of which, however, a popular account, it seems, has been previously published*. On the southern half of Funk Island "the Auk bred in peace, undisturbed by man, until that fateful day in June 1534, when Cartier's crews inaugurated the slaughter, which only terminated with the existence of the Great Auk."

Here "myriads of Garefowl lie buried in the shallow soil formed above their moldered bodies"—it is "no exaggeration to say that millions of Garefowl gave up their lives on these few acres of barren rock."

After their two days' stay on Funk Island, Mr. Lucas and his party "brought away 2 cubic feet of earth, as nearly as possible undisturbed, in order to show the bones *in situ*, a barrel of Auk remains gathered along the crest of the island, and nearly another barrel of select material, containing the best-preserved bones that could be found."

"The disposition so far made of this material is as follows: a perfect skeleton has been placed in the exhibition series of

* "The Home of the Great Auk." 'Popular Science Monthly,' August, 1888, pp. 456–464.

the U.S. National Museum, one has been presented to the Museum of Comparative Zoology, Cambridge, Massachusetts, and another to the American Museum of Natural History, New York.

"One specimen, sent in exchange to a well-known London dealer in natural-history material, has found its way to the Museum of Science and Art, Edinburgh, and another has been sent in exchange to the Australian Museum, Sydney, New South Wales. Two skeletons are retained for the reserve-series, U.S. National Museum, and three or four, less complete, can still be made up from the bones remaining, while there is besides a large number of individual bones, good, bad, and indifferent, left for study."

Mr. Lucas concludes his memoir with a study of the individual variation met with in the bones thus obtained, which is exhibited in a series of elaborate tables, and finally with a carefully compiled bibliography of the Great Auk.

44. *Meyer on* Pelecanus molinæ.

[*Pelecanus molinæ*, Gray. Von A. B. Meyer. J. f. O. 1890, p. 165.]

The Dresden Museum has received an example of *Pelecanus molinæ* from near Callao (*Dr. Stübel*), and Dr. Meyer takes the opportunity of vindicating its distinctness from *P. fuscus*. There is, however, as Dr. Meyer says, still much to be learned about the different plumages of this Pelican, one phase of which has been named *P. barbieri* by Oustalet (*cf.* Salvin, Ibis, 1879, p. 98).

45. *North on the Nests and Eggs of Australian Birds.*

[Australian Museum, Sydney. (Catalogue No. 12.) Descriptive Catalogue of the Nests and Eggs of Birds found Breeding in Australia and Tasmania. By A. J. North, F.L.S. Sydney: 1890.]

The object of this catalogue, as the author informs us in his preface, is to give authentic descriptions of the nests and eggs of the birds that have been found breeding in Australia, Tasmania, and the adjacent islands. It refers especially to the specimens in the Collection of the Australian Museum, Sydney, and has been prepared by Mr. A. J. North, an Assistant in the Zoological Department of that Museum.

The systematic arrangement followed is that of Gould's 'Handbook,' and, except in the case of species subsequently discovered, references are given only to that work. Of the 469 species treated of in the volume, the author has personally examined specimens of all except 34, the information concerning which is taken from Gould's 'Handbook.'

The 21 plates attached to the volume illustrate the eggs of 176 species. They are reproductions by the heliotype process of negatives taken from the specimens in the Museum, and seem to deserve much commendation. Although this plan does not give us the colour of the eggs, the exact spots and blotches, so difficult for an artist to render faithfully, are thus, of course, accurately given.

46. *Oates's 'Birds of British India.'*

[The Fauna of British India, including Ceylon and Burma. Published under the authority of the Secretary of State for India in Council. Edited by W. T. Blanford. Birds: Vol. II. By Eugene W. Oates. 8vo. Pp. i–x, 1–407. London: Taylor and Francis, 1890.]

The second volume of Mr. Oates's excellent handbook of the Birds of India carries on the subject to the end of the Passeres. It is much to be regretted that Mr. Oates has been refused the additional leave of absence which he would necessarily require in order to complete the work. But it is a great satisfaction under the circumstances to know that Mr. Blanford has himself undertaken the task, and will proceed with it as soon as he has got out the second half of the Mammals.

In the present volume Mr. Oates treats of the Muscicapidæ, Turdidæ, Ploceidæ, Fringillidæ, Hirundinidæ, Motacillidæ, Alaudidæ, Nectariniidæ, Dicæidæ, and Pittidæ. This sequence of families will appear rather extraordinary, but we need not repeat our criticisms of Mr. Oates's new arrangement of the Passeres (*cf.* Ibis, 1890, p. 252).

A noteworthy discovery is that *Chalcoparia* does not belong to the Nectariniidæ, but to the Crateropodidæ, near *Myzornis* (*op. cit.* p. 372).

The following species are described as new in this volume:—

Terpsiphone nicobarica (p. 48), from the Andamans and Nicobars; *Saxicola barnesi* (p. 75), from Baluchistan; *Anthus cockburniæ* (p. 305), from the Nilgiris; and *Æthopyga andersoni* (p. 349), from Upper Burmah. A new genus, *Acmonorhynchus*, is proposed (p. 381) for *Prionochilus vincens*, Sclater, of Ceylon.

This volume is illustrated by 108 very useful woodcuts.

47. *Olphe-Galliard on the Usefulness of Birds.*

[Sur l'Utilité des Oiseaux. Recueil par Léon Olphe-Galliard. Bull. Soc. d'Études Hautes-Alpes, 1890, No. 35.]

The ardent ornithologist of Southern France has put together in this pamphlet (extracted from the 'Bulletin de la Société d'Études des Hautes-Alpes') several translations from the Swedish and other articles upon the ever increasing duty that we owe to ourselves and our posterity to preserve bird-life of every sort. Every year we hear of the extermination of more species, and unless we take heed in time the ornis of the world bids fair to become reduced to the Pheasant and the Sparrow.

48. *Palmer on Birds observed during the Cruise of the 'Grampus' in* 1887.

[Notes on the Birds observed during the Cruise of the United States Fish-Commission Schooner 'Grampus' in the Summer of 1887. By William Palmer. Proc. U.S. Nat. Mus. xiii. p. 249.]

Mr. Palmer accompanied the U.S. Fish-Commission schooner 'Grampus' during her summer cruise of 1887, for the purpose of observing and collecting fish-eating birds and their eggs and young. The localities visited were on the coasts of Newfoundland and Labrador. Examples of aquatic species were observed or obtained, besides some land-birds. Many interesting field-notes are given on the aquatic species.

49. *Parker on the Morphology of Ducks and Auks.*

[Royal Irish Academy. Cunningham Memoirs.—No. VI. On the Morphology of the Duck and the Auk Tribes. By W. Kitchen Parker, F.R.S. With nine Plates. Dublin: 1890.]

This elaborate memoir on the osteology of the Anatidæ and Alcidæ was in course of being printed, when the sudden death of the author took place (on July 3rd, 1890). We do not quite understand why the two families were studied together, for, as is confessed in the prefatory remarks, they are "very distantly related." The Alcidæ, as Parker states, "lie in the centre, so to speak, of a considerable number of families of water-birds, and are manifestly related to the Grebes and Loons, birds that seem to be the modified descendants of *Hesperornis*." At the same time they are "quite as nearly akin" on the other side to the Penguins. As regards the Anatidæ, Parker does not commit himself nearly so definitely. But, as he has hinted in previous papers, the Ducks "evidently come from a stock closely related to that from which the Fowl-tribe sprung."

50. *Pleske on the Birds of Prjevalsky's Journeys in Central Asia.*

[Wissenschaftliche Resultate der von N. M. Przewalski nach Central-Asien unternommenen Reisen. Auf Kosten einer von seiner kaiserlichen Hoheit dem Grossfürsten thronfolger Nikolai Alexandrowitsch gespendeten summe herausgegeben von der kaiserlichen Akademie der Wissenschaften. Zoologischer Theil. Band II., Vögel. Bearbeitet von Th. Pleske. Lief. 2. Folio. St. Petersburg: 1890.]

We have now before us the second part of this important work, the object and inception of which have been already spoken of (see Ibis, 1890, p. 256). Part II. is chiefly devoted to the Sylvian, Timeliine, and Accentorine Passeres. A new genus, *Lophobasileus*, is proposed for the *Leptopœcile elegans* of Prjevalsky.

The following species are figured in this part:—

Plate II. *Phylloscopus tristis*, *P. tristis* var. *sindiana*, *Reguloides superciliosus* var. *mandellii*.

Plate IV. *Pratincola maura* var. *przewalskii*, *Accentor alpinus* var. *rufilatus*.

Plate V. Eggs of *Turdus auritus*, *Merula kessleri*, *Saxicola deserti*, *S. montana*, *Ruticilla frontalis*, *R. schisticeps*, *Dumeticola thoracica*, *Acrocephalus turdoides* var. *orientalis*, *Calliope tschebaiewi*, *Herbivocula armandi*.

Plate VI. *Lophobasileus elegans*, *Leptopœcile sophiæ*, *L. obscura*.

51. *Ridgway on the "Farallon" Rail.*

[Observations on the Farallon Rail (*Porzana jamaicensis coturniculus*, Baird). By Robert Ridgway. Proc. U.S. Nat. Mus. xiii. p. 309.]

Mr. Ridgway has studied the unique example of the Farallon Rail, *Porzana jamaicensis coturniculus* of Baird, stated to have been obtained in the Farallon Islands, near San Francisco. These islands have since been repeatedly searched, but are said to contain no spot suitable for Rails. It is therefore suspected that there may have been some mistake in the locality, and that the "Farallon Rail" may be *Porzana spilonota* of the Galapagos, which it certainly resembles more than *P. jamaicensis*.

52. *Scott on the Birds of the Dry Tortugas.*

[On Birds observed at the Dry Tortugas, Florida, during parts of March and April 1890. By W. E. D. Scott. The Auk, 1890, p. 301.]

The Dry Tortugas consist of a group of six coral islands, low and sandy, which lie some sixty miles west of Key West, between Cuba and Florida, as shown in the map accompanying this memoir. Mr. Scott made his headquarters at the Quarantine Station on Garden Key, in the centre of the group. Examples of 80 species of birds were obtained or observed. Of these 57 are land-birds, but none of them breed there. Six examples were obtained of *Dendrœca dominica albilora*, the western form of *D. dominica* (which also occurred), during Mr. Scott's stay.

53. *Sharpe and Wyatt on the* Hirundinidæ.

[A Monograph of the Hirundinidæ, or Family of Swallows. By R. Bowdler Sharpe and Claude W. Wyatt. Parts XI.–XIV. 1889–90. 4to. London: Sotheran & Co.]

The Monograph of the Swallows makes slow but constant progress. Since we last noticed its advance, two double parts have been issued, dated respectively December 1889 and December 1890, so that, if the statements in the prospectus are adhered to, three or four more parts will complete the work.

The letterpress contains all that is known of the species treated of, and the plates are generally well designed and nicely coloured.

Parts XI. and XII. (December 1889) contain figures of the following species:—*Cheramœca leucosternum, Hirundo badia, H. hyperythra, H. puella, H. dimidiata, H. savignii, Cotile sinensis, Tachycineta cyaneoviridis, T. bicolor, Stelgidopteryx uropygialis, Atticora fasciata, A. cyanoleuca, Progne tapera,* also maps of the distribution of *Progne, Tachycineta,* and *Stelgidopteryx.*

Parts XIII. and XIV. (December 1890) contain figures of *Stelgidopteryx serripennis, Petrochelidon pyrrhonota, P. swainsoni erythrogastra, P. spilodera, Cotile cincta, C. paludicola, Hirundo euchrysea, H. daurica, H. nipalensis, H. erythropygia, Chelidon nipalensis,* and *Tachycineta albiventris.*

Petrochelidon swainsoni erythrogastra is not a trinomial name, but that of a supposed hybrid between *Petrochelidon swainsoni* and *Hirundo erythrogastra.* We prefer Mr. Salvin's way of writing it, "*Hirundo erythrogastra* × *swainsoni* (*cf.* Ibis, 1888, p. 256).

54. *Shufeldt on the Osteology of the Water-birds.*

[Contributions to the Comparative Osteology of Arctic and Sub-Arctic Water-birds. Part VIII. By R. W. Shufeldt, M.D., C.M.Z.S., &c. Journ. Anat. & Physiol. xxv. p. 60.]

The eighth part of Dr. Shufeldt's "contributions" treats of the appendicular skeleton of the Laridæ and Stercorariidæ.

Remarks on the skull of *Rhynchops* follow, and a useful comparison of the skull of this very peculiar form with the cranium of the Laridæ. The author concludes with observations on the affinities of the Divers, Auks, and Gulls. The Auks (Alcæ) he proposes to divide into four families—Fraterculidæ, Phaleridæ, Alcidæ, and Allidæ.

55. *Smith on the Disappearance of* Spiza americana.

[On the Disappearance of the Dick Cissel (*Spiza americana*) from the District of Columbia. By Hugh M. Smith. Proc. U.S. Nat. Mus. xiii. p. 171.]

The "Dick Cissel" of the Americans (*Spiza americana*), formerly a regular summer visitor to the District of Columbia, appears to have been exterminated there. No specimens of this species have been obtained for thirty years, the last pair registered in the U.S. National Museum having been procured in May 1860. It has, however, been occasionally observed since that period, the last specimen noted having been seen in May 1887. It formerly nested regularly every year within the Smithsonian grounds.

56. *Stevenson and Southwell's 'Birds of Norfolk.'*

[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. Vol. III. 8vo. London: 1890.]

The issue of this third volume completes a piece of good work, commenced by the late Henry Stevenson, and left unfinished since 1877, in consequence of his failing health. Mr. Southwell makes unnecessary apologies in his preface for undertaking the task, which he seems to have performed in a very satisfactory manner. Norfolk may now claim to have one of the best of the county histories of British Birds. The appendices to the present volume bring up our knowledge of the species recorded in the first two volumes to the present date.

57. *Stone on Birds collected in Yucatan and S. Mexico.*

[On Birds collected in Yucatan and Southern Mexico. By Witmer Stone. Proc. Acad. Nat. Sci. Philad. 1890, p. 201.]

Mr. Stone gives us an account of the birds collected by Mr. F. C. Baker and himself during a recent expedition into Yucatan and Southern Mexico, which was conducted by Prof. Heilprin of Philadelphia. Yucatan was visited in February and March, in the dry season, and examples of 96 species were obtained. Most of these are well known, but some useful field-notes are given. *Icterus gularis*, not mentioned in Boucard's list of Gaumer's birds (P. Z. S. 1883, p. 434), was found "abundant." "It is strange that the species (of *Icterus*) described by Boucard as abundant were not seen at all by us."

The Mexican portion of the series was obtained partly near Orizaba and partly at Chalchicomula, at a height of 4000 feet above that city. Mr. Stone remarks, "The difference between the birds of this vicinity and of the town of Orizaba, 4000 feet below, was at once apparent. Only three species were seen at both places, the Turkey Vulture, Lincoln's Sparrow, and the Sparrow Hawk (*Falco sparverius*), and only the last of these was at all abundant at Chalchicomula. Nearly all the species seen belong to more northern genera, and the absence of such birds as the Great-tailed Grackle, Black Vulture, and Red-eyed Cowbird was especially noticeable."

A list is given of 33 species belonging to this high Mexican district, and field-notes are added. In Western Mexico Mr. Baker procured a few other specimens, amongst which were a pair of *Chamæospiza torquata* (*cf.* Biol. Centr.-Am., Aves, i. p. 399), the habits of which are stated to be those of *Pipilo*.

58. *Studer on the Birds obtained during the Voyage of the 'Gazelle.'*

[Die Forschungsreise S.M.S. 'Gazelle' in den Jahren 1874 bis 1876 unter Kommando des Kapitän zur See Freiherrn von Schleinitz, herausgegeben von dem Hydrographischen Amt des Reichs-Marine-Amts. III. Theil. Zoologie und Geologie. Mit 33 Tafeln. 4to. Berlin: 1889.]

A handsome volume, prepared by Dr. Th. Studer of Berne, gives us a summary of the researches in zoology and geology made during the voyage of the German S.S. 'Gazelle,' which

took the astronomers to Kerguelen's Land for the transit of 1875. The ornithological results of the voyage were given by Dr. Cabanis and Herr Reichenow in a paper published in the 'Journal für Ornithologie' in 1876 (*cf.* Ibis, 1877, p. 239). But further details will be found in this volume, which, moreover, contains coloured figures of *Trichoglossus flavicans*, *Ptilopus insolitus*, and *Phalacrocorax verrucosus* (apparently copied from the 'Journal für Ornithologie'), and six plates devoted to the development of *Megapodius eremita*, *Halodroma urinatrix*, *Eudyptes chrysocome*, and other species.

59. *Thompson on the Systematic Position of* Hesperornis.

[Studies from the Museum of Zoology in University College, Dundee. Edited by D'Arcy W. Thompson.—Vol. I. No. 10. On the Systematic Position of *Hesperornis*. By Prof. D'Arcy W. Thompson. 4to. Dundee: 1890.]

For some years in his laboratory the author of this memoir has been accustomed to teach that "the group of Toothed Birds, or *Odontornithes*, of Marsh is an unreal and illusory one." He now sets to work to prove this by instituting a "close comparison, bone by bone, of the osteological characters of *Hesperornis* and *Colymbus*." He comes to the conclusion "that, from purely osteological characters, the wide difference between *Hesperornis* and any Ratite, and its close resemblance to *Colymbus* or to *Podiceps*, is clear and patent. From these characters it is a Colymbine bird, of great size and prodigious swimming power, which, while losing its wings and sternal keel, and otherwise somewhat modifying its shoulder-girdle, as the faculty of flight degenerated, has retained in its brain-case, its palate, its mandibles, its vertebræ, its sternum, pelvis, and hind limbs, resemblance almost amounting to identity with the existing *Colymbi*."

60. *Townsend on Birds collected by the U.S. Fish-Commission S.S. 'Albatross.'*

[Scientific Results of Explorations by the U.S. Fish-Commission Steamer 'Albatross.'—XIV. Birds from the Coast of Western North

America and adjacent Islands, collected in 1888–89, with Descriptions of new Species. By Charles H. Townsend. Proc. U.S. Nat. Mus. xiii. p. 131.]

In the winter of 1889 the U.S. Fish-Commission S.S. 'Albatross' explored the islands on the coast of California, besides visiting many spots on the mainland, and made a collection of 226 birds, which are referable to 92 species and subspecies. Five new species and six new subspecies are now shortly described, namely, *Speotyto rostrata, Zenaidura clarionensis, Troglodytes tanneri,* and *Puffinus auricularis,* from Clarion Island; *Oceanodroma socorroensis* from Socorro Island; *Amphispiza belli cinerea* from Lower California; *Otocorys alpestris pallida* from Sonora; *Melospiza fasciata graminea,* from Santa Barbara Island; *Helminthophila celata sordida, Melospiza fasciata clementæ,* and *Otocorys alpestris insularis* from San Clemente Island. The last-named subspecies was also found very abundantly in San Nicolas, Santa Cruz, and Santa Rosa Islands. A specimen of *Halocyptena microsoma,* Coues, was obtained in Panama Bay. This is the second example obtained of this Petrel (*cf.* Ibis, 1868, p. 345).

61. *Wilson and Evans on Hawaiian Birds.*

[Aves Hawaiienses: the Birds of the Sandwich Islands. By Scott B. Wilson, F.Z.S., assisted by A. H. Evans, M.A., F.Z.S. Part I. Dec. 1890. 4to. London: 1890. R. H. Porter.]

We are much pleased to welcome the first part of Mr. Scott Wilson's promised volume on the avifauna of the Hawaiian Islands, and trust he will be able, with the assistance of Mr. Evans, to bring it to a satisfactory conclusion. It will be very convenient to have the great advances which Mr. Wilson has undoubtedly made in our knowledge of this most interesting subject incorporated with all that was previously known of it.

Mr. Frohawk's plates will give pleasure to all who study them. They represent the following species:—*Phæornis obscura, Acrulocercus nobilis, Loxops coccinea, L. flammea,*

Chrysomitridops cæruleorostris, Loxioides bailleui, Acrulocercus braccatus, and *Vestiaria coccinea.*

We may remark that it is quite unnecessary, nay, very objectionable, to quote printers' errors as "synonyms"—there are enough synonyms without them. Moreover, the specific name "*bailleui*" is spelt correctly on the plate referred to (Ibis, 1879, pl. ii.), so that the quotation of it (under *Loxoides bailleui*) is not exact.

62. *Winge on the Birds of Denmark.*

[Fuglene ved de danske Fyr i 1888–89. 6te og 7de Aarsberetning om danske Fugle. Ved Herluf Winge. Vidensk. Meddel. fra d. Naturh. Forening Kjöbenhavn, 1890, pp. 54, 106.]

[Fifth Report on Birds in Danmark, 1887. Compiled by Herluf Winge. Ornis, iv. p. 369.]

Since the death of Oluf Winge, his brother, Herluf Winge, has become our chief authority on the birds of Denmark, and students of the European Ornis should consult the carefully drawn reports of which he has kindly sent us copies. Great use, it will be seen, is made in Denmark, as regards ornithology, of the numerous Light-Stations round the coast.

63. *Zehntner on the Development of* Cypselus melba.

[Beiträge zur Entwicklung von *Cypselus melba*, nebst biologischen und osteologischen Details.—Inaugural-Dissertation zur Erlangung der Doktorwürde vorgelegt der hohen philosophischen Fakultät der Universität Bern von Leo Zehntner. 8vo. Berlin: 1890.]

The author very appropriately selected *Cypselus melba* and its development as a thesis for his dissertation on proceeding to the Doctorate of Philosophy at the University of Berne. An excellent memoir is the result, giving us first full biological details upon this well-known inhabitant of the Minster-tower of the Swiss capital, and then chapters on its osteology and the development of its embryo. The latter is of especial interest on account of the abnormality of the typical Cypselidæ as regards the phalanges of the hinder extremities. This is well explained and illustrated by numerous figures. The most salient points of this thesis were given in a commu-

nication to the 'Zoologischer Anzeiger' in 1889, which was republished in this journal (*cf.* Ibis, 1889, p. 196). We have now a more complete account, and may hope to have the author's matured judgment upon the systematic position of the Cypselidæ on a future occasion.

XXVIII.—*Letters, Extracts, Notices, &c.*

THE following letters have been received, addressed to the editor of 'The Ibis':—

Royal Zoological Museum, Dresden,
Dec. 3rd, 1890.

SIR,—In 'The Ibis' (1890, p. 413) I have mentioned a long specimen of *Merops* from the north coast of New Britain, which I referred to *Merops philippinus*, though I remarked that its dimensions are smaller, and especially that the bill is very short. Count Salvadori, in a recent letter to me, expressed the opinion that my identification ought to be reconsidered, as it appeared to him impossible that *M. philippinus* could have so wide a range as to extend to New Britain, though Mr. Ramsay, of Sydney, had written to him that he also had got a specimen of this Bee-eater from New Britain. I have therefore been thoroughly over the matter again, and have convinced myself that the supposition of the learned and keen connoisseur of the Papuan Ornis is well founded. The specimen cannot be considered as belonging to *M. philippinus*.

In comparison with the young specimen of the latter species from Macassar, mentioned *l. c.*, the whole plumage of the specimen from New Britain is less blue-green, and of a lighter, yellowish green; the front yellowish, and the green of the underparts appears to be washed with the brown of the throat. The tail-coverts are lighter blue and the rectrices have an olive-green shade; the base of the primaries and secondaries is brown, and the cinnamomeous colour on the underside of the first primary is more extended. But the best differential character is, perhaps, the want of the

green colour on the bend of the wing, which is buffish cinnamomeous from the band to the spurious primary and of the same colour as the under wing-coverts, whereas in *M. philippinus* the green border has a breadth of 2 to 3 millim. underneath. In *Merops ornatus*, with its short bill, this border is very narrow, but in other respects this species has nothing whatever to do with the New Britain bird. In case the want of the green wing border in th New Britain bird is due to immaturity, the adult bird wi perhaps prove to have such a wing-border as *M. ornatus*.

The measurements are the following :—Total circumference 220 millim., wing 120, tail 90, middle rectrices 94, bill along culmen 32, from nostril 24.

I propose, therefore, to call the New Britain bird *Merops salvadorii*, in honour of the Italian ornithologist who has kindly drawn my special attention to the subject.

Yours &c.,

A. B. Meyer.

Kilmory, Loch-Gilp-Head, N.B.,
Jan. 19th, 1891.

Sir,—It may interest your readers to know that the Grey Phalarope (*Phalaropus fulicarius*) may now be added to the List of Birds found in the Outer Hebrides. My son obtained a male bird last autumn, after a heavy gale from the westward. It was set up by Mr. MacLeay, Inverness, and is now in my collection. A Bewick's Swan (*Cygnus bewickii*) was lately obtained in Craignish, Argyllshire, by Captain MacDougall, of Lunga. Although I did not see it I think the identification may be relied on. It was sent for preservation to Small, Edinburgh. This locality was where my specimen of the Red-breasted Duck was shot—the first in Scotland, if not the only one obtained.

Yours &c.,

J. W. P. Campbell Orde.

Frankfort-on-Main,
Jan. 27th, 1891.

Sir,—Permit me to say that your remarks on *Cypselus*

infumatus ('The Ibis,' 1890, p. 452) are not quite correct, as what I gave (J. f. O. 1889, p. 423) were not my own notes, but those of my correspondent. I said especially, "Cypseliden habe ich in Ober Assam nicht erlegt." Further on you remark: "A Swift determined as *Collocalia linchi* (?) was also obtained there." I included my notes on "*Collocalia linchi*" in quotation-marks, and added: "Ich lasse die hoch interessante Beobachtung meines Freundes hier folgen, obgleich bei der Schwierigkeit der Bestimmung der Arten von *Collocalia* es wünschenswert wäre ein Exemplar vorliegend zu haben."

So you see I did not determine the Swift as *Collocalia linchi*. Had I killed a specimen I should have determined it so carefully that no query would have been necessary. I hope, however, to receive in a short time some specimens of this Swift from Assam and Cachar, or, perhaps, to be able to go and shoot some myself.

Yours &c.,

Ernst Hartert.

Villa Tännenhof, near Hallein,
Feb. 5th, 1891.

Sir,—On the 21st of January, 1891, three specimens of the Eastern Shore-Lark (*Otocorys penicillata*, Gould) were shot by the high-forester, Andr. Geschwind, at Travnik (Bosnia). One of them I received in the flesh, the two others went to the Bosnian Museum at Serajevo.

My specimen is a young female; it has the white parts of the face yellowish. Total length 19·8 centim., wing 11·6, tail 7·5.

This is the second record of the occurrence of this Eastern bird in Bosnia. The first notice was given by Herr O. Reiser (Ornith. Jahrb. 1890, pp. 106–108).

Yours, &c.,

v. Tschusi zu Schmidhoffen.

Keswick Hall, Norwich,
Feb. 6th, 1891.

Sir,—Sir Thomas Browne, in describing the Roller as having "an eye of green," probably meant a *lustre* of green. Shakespeare says:—

> "The ground, indeed, is tawny,
> With an eye of green in't."—(*The Tempest.*)

Taken in this sense, his description is not inapplicable to the tail of *Coracias garrulus*.

Yours &c.,
J. H. Gurney.

Firenze,
Feb. 15th, 1891.

Sir,—In reply to your inquiries I may now say that at last I have been able to examine the *Limosa* figured and described by Martorelli (*cf.* Ibis, 1891, p. 133). I have compared it with eight specimens of *L. uropygialis* collected in New Zealand and Eastern Asia (Japan), and find that it differs from all of them in the well-known characters, whilst it agrees perfectly with five specimens of *L. rufa* (Italian), except in its remarkably long bill.

But you know how the length of the bill varies in these *Limicolæ*, and in Martorelli's specimen there is a plain cause for abnormal development, which Martorelli does not mention in his paper nor figure in his otherwise excellent plate. There is an old extensive fracture at the base of the upper mandible, caused by a gunshot wound, which had healed.

In conclusion, I have not the least doubt that Martorelli's *Limosa* from Foggia is merely a *L. rufa* with an abnormally long bill.

Yours &c.,
Henry H. Giglioli.

British Consulate, Mogador.
Feb. 5th, 1891.

Sir,—I shot a fine specimen of the Brent Goose, *Bernicla brenta*, adult male in good plumage, on a bit of marsh near the sea, about a mile and a half south of this town, last Monday afternoon, Feb. 2nd. It was alone, but on the pre-

vious evening I had observed five birds flying over the bay which had puzzled me, looking too large for ordinary Ducks, and yet not flying like the Ruddy Sheldrake, which we often find here; and on the Monday morning a friend had noticed two birds looking like dark-coloured Geese (he said they were certainly not Cormorants) flying across the bay.

I believe the occurrence of this northern bird so far south may be new, and therefore of interest, especially as I see that Col. Howard Irby, in his excellent "Ornithology of the Straits of Gibraltar," makes no mention of the Brent as occurring on either the Spanish or African side of the Straits.

Mr. Howard Saunders, in his very valuable 'Manual of British Birds,' says that in cold weather the Brent Goose "occasionally reaches the African and Asiatic sides of the basin of the Mediterranean"; but this is perhaps the first record of its occurrence on the Atlantic coast of Southern Morocco. There is not the slightest doubt about the bird, which I have compared carefully with the engraving and description in the above-mentioned "Manual."

The Bernicle Goose (*Bernicla leucopsis*) is mentioned by Col. Irby as occurring in Andalusia, but he does not seem to have heard of it on the African side. I find, on reference to my shooting diary, that I saw, in stormy weather on November 3rd, 1887, a couple of unmistakable Bernicle Geese on a flooded plain near here, first apparently consorting with a small party of Ruddy Sheldrakes, but afterwards separate. Though, to my great regret, I failed to secure one, I am quite sure about the birds, one of which appeared to be an adult male in full plumage, and the figure on p. 397 of Mr. Howard Saunders's 'Manual' recalled it to me most distinctly.

Yours &c.,

CHARLES A. PAYTON.

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74 Leinster Road, Dublin,
9th March, 1891.

SIR,—I wish to place upon record the first appearance in Ireland of the Lesser Kestrel, *Falco cenchris*.

On the 20th of February last, Mr. Tank, of Aungier Street,

brought to me for identification a beautiful adult male of this rare Hawk, which he had just received from a customer. Upon instituting inquiries, I find that the bird was shot at Shankill (on the borders of the counties of Dublin and Wicklow), on the 17th of February, by Mr. Michael Carr, whilst it was following the plough and feeding, like a Gull, upon earthworms. Through the kind assistance of my friend Mr. James Johnston, of Bray, I have further ascertained that the bird had been first noticed early in November, and was seen in the same neighbourhood on various occasions all through the winter, nearly always when following the workmen upon newly ploughed land.

Yours &c.,

ALEXANDER G. MORE.

Munia sharpii.—Dr. Hartlaub writes to us as follows:—"As to *Amadina sharpii*, I have compared the original coloured drawing of *Pytelia capistrata*, made by Beaudeauin from a cage-bird at Bissao, with the figure published by Nicholson in the P. Z. S. 1878, pl. x. (*Amadina sharpii*), and have not the slightest doubt as to the identity of these two birds. So this fine species must now stand as *Munia capistrata* (Hartl.), it being my *Pytelia capistrata* in Cab. Journ. for 1861, p. 259. I observe that Mr. Sharpe, in his recent catalogue of the Ploceidæ (Cat. Birds B. M. vol. xiii. pp. 301–303), has not made out this identification."

Reappearance of Polyteles alexandræ.—A letter addressed to the 'Australian Register' of August 9th, 1890, and kindly communicated to us by the writer, Mr. M. Symonds Clark, of Knightsbridge, Adelaide, S. Australia, tells us that two living specimens of the rare Parrakeet *Polyteles alexandræ* have lately been brought into Adelaide, having been taken from the nest in the neighbourhood of Charlotte Waters. The only previously known specimens of this rare and beautiful species were those originally described by Gould, and figured in the 'Supplement to the Birds of Au stralia' (pl. 62). These examples, which had been procured by

Mr. F. G. Waterhouse at Howell's Ponds, near Newcastle Waters, were subsequently sent back to Adelaide; and there is, we believe, no specimen of *Polyteles alexandræ* in any European Collection.

Irruption of Otis tarda.—In the 'Field' for Feb. 28th, Mr. Harting gives a record of the occurrence of no less than seven specimens of the Great Bustard during the present winter in various parts of the South of England. Curiously enough, all these were of the female sex. Our correspondent, Mr. F. E. Blaauw, also writes to us (Amsterdam, Jan. 6):—"I can again mention a capture of a rare visitor worthy of note. It is this time a fine male *Otis tarda*, which was shot near Haarlem some days ago. Great Bustards, although appearing in this country during the winter occasionally in small troops, are still of very rare occurrence. For years together none are to be seen here."

The Gätke Collection.—In a former paragraph in this journal (Ibis, 1890, p. 468) we mentioned the acquisition by Mr. Seebohm of the Gätke Collection at Heligoland, for the purpose of presentation to the British Museum. Not only, we are informed, was the bargain made, but the money was actually paid. Great pressure, however, having been brought to bear upon Mr. Seebohm and the authorities at the British Museum, they have consented to rescind the agreement, and the collection will remain in Heligoland in a new "Zoological Station" which it is proposed to erect there. We are of opinion that this is a good arrangement, provided that steps are taken to insure a proper maintenance of the collection, and the immediate publication of the long-promised Catalogue with Herr Gätke's notes.

New Ornithological Works in Preparation.—We are pleased to find it announced in 'Nature' that the long-expected volume on the Birds of the Yarkand Expedition will shortly appear. The birds collected by Stoliczka during this journey (in 1873–74) were handed over to Mr. Hume, and are now

in the British Museum along with the rest of the 'Hume Collection.' Mr. Hume's MS. work on them having been accidentally destroyed, Mr. Bowdler Sharpe has now re-written it, and has incorporated in the volume the results obtained by other English naturalists in Eastern Turkestan —so that we may now look forward to a complete account of the ornithology of that country.

We understand that the articles on Birds written by Prof. Newton for the new edition of the 'Encyclopædia Britannica' will shortly be issued in a separate form, along with additional matter prepared by the Author and Dr. Gadow, the whole forming a 'Dictionary of Birds.'

The printing of the 19th volume of the British Museum Catalogue of Birds is nearly completed, and the volume will shortly be issued. It contains the Rhamphastidæ, Galbulidæ, and Bucconidæ, by the Editor of this Journal, and the Indicatoridæ, Capitonidæ, Cuculidæ, and Musophagidæ, by Captain Shelley. The 16th volume, containing the Upupidæ, Trochilidæ, Caprimulgidæ, and Cypselidæ, by Mr. Salvin, is passing through the press. The MS. of the 20th volume, containing the Psittacidæ, by Count Salvadori, is nearly finished.

We have received from Messrs. Sotheran the prospectus of Mr. Sharpe's new Monograph of the Paradise- and Bower-birds (*cf.* Ibis, 1890, p. 389), the first part of which will shortly be issued. It will be published in six parts, uniform with Gould's works, and form one volume imp. fol. when completed.

Death of Prof. Poey, of Havana.—Dr. Frederico Poey writes to us from Havana to announce the death of his father, Prof. Felipe Poey, in that city on the 20th of January last. Poey is well known to naturalists as the chief author of the 'Repertorio Fisico-Natural de la Isla de Cuba,' of the 'Memorias sobre la Historia Natural de la Isla de Cuba,' and of other works on the zoology of that island.

THE IBIS.

SIXTH SERIES.

No. XI. JULY 1891.

XXIX.—*Ornithological Results of an Expedition to the Philippine Islands in* 1887 *and* 1888. By J. B. Steere, Ph.D.

[Plates VII., VIII.]

The Steere Expedition to the Philippines went out from the University of Michigan in the year 1887, and spent about twelve months in the islands.

The object of the expedition was to make general zoological collections, and at the same time to examine as many distinct localities as possible, so that the distribution of species in the various islands might be studied. Fifteen of the larger islands, situated in all parts of the group, were visited, and from two to six weeks spent upon each. This amount of time, with a party of five collectors from the United States, and such native help as could be obtained, sufficed to make very large, though by no means exhaustive, collections of vertebrates, and important collections in several groups of invertebrates.

As far as possible, examples of all the species of birds in each island were collected, and of all ages and both sexes. Large collections of nests and eggs were also made. A few species, such as *Megapodius dillwyni*, *Munia atricapilla*,

Turnix nigrescens, and *Cinnyris jugularis*, were found nesting in the fall and early winter months. The first three mentioned apparently breed nearly all the year round. By February the number of species nesting was considerably increased, but the full tide of nesting was not reached until the months of May and June, the number then decreasing through the latter part of June and July much more rapidly than it had increased.

The following is a list of the dates and the order in which the islands were visited :—

Paragua, August and September, 1887; Mindanao, October; Basilan, November; Mindanao, again in December; Guimaras, December; Panay, January, 1888; Negros and Siquijor, February; Cebu and Bojol, March; Samar and Leyte, April; Masbate and Marinduque, May; Mindoro, June; Luzon, July, 1888.

As island after island was reached and collected upon by the party, the discovery was made that the Philippine group is divided into several quite distinct zoological subdivisions, which I have considered to be Sub-provinces, and have named as follows :—(I.) the Sub-province of the North Philippines, made up of Luzon and the small adjacent islands; (II.) Mindoro; (III.) Central Philippines, embracing the islands of Panay, Negros, Guimaras, Cebu, and Masbate; (IV.) the West Philippines—Paragua and Balabac; (V.) the South Philippines—Mindanao and Basilan; (VI.) the East Philippines—Samar, Leyte, and probably Bojol.

There are marks of still further differentiation within these six divisions, notably in the instances of Cebu and Basilan.

The differences in the birds of these Sub-provinces were so great that a stay of a single day in an island was sufficient to prove whether we had reached a new area or not.

In May, after having visited the eastern islands of Samar and Leyte, we stopped at the island of Masbate on our way north, and immediately recognized its birds as being like those of Panay and Negros, thus placing it in the division of the Central Philippines which we had visited three months before.

The genera most relied upon for the establishment of these divisions were *Loriculus* and *Prioniturus* among the Parrots; *Thriponax* and *Chrysocolaptes* among the Woodpeckers; *Actenoides* and *Ceyx* among the Kingfishers; *Buceros, Cranorrhinus*, and *Penelopides* among the Hornbills; and *Artamides, Dicrurus, Irena*, and *Iole*. Though these genera are, perhaps, the most uniformly distributed through the Sub-provinces, with local species in each Sub-province, many other genera corroborate the same theory.

The little island of Siquijor, south of Cebu, and between that island and Mindanao, seems to be a remnant of another Sub-province, now nearly swallowed up by the sea. The presence of a distinct species of *Dicæum* and of very well-marked species of *Iole* and *Loriculus* limited to the space of a few miles square, seems most readily explained in this way. The Philippine Islands are all volcanic, and their shores show signs of frequent changes of sea-level, which, on account of the shallow channels that separate the islands, would work rapid and extensive changes of the land-surface of the group.

Altogether the Steere Expedition obtained examples of 3 species of birds in the Philippines, of which 53 appear to be new to science. I have already given a preliminary list of the birds in a pamphlet published at Ann Arbor on July 14th, 1890*. In order to make the new species better known, I have accepted the offer of the Editor of 'The Ibis' to restate their characters, and to give illustrations of two of the principal novelties.

1. Prioniturus luconensis, sp. nov. (*Op. cit.* p. 6.)

Adult male and *female*.—General colour above and below, including the head, bright yellow-green.

Hab. Marinduque, Luzon.

* A List of the Birds and Mammals collected by the Steere Expedition to the Philippines, with Localities, and with brief preliminary Descriptions of supposed new Species. By J. B. Steere, Ph.D., Professor of Zoology in the University of Michigan. Ann Arbor, Mich 1890. 8vo. 30 pp.

2. Prioniturus mindorensis, sp. nov. (*Op. cit.* p. 6.)

Adult male.—General colour grass-green, as in *P. discurus*; crown and nape violet; lores, face, and chin yellow-green.

Hab. Mindoro.

3. Cyclopsitta mindanensis, sp. nov. (*Op. cit.* p. 6.)

Adult male.—Collar violet; cheeks green. *C. lunulata* has a cobalt collar and blue cheeks in the adult male.

Hab. Mindanao.

4. Loriculus siquijorensis, sp. nov. (*Op. cit.* p. 6.)

Adult male with large quadrangular spot of crimson upon the forehead and crown, ending sharply in the general green colour of the upper surface. Adult female and young male: red spot upon the forehead veiled by blue tips to the red feathers.

Hab. Siquijor.

5. Loriculus mindorensis, sp. nov. (*Op. cit.* p. 6.)

Adult with a broad crimson band across the forehead below the eyes, ending sharply in the green of the upper surface.

Hab. Mindoro.

6. Loriculus worcesteri, sp. nov. (*Op. cit.* p. 6.)

The crimson of the upper surface covering the forehead, crown, and nape, where it tapers to a point. It is distinguished from *L. hartlaubii*, its nearest ally, by the much fainter wash of orange-red upon the mantle and interscapulars, and by the shape of the red markings of the head and nape. In *L. hartlaubii* the crimson area grows wider on the nape, where it ends broadly.

All adult male Philippine *Loriculi* observed have an orange-red spot upon the breast and green cheeks. All adult females and all young males in their second plumage have blue on the cheeks and throat, and lack the orange-red plastron. All young birds in first plumage have the entire head green and the rump scarlet. The seven species met with can be readily distinguished in all but the first plumage by the shape and location of the crimson and yellow markings upon the head and nape.

Hab. Samar, Leyte.

7. Circus philippinensis, sp. nov. (*Op. cit.* p. 7.)

Adult female.—Ashy brown. Head and neck streaked with white; hinder crown streaked with cinnamon. Scapulars and feathers of interscapular region narrowly tipped with white, and showing more or less of large ashy-white spots on both webs. Outer surface of folded wing ashy white, banded with black. Tail ashy white, banded with ashy brown and tipped with white. Upper tail-coverts white. Under surface white, narrowly streaked with ashy brown on throat and breast. Belly, thighs, and under tail-coverts pure white. Under surface of tail white, with ashy, and faintly banded.

Hab. Mindanao, Guimaras, Luzon.

8. Spilornis panayensis, sp. nov. (*Op. cit.* p. 7.)

Adult male.—Head black, feathers of crest sulphur-white at base, then black, narrowly edged with whitish. Rest of upper surface, with wings, light ashy brown, all the feathers edged with whitish. Tail broadly tipped with white, and with two broad whitish bars and part of a third basal one. Throat bluish ash, unmarked. Rest of under surface pale cinnamon, shaded with ash and spotted and banded as in *S. holospilus*. Length 19·75 inches, wing 12·50, tail 9·0, tarsus 2·80. Distinguished from *S. holospilus* by its small size and pale colouring.

Hab. Guimaras, Panay, Negros.

9. Thriponax philippinensis, sp. nov. (*Op. cit.* p. 8.)

Adult male.—Rump buffy white. Crest scarlet, with the bases of the feathers of the crown and nape white; cheeks and sides of face largely scarlet, nearly joining the scarlet feathers of the crest behind the eye. The feathers of the chin, throat, and neck narrowly tipped with scarlet; lower mandible horn-white, upper blackish.

Hab. Guimaras, Masbate.

10. Thriponax mindorensis, sp. nov. (*Op. cit.* p. 8.)

Adult male.—Much smaller than *T. philippinensis*. Rump white. Much white upon ear-coverts and throat. Scarlet cheek-patch limited to a narrow bar upon the lower jaw.

Bases of the feathers of the forehead, as well as of the crest, white. White spot at bases of first and second primaries.

Hab. Mindoro.

11. Chrysocolaptes samarensis, sp. nov. (*Op. cit.* p. 8.)

Adult male.—General colour of upper parts crimson, as in *C. hæmatribon*. Under surface spotted, as in *C. lucidus*. Buffy feathers of face and throat washed with crimson, much deeper on the cheeks.

C. samarensis is curiously intermediate between *C. hæmatribon* and *C. lucidus*, having the back of one and the ventral surface of the other; but the crimson markings of the face and throat separate it from either.

Hab. Samar, Leyte.

12. Yungipicus basilanicus, sp. nov. (*Op. cit.* p. 9.)

Head black, slightly tinged in front with cinnamon-brown. Crimson crest in male nearly confluent. Breast washed with orange-red, fading to sulphur-yellow behind. Interscapulars black and barred with sulphur-yellow. Back sulphur-yellow.

Hab. Basilan.

13. Yungipicus leytensis, sp. nov. (*Op. cit.* p. 9.)

Head black. Forehead and loral region cinnamon. Breast tinged with crimson.

Hab. Leyte, Samar.

14. Ceyx samarensis, sp. nov. (*Op. cit.* p. 10.)

Upper surface deep rufous. Interscapulars forming two broad black bands. Wings black; coverts black and spotted with cobalt. Sides of the head rich lilac. Breast and upper abdomen lilac, fainter behind. Size—length 5·80 inches, tail 1·20, beak 1·20, wing 2·60, middle toe and claw 0·60. Differs from the true *C. melanura* of Luzon in its larger size, in the colouring of the cheeks and breast, and in the amount of colouring on the lower surface.

Hab. Samar, Leyte.

15. Ceyx mindanensis, sp. nov. (*Op. cit.* p. 10.)

Above rufous. Head, cheeks, and back thickly spotted

with bright lilac. Wings black, secondaries edged with rufous. Coverts black, broadly tipped with rufous, these rufous tips carrying faint lilac spots. Breast rufous, washed with bright lilac.

Hab. Mindanao.

16. Ceyx basilanica, sp. nov. (*Op. cit.* p. 10.)

Colour much as in *C. mindanensis*. Rufous edging of the secondaries much broader, and upper secondaries broadly tipped with rufous. White spot on the side of neck not preceded by the blue and black markings found in the preceding species.

C. basilanica differs from *C. mindanensis* in having lost almost all the black in the scapulars and in the colouring of the wing and neck.

Hab. Basilan.

17. Ceyx fluminicola, sp. nov. (*Op. cit.* p. 10.)

General colouring above as in *C. argentata*. Chin and throat buffy white. White spot on the belly. Breast, flanks, and remaining under surface deep ultramarine, with black bases to the feathers. Differs from *C. argentata* in smaller size, in the buffy-white chin and throat, and in the general colour of the under surface. Wing 2·27 inches, tail 1·25, culmen 1·40.

Hab. Samar, Leyte.

18. Ceyx bournsii, sp. nov. (*Op. cit.* p. 10.)

Head, nape, and interscapulars thickly spotted with bright cobalt, the blackish bases of the feathers appearing between. Back silvery blue; scapulars black, tipped with faint cobalt. Upper tail-coverts and tail cobalt. Wing-coverts spotted with cobalt; primaries black, first rufous on the outer web. Throat and spot on the side of the neck white, the latter tinged with rufous. Cheeks and rest of the under surface orange-rufous, deeper on the breast. Length 4·5 inches culmen 1·0, wing 2·5. This species appears to be most nearly allied to *C. cajeli* from Bourou.

Hab. Basilan.

19. Ceyx malamaui, sp. nov. (*Op. cit.* p. 11.)

Head, nape, interscapular region, and wing-coverts black, spotted with ultramarine. Scapulars black, washed with ultramarine. Back silvery blue. Tail black, tinged with ultramarine. Wings black. Spot on the side of neck white. Throat white, tinged with orange. Large loral spot, cheeks, and the rest of the under surface orange-rufous. Length 5·0 inches, culmen 1·15, wing 2·60.

This Kingfisher appears most nearly allied to *C. lepida*.

Hab. Basilan.

20. Actenoides moseleyi, sp. nov. (*Op. cit.* p. 11.)

A single specimen of *Actenoides*, a female, procured in Negros, is near to *A. lindsayi*. It has the green head, with the blue stripe on the side and back of the head, of the male of that species, with the buffy ear-coverts and green moustachia. stripe of the female. It differs from both sexes of that species in having a black nape and mantle, and black edgings to the feathers of the breast and flanks.

Hab. Negros.

21. Centrococcyx mindorensis, sp. nov. (*Op. cit.* p. 12.)

All black, with bronze-green reflections. Head duller black. Wing slightly shaded with rufous, most apparent on edges of primaries. Eyes red. Legs and beak black. Length 17·0 inches, tail 11·0, wing 7·0. Sexes alike in colour.

Hab. Mindoro.

22. Penelopides basilanica, sp. nov. (*Op. cit.* p. 13.)

Much like *P. affinis* of Mindanao, but differs from it in having the rufous upon the tail reaching to and beneath the upper tail-coverts, so that the whole base of the tail appears rufous, though some specimens show some black at the bases of the feathers when they are uncovered. The sides of the mandibles are also flesh-coloured to their bases, instead of being black behind, as in *P. affinis*.

Hab. Basilan.

23. Penelopides samarensis, sp. nov. (*Op. cit.* p. 13.)

Most like *P. panini*, but differs from it in having, in the

male, the belly, under tail-coverts, thighs, breast, and upper tail-coverts buffy white, uniform with the head and breast, instead of dark rufous, as in *P. panini*. The chiselling upon the beak is also very different. In *P. panini* both mandibles are extensively grooved, the furrows in the upper mandible being buffy white and the ridges between black; the ridges below are also black, with indications of lighter furrows. In *P. samarensis* the chiselling is nearly limited to the lower mandible, and upon this the ridges are white and the furrows dark.

Hab. Samar, Leyte.

24. PENELOPIDES MINDORENSIS, sp. nov. (*Op. cit.* p. 13.)

Similar to *P. manillæ*, but black, with bronze-green gloss, instead of brown, as in *P. manillæ*. The whole base of the tail is light ferruginous, instead of this colour being limited to a narrow bar, as in *P. manillæ*, and the lower mandible is plain, instead of being chiselled, as in that species. The female of *P. mindorensis* has the feathers of the head white, as in the male, thus differing from the other Philippine species, in all of which the females are black-headed.

The males and females of *P. mindorensis* differ chiefly in the colour of the bare skin about the eye and the base of the beak, this in life being dark blue in the female and flesh-coloured in the male.

Hab. Mindoro.

25. ARTAMIDES MINDORENSIS, sp. nov. (*Op. cit.* p. 14.)

Nearly similar to *A. striatus*, but differs in having the black of the lores extending about the eye, and in the rump and upper tail-coverts being uniform with the back, and not fringed with grey.

Hab. Mindoro.

26. ARTAMIDES MINDANENSIS, sp. nov. (*Op. cit.* p. 14.)

Young.—Whole of under plumage and the rump and upper tail-coverts barred with black and white. Rest of upper surface lead-grey.

Adult male.—Chin, throat, and upper breast uniform plumbeous grey, like the back. Rest of under surface and the

rump and upper tail-coverts barred with black and white. The black bars become narrower behind below, until the under tail-coverts are nearly or quite pure white.

Hab. Mindanao, Samar.

27. Artamides panayensis, sp. nov. (*Op. cit.* p. 14.)

Young.—Barred below like *A. mindanensis*, but with the black bars much broader, giving the under surface a darker look. Feathers of rump and upper tail-coverts plumbeous at base, then broadly black, then white-edged.

Adult male.—Throat and breast uniform plumbeous grey. Rest of under surface and rump and upper tail-coverts barred, as in the young. Bars of black on under tail-coverts as broad as the white. *A. panayensis* is a shade darker plumbeous grey than *A. mindanensis*. Black and plumbeous predominate on the rump and upper tail-coverts; black predominates in the barring beneath. In *A. mindanensis* white is more prominent in the barring below and above.

Hab. Guimaras, Panay, Masbate.

28. Edoliosoma (Graucalus) panayense, sp. nov. (*Op. cit.* p. 14.)

Adult male.—Above lead-black, lighter and washed with ashy on rump and upper tail-coverts. Throat, breast, wings, and tail clear black. Flanks and thighs plumbeous black. Under wing- and tail-coverts white. Wing-coverts and outer edges of secondaries forming a white wing-bar, as in *Lalage*. Feathers of tail tipped with white.

Female.—Plumbeous grey above and below. Wings and tail as in the male. Legs and beak black. Length 10·40 inches, tail 5·0, wing 5·25, culmen 1·0, tarsus 0·85.

Hab. Guimaras, Panay.

29. Pseudolalage minor, sp. nov. (*Op. cit.* p. 15.)

This bird of the *P. melanoleuca* type differs in being much smaller, averaging about 7·50 inches, while *P. melanoleuca* averages 8·25. The male agrees almost exactly with *P. melanoleuca* in colouring. The white tips of the two outer tail-feathers are much narrower. The females of the two species differ most; they are alike on the upper surface, but *Pseudo-*

lalage minor has the chin, throat, and breast plumbeous grey, with dark shaft-stripes and faint whitish above. The plumbeous of the breast fades into white on the belly and under tail-coverts.

Hab. Mindanao.

30. Pericrocotus leytensis, sp. nov. (*Op. cit.* p. 15.)

The adult male has the general colouring of *P. igneus*, but is larger, and the central tail-feathers are tipped with vermilion. The four outer primaries are black, and at least seven of the secondaries have vermilion markings on the outer webs towards their tips, as well as the broad vermilion bars across their bases. Length 7·0 inches, wing 3·0, tail 3·50.

Hab. Leyte.

31. Hypothymis samarensis, sp. nov. (*Op. cit.* p. 16.)

I find this form of *Hypothymis* from the eastern islands constantly differing from *H. superciliaris* in having the head black, slightly washed with blue. The silvery cobalt plumes on the forehead, and over the eye also, form a much narrower line.

Hab. Samar, Leyte.

32. Cyanomyas helenæ, sp. nov. (*Op. cit.* p. 16.)

Adult male.—Entire upper surface rich azure-blue, lighter on upper tail-coverts. Forehead and line over eye silvery cobalt. Wings much darker blue. Lore and space extending back to the eye black. Chin black. Throat and breast dark azure-blue. Abdomen white. Feathers of crest and sides of head much lengthened, as in *C. cœlestis*. Size smaller.

Hab. Samar.

33. Setaria samarensis, sp. nov. (*Op. cit.* p. 16.)

Differs chiefly from *S. ruficauda* of Sharpe in having the cheeks brown, and not olive, and in having the under surface washed with fulvous brown, this forming a broad band across the breast.

Hab. Mindanao, Samar.

34. Oriolus samarensis, sp. nov. (*Op. cit.* p. 17.)

Yellower than *O. steerii*. Central tail-feathers unmarked.

The grey of the wing-coverts and primaries and secondaries replaced by yellow. Feathers of breast and flanks streaked as in *O. steerii*, but washed with yellow. Under wing-coverts light yellow.

Hab. Samar.

35. Macronus mindanensis, sp. nov. (*Op. cit.* p. 17.)

Head and nape brown, streaked with whitish. Throat white, washed with fulvous, this colour becoming more pronounced on the breast and abdomen, taking the place of the olivaceous colouring of *M. striaticeps*.

Hab. Mindanao, Samar, Leyte.

36. Mixornis nigro-capitatus, sp. nov. (*Op. cit.* p. 17.)

Head black, tinged with dark rufous at the sides. Back dark ashy, with very narrow lighter shaft-lines. Chin and moustachial stripe dark rufous. Throat saffron-yellow, washed with rufous. Rest of under surface yellowish white.

Hab. Samar, Leyte.

37. Ptilocichla basilanica, sp. nov. (*Op. cit.* p. 18.) (Plate VII.)

Sexes alike. Above olive-brown, becoming rufous on wings and rump. Feathers of head and nape broadly edged with black. Feathers of lower back very long, overlapping the rufous upper tail-coverts, silky, and with narrow whitish shaft-stripes, and with concealed broad white tips beneath. White eye-stripe reaching to nape. Chin and throat white, with black moustachial stripe. Breast black, tinged with rufous, and with broad white shaft-stripes, this colouring continuing on the belly and under tail-coverts, but the rufous predominating. Length 6·0 inches, wing 3·25, tail 2·30, tarsus 0·11, culmen 0·75.

Hab. Basilan.

38. Ptilocichla mindanensis, sp. nov. (*Op. cit.* p. 18.)

Above fulvous brown. Feathers of head narrowly edged with black. Feathers of back showing indistinct shaft-stripes. Below much as in *P. basilanica*, which it equals in size also.



J. G. Keulemans del. et lith. Mintern. Bros. imp.

PTILOCICHLA BASILANICA.



2/3

J. G. Keulemans del. et lith.

Mintern Bros. imp.

IRENA ELLÆ, ♂, ♀.

It is readily separated by the fulvous brown of the head and the uniform fulvous of the back.

Hab. Mindanao.

39. Irena ellæ, sp. nov. (*Op. cit.* p. 18.) (Plate VIII.)

Adult male.—Crown of head and nape deep cobalt-blue, as in *I. cyanogastra.* Sides of neck, back, and scapulars velvety black. Lower back washed with cobalt, this becoming rich cobalt on upper tail-coverts. Tail black, washed with deep cobalt. Wings marked with cobalt much as in *I. cyanogastra.* Under surface deep velvety black, feathers of abdomen slightly washed with blue. Under tail-coverts deep cobalt.

Adult female.—Chin and throat velvety black. Breast, abdomen, and flanks purplish blue. Size the same as that of *I. cyanogastra.*

I. ellæ can be readily distinguished from *I. cyanogastra,* its nearest ally, by its black back.

Hab. Samar, Leyte.

40. Poliolophus basilanicus, sp. nov. (*Op. cit.* p. 19.)

Hab. Mindanao, Basilan.

41. Iole guimarasensis, sp. nov. (*Op. cit.* p. 19.)

Size and general colouring of *I. rufigularis,* with the light shaft-streaks on the throat of *I. philippinensis.*

On crossing from Negros to Cebu I immediately noticed the greatly different note of the Cebu bird.

Hab. Negros, Panay, Guimaras.

42. Iole mindorensis, sp. nov. (*Op. cit.* p. 19.)

Above dark olive-brown. Head dark brown, slightly washed with ashy. Throat and breast brown, faintly rufous shaded, and with faint lighter shaft-streaks. Rest of under surface light olive-brown, with light shaft-streaks, somewhat lighter on the belly. Length 8·0 inches, wing 4·0, tail 4·0, culmen 1·10.

Distinguished from *I. philippinensis* by its long beak, faint rufous-brown throat, and olive-brown under surface.

Hab. Mindoro.

43. Iole siquijorensis, sp. nov. (*Op. cit.* p. 19.)

Head nearly black. Rest of upper surface dark olive-brown, feathers narrowly edged with grey, lighter on the rump. Wings and tail like the back. Wing-coverts and secondaries broadly tipped with whitish. Throat white, feathers narrowly edged with brown. Breast olive-brown, with broad whitish shaft-stripes. Belly whitish, washed with yellow. Length 9·75 inches, wing 5·25, tail 5·0, culmen 1·25.

This black-headed Bulbul is apparently confined to the little island of Siquijor.

Hab. Siquijor.

44. Cittocincla cebuensis, sp. nov. (*Op. cit.* p. 20.)

Entirely black. Upper and under surface glossy purplish black. Wings and tail black, edged with purplish black. Length 8·50 inches, wing 3·75, tail 4·50, culmen 0·75.

Hab. Cebu.

45. Orthotomus panayensis, sp. nov. (*Op. cit.* p. 20.)

The chestnut-headed Tailor-bird from Panay must, I think, be separated from that of the other islands. It is smaller, and the slaty gray is confined to a brief space on the mantle. The interscapular region, as well as the rest of the back, is green.

Hab. Panay.

46. Orthotomus samarensis, sp. nov. (*Op. cit.* p. 20.)

Adult male.—Head black. Collar yellow. Rest of upper surface dark olive-green. Chin and jaw white. Throat black. Rest of under surface bright yellow. Tail chestnut; outer pair of tail-feathers with outer web yellow. Length 4·60 inches, wing 2·90, tail 1·80.

Hab. Samar.

47. Zosterops basilanica, sp. nov. (*Op. cit.* p. 21.)

Above dark olive-green, but a little lighter on the head and rump. Wings and tail blackish, edged with olive-green. Lores dusky, space above them not distinctly yellow. Chin, throat, and a broad stripe along the breast and abdomen sulphur-yellow. Sides of breast and flanks clear ashy grey.

Differs from *Z. everettii* in wanting the light yellow spot above the lores, and in the broad and deeper yellow stripe along the under surface.

Hab. Basilan, Samar, Leyte.

48. PHILEMON PHILIPPINENSIS, sp. nov. (*Op. cit.* p. 21.)

Adult female.—Above olive-green. Wings brown, edged with olive-yellow. Under surface ashy olive, washed with b[illegible]e-green. Forehead, space about gape, in front of the eye, ear-coverts bare. Length 6·60 inches, wing 3·2, tail 0, culmen 1·55.

Hab. Samar.

49. DICÆUM BESTI, sp. nov. (*Op. cit.* p. 22.)

Differs from *D. cinereigulare* in having the entire throat grey, and not yellow. Rump distinctly yellow.

Hab. Siquijor.

50. PRIONOCHILUS SAMARENSIS, sp. nov. (*Op. cit.* p. 22.)

Similar to *P. olivaceus*. Differs from it in having the breast and sides of the throat ash-brown, nearly snuff-brown, instead of ashy olive.

Hab. Samar, Leyte.

51. CINNYRIS GUIMARASENSIS, sp. nov. (*Op. cit.* p. 22.)

Adult male.—Forehead and crown metallic green, with violet reflections. Hind head, neck, and upper part of mantle dark blood-red. Back olive-yellow. Chin violet. Cheeks, sides of neck, and throat velvety black. Breast rich orange, separated from the black of the throat by a sulphur-yellow band. A central stripe on the throat, partly concealed, of rich vermilion. Flanks and abdomen pale yellow. Length 3·50 inches, wing 1·90.

Hab. Guimaras.

52. CORVUS SAMARENSIS, sp. nov. (*Op. cit.* p. 23.)

Adult male.—Black all over, with purple gloss; little duller on the underparts. Beak greatly curved. Length 13·25 inches, wing 9·0, tail 5·25, tarsus 1·50, culmen 1·80, depth at base 0·87.

This little Mountain Crow of Samar is readily distinguished from *C. pusillus* of the island of Paragua by its immense curved beak.

Hab. Samar.

53. Sarcophanops samarensis, sp. nov. (*Op. cit.* p. 23.)

Differs from *S. steerii* chiefly in having the back mottled lilac and brown, instead of dark ashy, this in both sexes. A lilac wing-bar takes the place of the golden yellow one of *S. steerii*. The male is lilac below and the female white, the in *S. steerii*.

Hab. Samar.

XXX.—*On the Birds of the Lower Yangtse Basin.*—Part

By F. W. Styan, F.Z.S.

The district treated of in this paper extends from Hankow to the mouth of the Yangtse, embracing the last 600 miles of the river's course. Strictly speaking, the Lower Yangtse basin should include the last 1000 miles, but from want of opportunity I am unable to treat of the 400 miles between Ichang and Hankow; it is, however, an uninteresting region, and would probably furnish little information which cannot be obtained eastward of Hankow.

The Yangtse may fairly be divided into three sections—the Upper river, the Lower river, and the delta; the avifauna of the two latter is practically the same, and differs widely from that of the Upper Yangtse, as might be expected. The Upper Yangtse from its source passes through the high tablelands and mountainous regions of Sechuen until it debouches into the plains through the famous gorges at Ichang. Thence, for some 450 miles, its course is mostly through a broad valley and ancient lake-beds, backed by mountain-ranges of more or less importance, through some of which the river has cut its way. A little below Chinkiang, or perhaps at Kiang Yin, some 60 miles lower down, the delta begins, embracing a large extent of low land deposited by the river, and extends on the right bank to Hang-

chow Bay, and on the left to the Yellow Sea. The delta on the south is what is usually known as the "Shanghai country," and most of the birds recorded as obtained at Shanghai have been shot within its limits, though some of them may have been killed a hundred miles or more from Shanghai itself.

By the subjoined list it will be seen that 359 species of birds have been recorded as occurring in the Lower Yangtse Basin. These may be classified as follows:—

Breeders:		
Resident	90	
Summer Visitants	52	
		— 142
Non-Breeders:		
Winter Visitants	101	
Passing on Migration	97	
Stray Birds	11	
Doubtful	8	
		— 217
Total		359

Of the 142 species that breed in the district, it will, upon examination, be found that the greater number are Oriental, thus supporting Mr. Seebohm's conclusion (P.Z.S. 1890, p. 345) that the boundary line between the Palæarctic and Oriental regions in China should be drawn not further south than the watershed between the Hwang-Ho and the Yangtse. The Yangtse valley therefore is not far from the southern limit of the Palæarctic region, and its avifauna consists largely of genera and species from both regions.

Among the distinctly Oriental species which breed on the Yangtse, some, such as *Oriolus diffusus, Buchanga atra, B. leucogenys, Chibia hottentotta, Eurystomus calonyx, Halcyon pileatus*, and *Coccystes coromandus*, extend their breeding-range much further north; others, such as *Campophaga melanoptera, Ceryle rudis, Haliastur indus, Nettapus coromandelianus*, and *Hydrophasianus chirurgus*, apparently make the Yangtse basin their northern limit.

Of the resident birds, four species (*Cisticola cisticola* and three *Cettias*) are abundant in the breeding-season, but

almost disappear afterwards, leaving only a few representatives at this northern limit of their winter-quarters. In the migratory list the most curious point is the omission of several species which might fairly be expected to pass through the district.

Merula chrysolaus, *M. cardis*, and *Emberiza sulphurata* winter in South China, and on their spring migration strike across from the mountainous province of Chekiang to Japan, thus avoiding the Yangtse valley. According to David, the first two push on as far as the Amoor to breed.

Hypsipetes amaurotis and *Xanthopygia narcissina* follow the same route, but a few stragglers pass through the Yangtse valley.

Locustella ochotensis, *Lusciniola aëdon*, *Cypselus pacificus*, *Cerchneis pekinensis*, *C. amurensis*, and *Astur palumbarius* must pass through the district, and their absence from my list is no doubt mainly due to want of observation. It is not, however, improbable that those which pass up the east coast strike across from Chekiang province to the Shantung promontory, just avoiding the Yangtse mouth.

A number of species not included in this list approach the Yangtse basin, but are confined within the mountainous districts to the south of it—for instance, *Prinia inornata*, *Suthora gularis*, *Melophus melanicterus*, *Dendrocitta sinensis*, *Centropus sinensis*, *Trochalopterum cinereiceps*, and *Leiothrix luteus*.

The list will, I believe, be found correct in the main, but subject to alteration and addition. A few of the migratory species may possibly remain to breed, and some of those placed under the head of stray visitants may prove to be regular migrants. From the list of breeding birds few, if any, can be eliminated, though in some cases their claim to rank as such rests upon circumstantial evidence only. The difficulty of obtaining reliable information in China is very great, and the following notes are based entirely upon my own observations in the field, and on specimens which I have actually handled. With these I have incorporated the information to be found in David and Oustalet's 'Oiseaux de la

...ine,' and in Swinhoe's various papers on Chinese ornithology. I have also to thank Dr. Bowdler Sharpe and Mr. Seebohm for assistance in comparison of skins.

The numbers in brackets refer to those in David and Oustalet's book, and the few synonyms inserted are taken from Swinhoe's list of the birds of China (P. Z. S. 1871, pp. 337–423).

The following are some of the principal localities mentioned:—

Hankow, on the Yangtse, about 600 miles from its mouth.

Kiukiang, on the Yangtse, about 450 miles from its mouth.

Lushan, a range of hills about 5000 feet above sea-level, rising behind Kiukiang and sloping down to the Poyang Lake on the S.E.

Ngankin, about 350 miles up the river, capital of Anhwei Province.

Chien San, a range of hills about 25 miles north of Ngankin.

Nankin, about 200 miles up the river.

Chinkiang, about 150 miles up the river.

Kiang Yin, about 90 miles up the river.

Kahing, in the delta, about 80 miles S.W. of Shanghai.

List of Species.	Breeders.		Non-Breeders.			
	Residents.	Summer Visitants.	Winter Visitants.	Pass on Migration.	Stray Birds.	Doubtful.
PASSERES.						
Turdidæ.						
1. Merula mandarina	*					
2. —— chrysolaus	..	..	..	..	..	*
3. —— hortulorum	..	..	..	*		
4. —— obscura	..	..	..	*		
5. —— pallida	..	..	*			
6. —— naumanni	..	..	*			
7. —— fuscata	..	..	*			
8. Geocichla sibirica	..	..	..	..	..	*
9. —— varia	..	..	..	*		

List of Species.	Breeders.		Non-Breeders.			
	Residents.	Summer Visitants.	Winter Visitants.	Pass on Migration.	Stray Birds.	Doubtful.
10. Myiophoneus cæruleus	*					
11. Monticola solitarius	*					
12. —— cyanus	..	..	..	..	*	
13. Copsychus saularis	*					
Timeliidæ.						
14. Dryonastes perspicillatus	*					
15. —— sannio	..	..	..	*		
16. Trochalopterum canorum	*					
17. Pomatorhinus styani	*					
18. Stachyridopsis ruficeps	*					
19. Suya crinigera	*					
20. Cisticola cisticola	*					
Paradoxornithidæ.						
21. Paradoxornis guttaticollis	*					
22. —— heudei	*					
23. Suthora webbiana	*					
24. —— suffusa	*					
Cinclidæ.						
25. Cinclus pallasi	*					
Henicuridæ.						
26. Henicurus sinensis	*					
27. Microcichla scouleri	*					
Sylviidæ.						
28. Pratincola maura	..	..	..	*		
29. Oreicola ferrea	..	*				
30. Ruticilla aurorea	..	..	*			
31. Rhyacornis fuliginosa	*					
32. Chæmarrhornis leucocephala	..	*				
33. Erithacus cærulecula	..	..	..	*		
34. —— calliope	..	..	..	*		
35. —— cyanus	..	..	..	*		
36. —— sibilans	..	..	..	*		
37. Phylloscopus proregulus	..	..	..	*		
38. —— superciliosus	..	..	..	*		
39. —— coronatus	..	..	..	*		

List of Species.	Breeders.		Non-Breeders.			
	Residents.	Summer Visitants.	Winter Visitants.	Pass on Migration.	Stray Birds.	Doubtful.
40. Phylloscopus borealis	..	..	..	*		
41. Lusciniola fuscata	..	..	..	*		
42. —— schwarzi	..	..	..	*		
43. Acrocephalus orientalis	..	*				
44. —— bistrigiceps	..	*				
45. —— agricola	..	*				
46. Locustella certhiola	..	..	..	*		
47. —— lanceolata	..	..	..	*		
48. Cettia canturiens	*					
49. —— minuta	*					
50. —— fortipes	*					
51. —— squamiceps	..	*				
Paridæ.						
52. Parus minor	*					
53. —— venustulus	..	..	*			
54. Acredula concinna	*					
55. —— glaucogularis	*					
Sittidæ.						
56. Sitta sinensis	*					
57. Tichodroma muraria	*					
Troglodytidæ.						
58. Anorthura fumigata	..	..	..	..	*	
Motacillidæ.						
59. Motacilla leucopsis	..	..	..	*		
60. —— ocularis	..	..	*			
61. —— lugens	..	..	*			
62. —— melanope	..	..	..	*		
63. —— borealis	..	..	..	*		
64. —— flava	..	..	..	*		
65. —— taivana	..	..	..	*		
66. —— citreola	..	..	..	*		
67. Limonidromus indicus	..	..	..	*		
68. Anthus maculatus	..	..	*			
69. —— cervinus	..	..	*			
70. —— japonicus	..	..	*			
71. —— blakistoni	..	..	*			
72. —— gustavi	..	..	..	*		

List of Species.	Breeders.		Non-Breeders.			
	Residents.	Summer Visitants.	Winter Visitants.	Pass on Migration.	Stray Birds.	Doubtful.
73. Anthus richardi	..	..	..	*		
74. —— infuscatus	*					
75. Oreocorys sylvanus	..	..	..	..	*	
Pycnonotidæ.						
76. Pycnonotus sinensis	*					
77. —— xanthorrhous	*					
78. Spizixus semitorques	*					
79. Hypsipetes amaurotis	..	..	..	..	*	
Oriolidæ.						
80. Oriolus diffusus	..	*				
Dicruridæ.						
81. Buchanga atra	..	*				
82. —— leucogenys	..	*				
83. Chibia hottentotta	..	*				
Campophagidæ.						
84. Campophaga melanoptera	..	*				
85. Pericrocotus cinereus	..	..	..	*		
86. —— cantonensis	..	..	..	..	..	*
87. —— brevirostris	..	..	..	*		
Laniidæ.						
88. Lanius schach	*					
89. —— bucephalus	..	..	*			
90. —— superciliosus	..	..	..	*		
91. —— cristatus	..	..	..	*		
92. —— lucionensis	..	*				
93. —— tigrinus	..	*				
94. —— tephronotus	..	..	..	..	..	*
95. —— sphenocercus	..	..	*			
Muscicapidæ.						
96. Alseonax latirostris	..	..	..	*		
97. Hemichelidon sibirica	..	..	..	*		
98. Muscicapa griseisticta	..	..	..	*		
99. —— albicilla	..	..	..	*		

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List of Species.	Breeders.		Non-Breeders.			
	Residents.	Summer Visitants.	Winter Visitants.	Pass on Migration.	Stray Birds.	Doubtful.
100. Tarsiger cyanurus	..	..	*			
101. Poliomyias luteola	..	..	..	*		
102. Niltava cyanomelæna	..	..	..	*		
103. Xanthopygia tricolor	..	..	..	*		
104. —— narcissina	..	..	..	*		
105. Cryptolopha affinis	..	..	..	..	*	
106. Terpsiphone incei	..	*				
107. —— princeps	..	..	..	*		
Ampelidæ.						
108. Ampelis garrulus	..	..	*			
109. —— japonicus	..	..	*			
Hirundinidæ.						
Hirundo gutturalis	..	*				
— alpestris	..	*				
otyle riparia	..	*				
166. Chelidon lagopus	..	..	..	..	*	
Nectariniidæ.						
167. Nosterops simplex	*					
— erythropleurus	..	..	..	..	..	*
Fringillidæ.						
168. Carpodacus erythrinus	..	..	..	*		
Pyrrhula griseiventris	..	..	*			
Fringilla montifringilla	..	..	*			
169. Passer montanus	*					
170. — rutilans	*					
171. Zophona melanura	*					
172. Coccothraustes japonicus	..	..	..	..	..	*
173. Chloris sinica	*					
174. Chrysomitris spinus	..	..	*			
Emberiza spodocephala	..	..	*			
— melanops	..	*				
— fucata	*					
175. Cu— rustica	..	..	*			
176. —— pusilla	..	..	*			
177. —— tristrami	..	..	..	*		
178. H— castaneiceps	*					
179. Cc— elegans	*					

List of Species.	Breeders.		Non-Breeders.			
	Residents.	Summer Visitants.	Winter Visitants.	Pass on Migration.	Stray Birds.	Doubtful.
133. Emberiza chrysophrys	..	..	..	*		
134. —— aureola	..	..	..	*		
135. —— rutila	..	..	..	*		
136. —— passerina	..	..	*			
137. —— yessoensis	..	..	*			
138. Plectrophanes lapponicus	..	..	..	*		
139. Padda oryzivora	..	..	..	*		
140. Munia acuticauda	*					
141. —— topela	..	*				
Alaudidæ.						
142. Alauda arvensis	..	..	*			
143. —— cœlivox	..	*				
Sturnidæ.						
144. Acridotheres cristatellus	*					
145. Sturnia sturnina	..	..	..	*		
146. Spodiopsar cineraceus	..	..	*			
147. —— sericeus	..	..	*			
148. Pastor roseus	..	..	..	..		
Corvidæ.						
149. Corvus torquatus	*					
150. —— levaillanti	*				*	
151. —— pastinator	*					
152. Colœus dauricus	*					
153. —— neglectus	*					
154. Pica caudata	*					
155. Cyanopolius cyanus	*					
156. Urocissa sinensis	*					
157. Garrulus sinensis	*					
Pittidæ.						
158. Pitta nympha	..	..	..	*	*	
MACROCHIRES.						
Cypselidæ.						
159. Chætura caudacuta	..	..	..	*		

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List of Species.	Breeders.		Non-Breeders.			
	Residents.	Summer Visitants.	Winter Visitants.	Pass on Migration.	Stray Birds.	Doubtful.
Caprimulgidæ.						
160. Caprimulgus jotaka	..	..	..	*		
PICI.						
Picidæ.						
161. Iynx torquilla	..	..	..	*		
162. Picus cabanisi	*					
163. Iyngipicus scintilliceps	*					
164. Gecinus guerini	*					
165. Picumnus chinensis	*					
COCCYGES.						
Upupidæ.						
166. Upupa epops	*					
Meropidæ.						
167. Merops bicolor	..	*				
Coraciidæ.						
168. Eurystomus calonyx	..	*				
Alcedinidæ.						
169. Alcedo bengalensis	*					
170. Ceryle rudis	..	*				
171. —— guttata	*					
172. Halcyon pileatus	..	*				
173. —— smyrnensis	..	..	..	..	..	*
174. —— coromandus	..	..	..	*		
Cuculidæ.						
175. Cuculus canorus	..	*				
176. —— micropterus	..	*				
177. —— striatus	..	*				
178. Hierococcyx fugax	..	..	..	*		
179. Coccystes coromandus	..	*				

List of Species.	Breeders.		Non-Breeders.			
	Residents.	Summer Visitants.	Winter Visitants.	Pass on Migration.	Stray Birds.	Doubtful.
STRIGES.						
Bubonidæ.						
180. Ketupa flavipes	*					
181. Bubo ignavus	*					
182. —— coromandus	..	..	..	..	*	
183. Scops glabripes	*					
184. —— semitorques	*					
185. —— stictonotus	..	..	..	*		
186. Glaucidium whitelyi	*					
187. —— brodiei	*					
188. Ninox scutulata	..	*				
189. Asio otus	..	..	*			
190. —— accipitrinus	..	..	*			
ACCIPITRES.						
Falconidæ.						
191. Pandion haliaëtus	*					
192. Circus æruginosus	..	..	*			
193. —— spilonotus	..	..	*			
194. —— melanoleucus	..	..	..	*		
195. —— cyaneus	..	..	*			
196. —— macrurus	..	..	..	*		
197. —— pygargus	..	..	..	*		
198. Buteo plumipes	..	..	*			
199. —— hemilasius	..	..	*			
200. Archibuteo strophiatus	..	..	*			
201. Aquila clanga	*					
202. —— heliaca	*					
203. Nisaëtus fasciatus	*					
204. Haliaëtus albicilla	*					
205. Spizaëtus nipalensis	..	..	..	..	*	
206. Astur cuculoides	..	*				
207. —— soloensis	..	..	..	..	...	*
208. Accipiter nisus	..	..	*			
209. —— virgatus	..	..	..	*		
210. Butastur indicus	..	..	..	*		
211. Falco communis	*					
212. —— melanogenys	..	*				
213. —— subbuteo	..	*				
214. —— regulus	..	..	*			
215. Cerchneis tinnunculus	..	..	*			

List of Species.	Breeders.		Non-Breeders.			
	Residents.	Summer Visitants.	Winter Visitants.	Pass on Migration.	Stray Birds.	Doubtful.
216. Milvus melanotis	*					
217. Haliastur indus	..	*				
Vulturidæ.						
218. Vultur monachus	..	..	..	..	*	
STEGANOPODES.						
Pelecanidæ.						
219. Pelecanus philippensis	..	..	*			
Phalacrocoracidæ.						
220. Phalacrocorax carbo	*					
HERODIONES.						
Ardeidæ.						
221. Ardea cinerea	*					
222. —— purpurea	..	..	..	*		
223. Herodias alba	*					
224. —— intermedia	*					
225. —— garzetta	*					
226. Bubulcus coromandus	..	..	..	*		
227. Ardeola prasinosceles	..	*				
228. Ardetta flavicollis	..	*				
229. —— sinensis	..	*				
230. —— cinnamomea	..	*				
231. —— eurythma	..	*				
232. Butorides javanicus	..	..	..	*		
233. Nycticorax griseus	*					
234. Botaurus stellaris	..	..	*			
Ciconiidæ.						
235. Ciconia nigra	..	..	*			
236. Leptoptilus javanicus	..	*				
237. Tantalus leucocephalus	..	..	*			
Plataleidæ.						
238. Ibis nippon	*					
239. Platalea major	..	..	..	*		
240. —— minor	..	..	..	*		

List of Species.	Breeders.		Non-Breeders.			
	Residents.	Summer Visitants.	Winter Visitants.	Pass on Migration.	Stray Birds.	Doubtful.
ANSERES.						
Anatidæ.						
241. Cygnus musicus	..	..	*			
242. —— minor	..	..	*			
243. Anser albifrons	..	..	*			
244. —— erythropus	..	..	*			
245. —— cinereus	..	..	*			
246. —— segetum	..	..	*			
247. —— cygnoides	..	..	*			
248. Nettapus coromandelianus	..	*				
249. Dendrocygna javanica	..	..	..	..	*	
250. Tadorna vulpanser	..	..	*			
251. Casarca rutila	..	..	*			
252. Aix galericulata	..	..	*			
253. Mareca penelope	..	..	*			
254. Dafila acuta	..	..	*			
255. Anas boschas	..	..	*			
256. —— zonorhyncha	*					
257. Chaulelasmus streperus	..	..	*			
258. Querquedula crecca	..	..	*			
259. —— circia	..	..	*			
260. Eunetta formosa	..	..	*			
261. —— falcata	..	..	*			
262. Spatula clypeata	..	..	*			
263. Fuligula cristata	..	..	*			
264. —— baeri	..	..	*			
265. —— ferina	..	..	*			
266. —— marila	..	..	*			
267. —— mariloides	..	..	*			
268. Clangula glaucion	..	..	*			
269. Œdemia fusca	..	..	*			
270. —— velvetina	..	..	*			
271. Mergus merganser	..	..	*			
272. —— serrator	..	..	*			
273. —— albellus	..	..	*			
COLUMBÆ.						
Columbidæ.						
274. Turtur rupicola	*					
275. —— chinensis	*					
276. —— humilis	..	*				

List of Species.	Breeders.		Non-Breeders.			
	Residents.	Summer Visitants.	Winter Visitants.	Pass on Migration.	Stray Birds.	Doubtful.
GALLINÆ.						
Phasianidæ.						
277. Pucrasia darwini	*					
278. Phasianus torquatus	*					
279. —— reevesii	*					
Tetraonidæ.						
280. Bambusicola thoracica	*					
281. Coturnix communis	*					
Turnicidæ.						
282. Turnix blanfordi	..	*				
GERANOMORPHÆ.						
Rallidæ.						
283. Rallus indicus	*					
284. —— jouyi	..	*				
285. Porzana erythrothorax	..	*				
286. —— exquisita	..	*				
287. —— pygmæa	..	*				
288. Gallinula phœnicura	..	*				
289. —— chloropus	..	*				
290. —— coccineipes	..	*				
291. Gallicrex cinereus	..	*				
292. Fulica etra	*					
Gruidæ.						
293. Grus cinerea	..	..	*			
294. —— vipio	..	..	*			
295. —— viridirostris	..	..	*			
296. —— leucogeranus	..	..	*			
297. —— monachus	..	..	*			
Otidæ.						
298. Otis dybowskii	..	..	*			

List of Species.	Breeders.		Non-Breeders.			
	Residents.	Summer Visitants.	Winter Visitants.	Pass on Migration.	Stray Birds.	Doubtful.
LIMICOLÆ.						
Parridæ.						
299. Hydrophasianus chirurgus	..	*				
Glareolidæ.						
300. Glareola orientalis	..	..	*			
Charadriidæ.						
301. Charadrius fulvus	..	..	..	*		
302. —— helveticus	..	..	..	*		
303. —— minor	..	..	..	*		
304. —— placidus	..	..	*			
305. —— geoffroyi	..	..	..	*		
306. —— veredus	..	..	..	*		
307. —— mongolicus.....	..	..	..	*		
308. —— cantianus	..	..	..	*		
309. Lobivanellus cinereus	..	*				
310. Vanellus cristatus	..	..	*			
311. Strepsilas interpres.....	..	..	..	*		
312. Hæmatopus osculans	..	..	*			
Scolopacidæ.						
313. Recurvirostra avocetta	..	..	*			
314. Himantopus melanopterus	..	..	*			
315. Scolopax rusticula	..	..	*			
316. Gallinago solitaria	..	..	*			
317. —— stenura	..	..	..	*		
318. —— megala	..	..	..	*		
319. —— cœlestis	..	..	*			
320. Rhynchæa capensis	*					
321. Tringa canutus	..	..	..	*		
322. —— crassirostris	..	..	..	*		
323. —— subarquata.....	..	..	..	*		
324. —— cinclus	..	..	*			
325. —— subminuta	..	..	..	*		
326. —— platyrhyncha	..	..	..	*		
327. —— acuminata	..	..	..	*		
328. —— temminckii.....	..	..	..	*		
329. —— ruficollis.....	..	..	..	*		

List of Species.	Breeders.		Non-Breeders.			
	Residents.	Summer Visitants.	Winter Visitants.	Pass on Migration.	Stray Birds.	Doubtful.
330. Calidris arenaria	..	..	..	*		
331. Tringoides hypoleucus	*					
332. Eurynorhynchus pygmæus	..	..	..	*		
333. Totanus ochropus	..	..	*			
334. —— glareola	..	..	..	*		
335. —— calidris	..	..	*			
336. —— fuscus	..	..	*			
337. —— glottis	..	..	*			
338. —— incanus	..	..	..	*		
339. Terekia cinerea	..	..	..	*		
340. Limosa uropygialis	..	..	..	*		
341. —— melanuroides	..	..	..	*		
342. Ereunetes taczanowskii	..	..	..	*		
343. Numenius variegatus	..	..	..	*		
344. —— minutus	..	..	..	*		
345. —— lineatus	..	..	*			
GAVLÆ.						
Laridæ.						
346. Larus cachinnans	..	..	*			
347. —— melanurus	..	..	*			
348. —— canus	..	..	*			
349. —— ridibundus	..	..	*			
350. —— saundersi	..	..	*			
351. Sylochelidon caspia	..	..	..	*		
352. Hydrochelidon hybrida	..	..	..	*		
353. —— leucoptera	..	..	..	*		
354. Sterna sinensis	..	..	..	*		
355. —— fluviatilis	..	..	..	*		
PYGOPODES.						
Colymbidæ.						
356. Colymbus septentrionalis	..	..	*			
Podicipidæ.						
357. Podiceps cristatus	..	..	*			
358. —— minor	*					
359. —— auritus	..	..	*			
Totals	90	52	101	97	11	8

Order PASSERES.

Fam. Turdidæ.

1. Merula mandarina (Bp.).

(229.) *Merula sinensis*, Swinhoe, P. Z. S. 1871, p. 367.

Plentiful and resident, quite taking the place of our common Blackbird. Nests in May, generally at a considerable height from the ground, in the forks of willows or in other suitable trees.

2. Merula chrysolaus (Temm.).

(237.) The birds of this species which winter in South China cross from the mountainous provinces of Fokien and Chekiang to breed in Japan, some, according to David, travelling as far as the Amoor. Swinhoe gives its range in China "from Hainan to Pekin," in which case some individuals must surely pass through the Yangtse valley on migration. I have, however, never met with them, and insert the species in the doubtful list.

3. Merula hortulorum (Sclater).

(234.) Passes through the district in small numbers in October and November; the spring migration I have not noted.

4. Merula obscura (Gm.).

(238.) Scarce; noted in Shanghai in March and May.

5. Merula pallida (Gm.).

(236.) A common winter visitant, arriving in November and leaving about the middle of April. A solitary bird, frequenting gardens, orchards, and bamboo clumps round the villages, much resembling the Blackbird in its habits, and also in its single alarm-note when disturbed.

6. Merula naumanni (Temm.).

(239.) Common in winter; arrives first week in November and remains till the middle of April. To a great extent gregarious, frequenting the larger copses and outskirts of woods; a conspicuous feature among the mulberry plan-

ions in the silk-districts. Also scattered singly throughout ne open cultivated country. Seldom found at any elevation over a few hundred feet.

7. Merula fuscata (Pall.).

(240.) Arrives and leaves about the same time as the last species, with which it sometimes associates in flocks. I have met with it at Kiukiang as late as 26th April. Gregarious; not so abundant as *M. naumanni*; prefers fir-woods on the lower slopes and at the bases of hills to the open country.

8. Geocichla sibirica (Pall.).

(231.) I have never met with this species, but both Swinhoe and David state that it winters in China generally. it passes through Chefoo in May and June, and there is fo:ry probability of its passing through the Yangtse basin. de

9. Geocichla varia (Pall.).

(244.) A scarce, shy bird, found skulking among the thick cover of the hills. It probably winters south of the Yangtse, as the few occasions on which I have met with it have been in March and April. The skin of this bird is marvellously tender, which makes it difficult to preserve.

10. Myiophoneus cæruleus (Scop.).

(267.) Found on the mountain-streams throughout the Yangtse basin. They live almost entirely among the boulders, and being shy are seldom seen. I have once seen one alight on a tree when disturbed, but they usually disappear into hollows among the rocks. I believe they nest early in April.

11. Monticola solitarius (Briss.).

(249.) *Petrocincla manilla* (Bodd.), Swinhoe, P. Z. S. 1871, p. 368.

On the Lower Yangtse Rock-Thrushes are scarce, though plentiful enough in the gorges of the upper river and on the rocky islands off the coast. They are found on the Poyang Lake, where they appear to be resident, as I have met with them in December. A few pass through the cultivated districts round Shanghai on migration in autumn. One killed

on the coast had been feeding freely on crabs; another full of grasshoppers. *M. solitarius* is the prevailing for but there can be no doubt that it interbreeds with the following.

12. Monticola cyanus (L.).

(251.) I obtained a single specimen, without a trace of red on the lower parts, from the Lushan Hills, Kiukiang, in January.

13. Copsychus saularis (L.).

(264.) Abundant and resident. A familiar bird, living mostly in gardens and about houses. It breeds in May, an has two broods, for I have seen young birds just ready t leave the nest on 18th July. The nest is placed in a holl tree, the roof of a verandah, or some similar place. ge li-

Fam. Timeliidæ.

14. Dryonastes perspicillatus (Gm.).

(286.) A common resident, frequenting thick cover and bamboo-copses on the plains.

15. Dryonastes sannio (Swinhoe).

(287.) I have only come across this species during the spring migration, at Kiukiang, in April and May.

16. Trochalopterum canorum (L.).

(283.) *Leucodioptron chinense*, Swinhoe, P. Z. S. 1871, p. 371.

Abundant throughout the district on wooded hills, where they frequent the thick cover and find their food among the dead leaves. They are not shy, but thread their way so rapidly through the densest brushwood, half flitting, half hopping from branch to branch, and sometimes dodging along the ground among the stumps, that it is difficult to shoot them. They sing most beautifully morning and evening, and are then more easily approached. They are favourite cage-birds with the natives, who can always rouse them into song by imitating their note. When caged they exhibit considerable powers of mimicry, and are often known as "Mocking-birds."

Though naturally hill-birds, they sometimes stray into the plains when good cover attracts them. I have seen them in our garden, and shot them inside the walls of Kiukiang city, also in the Kahing silk-districts.

17. Pomatorhinus styani, Seebohm.

Pomatorhinus styani, Seebohm, Ibis, 1884, p. 263.

This is the only Pomatorhine found in the district. It occurs on all the hill-ranges, and occasionally on the plains where there are thick bamboo-copses. Specimens obtained at Ningpo, Hangchow, Ta-Hu Lake, Kiukiang, and other points on the river are all exactly similar. (*P. stridulus*, Swinhoe, is a southern species, and does not extend its range to the Yangtse.) It is probably an early breeder, for a pair shot on 29th March had the testes and ovary well developed. I have, however, met with them still in small flocks early in April. An easy bird to attract by imitating its plaintive flute-like call-note.

18. Stachyridopsis ruficeps (Blyth).

(328.) *Stachyris præcognitus*, Swinhoe, Ibis, 1866, p. 310.

Found on the Lushan Hills, Kiukiang, on the hills near Hangchow, and probably on all the ranges along the Yangtse, but it is such a shy, retiring bird that it easily escapes notice. Its note reminds one of a Pomatorhine, and is remarkably loud for the size of the bird. A restless bird, always on the move among the wooded hill-sides.

19. Suya crinigera, Hodgson.

(375.) *Suya striata*, Swinhoe, Ibis, 1862, p. 304.

Plentiful on the low grassy hills about Kiukiang, where it is resident, but appears more numerous in summer. Is found at a considerable elevation on the hill-ranges.

20. Cisticola cisticola (Temm.).

(371.) *Cisticola schœnicola*, Swinhoe, P. Z. S. 1871, p. 352.

A few birds of this species may be found in the Yangtse valley in winter; immense numbers appear in April to breed and pass the summer with us.

Their favourite resorts are the grassy plains; when out

Snipe-shooting one puts them up in the long grass every few yards. They rise with a short jerky flight, uttering a single thin penetrating alarm-note, rapidly repeated, and after hovering around, pitch some fifty yards off. Later on, when the plains are mostly under water, they take to the long grass on the low hills. On 9th October I met with a large number, including young birds, congregated together, evidently preparing to migrate, for after that date I noticed none about.

The female in breeding-plumage does not differ from the male; in both sexes the heads show traces of streaks, sometimes faint, sometimes very distinct, especially on the sides and hinder portion of crown.

Fam. PARADOXORNITHIDÆ.

21. PARADOXORNIS GUTTATICOLLIS, David.

(301.) A specimen in the Shanghai Museum was killed at Maychee, south-west of Shanghai.

22. PARADOXORNIS HEUDEI, David.

(302.) This interesting species seems to be almost confined to a few reed-covered islands on the Yangtse in the neighbourhood of Nankin. I have only visited its haunts in winter, when the dry reeds are standing in masses from ten to fifteen feet in height. Among these large parties of *Paradoxornis* are plentiful enough. They flit from one patch of reeds to another in the same way as a party of Tits, and constantly utter a rather pleasing liquid trill. Their flight is feeble, and they generally light at the foot of the reeds and jerk their way upwards, tearing away at the stem with their powerful bills; their food appears to be entirely vegetable.

23. SUTHORA WEBBIANA, Gray.

(369.) Common in large parties in the bamboo-copses and hedges of the Shanghai district.

24. SUTHORA SUFFUSA, Swinhoe.

(368.) Plentiful all up the river, frequenting copses, hedges, and scrub-covered hill-sides, especially bamboo-scrub; sometimes found in reed-beds. The fully fledged young are about in June.

Fam. Cinclidæ.

25. Cinclus pallasi, Temm.

(227.) Found on all the mountain-torrents of the larger ranges, but never on the plains or among the lower hills. They nest in March, and the young are hatched out about the middle of the month. A pair in the Lushan Hills used the same nest two consecutive years, after which some one destroyed it. It was a large mass of dry moss, lined with coarse grass, placed in an angular crevice of an overhanging cliff, about ten feet above a pool. They are interesting birds to watch, and not at all shy.

Fam. Henicuridæ.

26. Henicurus sinensis, Gould.

(426.) A common bird among the hills up to a considerable elevation; never wanders far into the plains. It frequents the rocky beds of streams, brooks, and ditches, preferring places where the cover is thick and tangled. It is by no means shy, but often difficult to catch sight of; it frequently utters a thin, long-drawn, plaintive whistle, and is more often heard than seen. They are generally found in pairs, and appear to nest in June. I obtained a young one fully fledged which had just left the nest in the middle of July; the upper parts and breast, instead of being black, were deep sooty brown, spotted with buff.

27. Microcichla scouleri (Vigors).

(428.) A much scarcer bird than the foregoing, but it is found in the gorges of the Lushan Hills, Kiukiang, in the Chin Teh Hills, some 70 miles lower down, and probably in other ranges.

Fam. Sylviidæ.

28. Pratincola maura (Pall.).

(256.) *Pratincola indica,* Blyth; Swinhoe, P. Z. S. 1871, p. 360.

Passes through in small numbers in April and May, returning in October and November.

29. Oreicola ferrea (Hodgson).

(257.) The only specimen of this southern species which I have met with was killed on the Lushan Hills in April. It breeds at Ichang, in Western China, whence old and young have been sent me in July, and it is not improbable that it also breeds occasionally on the hills of the Lower Yangtse.

30. Ruticilla aurorea (Pall.).

(260.) Arrives in the middle of October and remains into April. One of our commonest winter birds in gardens and cultivated country.

31. Rhyacornis fuliginosa (Vig.).

(262.) *Xanthopygia fuliginosa* (Vig.), Sharpe, Cat. Birds Brit. Mus. iv. p. 253.

The true position of this species has yet to be decided, but I cannot bring myself to place it among the Flycatchers, and still less in a genus which embraces such remarkably distinct forms as *X. cyanomelæna* and *X. tricolor*. It is a non-migratory species, and in nesting-habits and mode of life essentially a Rock-Chat.

Abundant on mountain-streams; nests in April.

32. Chæmarrhornis leucocephala (Vig.).

(263.) Plentiful in West China, but scarce in the Lower Yangtse. I have twice met with it in the Lushan Hills, once in April and once in November. It also strays to the east coast, for one in the Shanghai Museum was killed among the Ningpo hills in November. It may therefore be fairly included among the summer visitants, though a rare one.

33. Erithacus cærulecula (Pall.).

(339.) Scarce. Obtained at Shanghai on 28th November and at Kiukiang in December.

34. Erithacus calliope (Pall.).

(340.) I have never been able to meet with this bird, though it must pass through in some numbers in spring and autumn.

35. Erithacus cyanus (Pall.).

(344.) Passes in fair numbers in April and May.

36. Erithacus sibilans (Swinhoe).

(345.) Passes in April and May, and returns in November.

37. Phylloscopus proregulus (Pall.).

(397.) Begins to arrive early in March and soon after its sweet and powerful song is heard throughout the day from the tops of the bamboos and firs; its call-note is a loud Canary-like *hweet*. Most of them pass on by the middle of April; in October they reappear, and I have obtained one at Kiukiang as late as December.

38. Phylloscopus superciliosus (Gm.).

(396.) Abundant, arriving and leaving about the same time as the foregoing. During the last days of October I witnessed an extensive migration in the Lushan Hills. The bamboos, firs, and, in particular, the tallow-trees, were simply alive with them during the three days I spent in the hills; they were actively engaged hunting for food, and marvellously tame.

39. Phylloscopus coronatus (Temm.).

(389.) Not common; passes Kiukiang in April, and returns in August and September.

40. Phylloscopus borealis (Blas.).

(392.) Passes abundantly in April, and again in autumn from August to November.

41. Lusciniola fuscata (Blyth).

(387.) Obtained at Kiukiang in May, and abundantly in autumn from October to December. Frequents willows, reed-beds, and low bushes on the plains.

42. Lusciniola schwarzi (Radde).

(355.) *Herbivocula flemmingi*, Swinhoe, P. Z. S. 1871, p. 354.

Phylloscopus affinis, Styan, Ibis, 1889, p. 444.

The two specimens recorded by me as *P. affinis* prove to be this species in yellow autumn plumage. I have since obtained several at Kiukiang in May.

43. Acrocephalus orientalis (T. & S.).

(365.) Thousands arrive towards the end of April to breed in the reed-beds of the Yangtse, and remain till the end of October or middle of November. After the nesting is over they are not so much confined to the reeds, but may be found scattered about in copses and rough bushy ground.

44. Acrocephalus bistrigiceps, Swinhoe.

(368.) Summers at Kiukiang, and breeds in the reed-beds, but is not very plentiful. Noted from May till middle of October.

45. Acrocephalus agricola (Jerdon).

Acrocephalus agricola, Styan, Ibis, 1889, p. 444.

Summers plentifully at Kiukiang, breeding in the reed-beds.

46. Locustella certhiola (Pall.).

(360.) Passes through Kiukiang in May, and is abundant on the grassy plains in September. Round Shanghai numbers frequent the fields of ripe paddy in September, and leave early in October.

47. Locustella lanceolata (Temm.).

(363.) Obtained at Kiukiang in May and October. During the latter month they are abundant on the plains, but difficult to procure. They lie in the tangled grass, and when disturbed fly low and straight into the reeds, where they are at once hidden; they can only be fired at on the wing, and when dropped among the rank grass are most difficult to find.

48. Cettia canturiens (Swinhoe).

(352.) The Yangtse valley is probably the northern limit of this bird's winter-quarters. A few remain throughout the winter, skulking silently in the beds of dry reeds. Towards the end of March the spring arrivals pour in, and from all sides their curious loud bubbling note is heard. At this time of year they are not found in the reeds, but in hedges, bushes, and scrubby hill-sides up to an elevation of at least 2000 feet. It requires a deal of patience to obtain

specimens of any of the Cettias, as when approached they drop to the dense cover at the roots of the bushes, and will not show for a long time.

49. Cettia minuta (Swinhoe).

(353.) Obtained at Kiukiang in May, July, August, and on November 6; whether any remain through the winter I am not quite certain.

50. Cettia fortipes (Hodgson).

(383.) *Horeites robustipes*, Swinhoe, P. Z. S. 1871, p. 351. This is chiefly a hill species, and in March I have found it very plentiful over 2000 feet, as high as scrub was to be found. It is also found in the plains, but is not nearly so common there as *C. canturiens*. It has a most peculiar double call, or rather two distinct calls, which are repeated alternately at intervals of about one minute with the greatest regularity. I have never heard one cry repeated twice in succession. The first sounds like *Whē-ē-ē-ēw-teĕs-wēēt*, the second *Eē-ē-ē-ē-ē-twēē-tew*. A few individuals remain throughout the winter.

51. Cettia squamiceps (Swinhoe).

(347.) A single specimen was shot near Shanghai in summer, and is now in the Shanghai Museum.

Fam. Paridæ.

52. Parus minor, T. & S.

(402.) Very common. I have met with them on the hills up to about 1500 feet. Neither *P. cinereus* nor the intermediate form, *P. commixtus*, comes so far north as the Yangtse.

53. Parus venustulus, Swinhoe.

(407.) In 'The Ibis,' 1889, p. 444, I have made some remarks on the plumage of both sexes of this Tit. It appears to be a winter visitant only to Kiukiang, for my specimens were all procured between December and March. A series of immature birds were assuming adult plumage by a gradual moult; by the early part of March they had mostly completed it and were in full plumage.

54. Acredula concinna (Gould).

(423.) Common on the hills, especially among firs; never found on the plains. I saw a nest during the first week in April at an elevation of 500 feet. It was placed in a young fir about four feet from the ground, shaped like that of the Long-tailed Tit, compactly built of moss, dead leaves, feathers, and fir-spines, and well lined with feathers. The eggs were small, roundish, and white, nearly ready to hatch.

55. Acredula glaucogularis (Gould).

(420.) Common on the plains, low hills, and up to an elevation of perhaps 1000 feet; especially fond of fir-woods. From dissection of some shot in February I should say that they are probably early breeders.

Fam. Sittidæ.

56. Sitta sinensis, Verr.

(140.) *Sitta sinensis*, Styan, Ibis, 1887, p. 221.

Very similar to *S. cæsia*, but smaller and with a much less powerful bill.

Père David met with this species in Kiangsi, and I found it common in the Wan Shan Hills behind Ngankin in Anhwei province.

57. Tichodroma muraria, L.

(139.) Found by Père David in Kiangsi province.

Fam. Troglodytidæ.

58. Anorthura fumigata (Temm.).

(329.) The one recorded in 'The Ibis,' 1889, p. 445, is the only specimen that has been obtained in the district, but I believe I once saw one in the Lushan Hills, Kiukiang.

Fam. Motacillidæ.

59. Motacilla leucopsis, Gould.

(429.) *M. alboides*, var. *felix*, Swinhoe, P. Z. S. 1871, p. 363.

Passes through in considerable numbers in February and March, and returns again in September and October.

60. MOTACILLA OCULARIS, Swinhoe.

(432.) A partial migrant. A good number spend the winter in the district, and possibly a few remain to breed. From March to May it is very abundant, and again in October. They moult in March and are in full breeding-plumage by the latter half of April.

61. MOTACILLA LUGENS, Kittlitz.

(433.) *Motacilla japonica*, Swinhoe, P. Z. S. 1871, p. 364.

Arrives in November and leaves in April, some remaining all winter.

62. MOTACILLA MELANOPE, Pall.

(436.) Arrives at the end of March and remains until May, returning again early in September. Frequents the clear shallow streams at the bases of hills, and is seldom seen on the muddy plains.

63. MOTACILLA BOREALIS, Sand.

(439.) *Budytes cinereocapillus*, Swinhoe, 1871, p. 364.

Enormous flocks pass through at the end of April and during May, settling on the grassy plains where water is abundant. A large series out of these flocks show a gradual passage from the typical *M. borealis*, with dark head and no eye-stripe, to the typical *M. flava*, with paler blue head and a very distinct stripe; the blue of the head, however, is never quite so pale as in European examples. All the specimens examined have a yellow throat and white chin, not a white throat as in *M. cinereicapilla*. In autumn large flocks of immature birds arrive in September and October, but with the exception of one or two obtained in October and November the adults do not travel by this route.

64. MOTACILLA FLAVA, Linn.

(437.) As mentioned above, this species is found among flocks of *M. borealis* in about equal numbers.

65. MOTACILLA TAIVANA (Swinhoe).

(438.) Passes through at the same time, but is very much scarcer.

66. Motacilla citreola, Pall.

(440.) "Shanghai" (*David*); "Upper Yangtse" (*Swinhoe*).

I have not come across this species.

67. Limonidromus indicus (Gm.).

(441.) Passes along with the Wagtails in April and May in moderate numbers.

68. Anthus maculatus (Hodgson).

(445.) *Pipastes agilis*, Swinhoe, P. Z. S. 1871, p. 366.

A few remain throughout the winter, but join the spring migrants on their way north in April and May. It breeds at Ichang and possibly also on the Lower Yangtse.

69. Anthus cervinus (Pall.).

(443.) Common in the district all the winter; in March, April, and May their numbers are largely increased, and they go north to breed, returning again in October. Some specimens in winter retain the red throat and breast, others a red throat only, others show no red (young birds).

70. Anthus japonicus, T. & S.

Plentiful from October till April, its numbers increasing in spring and autumn. Fully adult birds are very scarce; on 8th April I shot one with ashy-grey upper parts, the centres of the feathers being dusky; the vinous colour of the lower parts is dim and brownish, and the breast, sides of neck, and flanks are spotted with brown.

71. Anthus blakistoni, Swinhoe.

(442.) Not common; obtained at Kiukiang and Shanghai in November and December.

72. Anthus gustavi, Swinhoe.

(446.) "Kiangsi in June" (*David*).

There is a specimen in the Shanghai Museum.

73. Anthus richardi, Vieill.

(447.) Passes through Kiukiang in April and May, and again in November.

74. Anthus infuscatus (Blyth).

(449.) I have never seen a specimen of this bird, the

A. kiangsinensis of David, and can only insert it as a resident species breeding in Kiangsi.

75. Oreocorys sylvanus (Hodgs.).

Heterura sylvana, Seebohm, Ibis, 1883, p. 262.

The single specimen recorded by Mr. Seebohm is the only one I have met with. It was shot on December 15, beside a granite-quarry on a bare rocky hill-side; it was at an elevation of about 500 feet on the Lushan Hills above Nankiang.

Fam. Pycnonotidæ.

76. Pycnonotus sinensis (Gm.).

(217.) Very abundant. In winter more or less gregarious.

They must have more than one brood, for I have taken young birds from the nest on August 11.

77. Pycnonotus xanthorrhous, Anderson.

(219.) A hill species, not uncommon. Found in flocks in winter, frequenting thick cover, usually in the neighbourhood of a stream. In habits and voice they much resemble the last species; they are fond of perching on the highest twigs of bushes or small trees, whence they utter their short song, and take little flights into the air like Flycatchers.

78. Spizixus semitorques, Swinhoe.

(223.) A hill species, plentiful on most of the ranges bordering the Yangtse up to at least 2000 feet. In suitable rough ground they penetrate a little way into the plains. In general habits and voice they resemble other Bulbuls, but must be the most stupid of the family. I have fired six or eight shots deliberately at individuals of a large flock without disturbing the remainder, and I believe I might have killed the whole party.

79. Hypsipetes amaurotis (Temm.).

(207.) A Japanese and Southern Chinese species. I have seen one shot near Shanghai, and another from the Chusan Islands.

Fam. Oriolidæ.

80. Oriolus diffusus, Sharpe.

(203.) *Oriolus chinensis*, Swinhoe, P. Z. S. 1871, p. 37

The Golden Orioles arrive with wonderful regularity abo the 24th April, and their handsome plumage and beautifu flute-like notes add a great charm to our gardens. They usually nest in the thin fork of a willow or poplar 25 or 30 feet from the ground, but I have seen a nest on the slender point of an ash in a very exposed position, only some 15 feet in height. Though they build in trees close alongside houses, they are shy birds and dislike observation.

The autumn migration takes place between the end of September and middle of October.

Fam. Dicruridæ.

81. Buchanga atra (Hermann).

(166.) *Dicrurus cathœcus*, Swinhoe, P. Z. S. 1871, p. 377.

Appears in flocks in April, and remains to breed, leaving again in October. Confined, I believe, to the plains and low foot hills.

82. Buchanga leucogenys, Walden.

(167.) Arrives in much smaller numbers in May. I believe this is a hill species, though I have seen it in our gardens occasionally.

83. Chibia hottentotta (L.).

(170.) *Chibia brevirostris*, Swinhoe, P. Z. S. 1871, p. 378.

A hill species, which arrives in considerable numbers during the last week of April. Two nests found on 10th June each contained one young bird and two eggs (one addled). Another nest, barely finished on 14th June, contained on 6th July four eggs, two nearly ready to hatch, the other two addled. All three nests were placed in the thin fork of a horizontal branch of a Liquidambar, from 15 to 20 feet above the ground, suspended below the branch, formed of black fibres woven together in a beautiful network. The eggs are oval in shape, very pale grey ground, sparsely speckled with small lilac spots; in one clutch the ground-

colour is reddish, and over the delicate lilac spots the whole surface is thickly sprinkled with reddish brown.

Fam. Campophagidæ.

84. Campophaga melanoptera (Rüppell).

(157.) *Volvocivora melaschista*, Swinhoe, P. Z. S. 1871, p. 378.

Fairly numerous from May till September.

85. Pericrocotus cinereus, Lafr.

(164.) Obtained plentifully on Lushan in April; no doubt remains to breed. One obtained in Shanghai district in May.

86. Pericrocotus cantonensis, Swinhoe.

(165.) Père David says:—"Found abundantly in Chekiang and Kiangsi in spring." I have not met with it.

87. Pericrocotus brevirostris (Vig.).

(159.) According to David this southern species is common at Pekin in spring and autumn; it must therefore pass through our district *en route*. It breeds at Ichang, where I have nestlings taken in July.

Fam. Laniidæ.

88. Lanius schach, L.

(147.) A common species, confined to the plains and very low hills. A partial migration takes place; in summer it becomes scarcer, but in September and October its numbers are largely increased.

89. Lanius bucephalus, T. & S.

(150.) A winter species, rather scarce. In a certain part of the mulberry district near Kahing a few may be seen between November and February; at Chinkiang one was shot in March, and at Kiukiang a single specimen in the same month.

90. Lanius superciliosus, Latham.

(153.) I have never met with this species, which apparently passes north by a more westerly route. David, however, states that it sometimes wanders up the east coast.

91. Lanius cristatus, L.

(152.) I have never obtained adults in Central China, but among the immature birds which pass through in autum are many rufous ones which cannot be separated from the young of this species. In spring they must follow some other route.

92. Lanius lucionensis, L.

(151.) Arrives abundantly during the first week in May. I have specimens shot in June, and very young ones in July which, there is little doubt, were bred locally. In August immature birds are very plentiful, and among them are found individuals showing all shades in the upper parts, from dull earthy brown to warm rufescent brown, as in *L. cristatus*; in fact, I cannot distinguish the two species at this stage.

93. Lanius tigrinus, Drapiez.

(149.) *Lanius magnirostris*, Swinhoe, P. Z. S. 1871, p. 375.

Arrives at Kiukiang in fair numbers in May, and remains to breed. The young are hatched out in July.

I have found this species breeding at an elevation of about 600 feet.

94. Lanius tephronotus (Vig.).

(145.) David says it is found at Shanghai, but I cannot help thinking the locality is doubtful.

95. Lanius sphenocercus, Cab.

(143.) *Lanius major*, Swinhoe, P. Z. S. 1871, p. 375.

The habitat "Southern China," given for this species in the Cat. Birds Brit. Mus., is incorrect, as it is a northern bird which only occasionally strays so far south as the Yangtse. One in the British Museum was taken near Chinkiang in January; another was obtained near Nankin by Père Heude.

Fam. Muscicapidæ.

96. Alseonax latirostris.

(192.) Plentiful in May and September.

97. Hemichelidon sibirica.

(190.) Found in both North and South China, and must pass through the Yangtse district, but I have never met with it.

98. Muscicapa griseisticta.

(191.) Passes through in May and August.

99. Muscicapa albicilla, Pall.

(187.) Obtained at Kiukiang in September and October, and one specimen in December. They had all lost the red throat.

100. Tarsiger cyanurus (Pall.).

(335.) The Yangtse Valley is probably the northern limit of this bird's winter-quarters. Large numbers pass south at the end of October and November, and return again in March, a fair number remaining all through the winter. On 3rd November I saw hundreds on the rock of Shaweishan, at the mouth of the Yangtse, so tame from fatigue that many could have been taken with a butterfly-net as they hopped about the path close to one's feet.

This bird picks up a good deal of its food on the ground among brushwood.

101. Poliomyias luteola (Pall.).

(188.) Arrives in April, leaves in May, and passes through again in October.

102. Niltava cyanomelæna (Temm.).

(180.) Arrives at end of April, when I met with numbers among the bamboos of the Lushan Hills; returns again in September. Breeds at Ichang, in W. China.

103. Xanthopygia tricolor, Blyth.

(183.) Passes with the other Flycatchers in April and May. On its return I have obtained it in August and October.

104. Xanthopygia narcissina (Temm.).

(184.) Scarce in this district, its route being by South China to Japan. One, however, was killed at Chinkiang, and near Shanghai another, which is now in the Shanghai Museum.

105. Cryptolopha affinis (Hodgs.).

(393.) *Cryptolopha tephrocephala*, Swinhoe, P. Z. S. 1871, p. 358.

I obtained a single example of this beautiful little Fly-catcher at Kiukiang 15th April: in China it has hitherto only been met with in the extreme south-west.

106. Terpsiphone incei (Gould).

(172.) *Terpsiphone affinis*, Sharpe, Cat. Birds Brit. Mus. iv. p. 350.

These birds arrive in considerable numbers in May, and a few remain to breed. They haunt the gardens in Hankow during summer, and a friend at Shanghai tells me they breed in the bamboos in his garden. *Pace* Dr. Sharpe (Cat. Birds Brit. Mus. iv. p. 350), I am convinced that Swinhoe and David were correct in stating that the fully adult males of this species assume white plumage. They can readily be distinguished from the adults of *T. affinis* by their very much slighter bill. Moreover, all the brown males and females which pass this way belong to *T. incei*, and it would be strange if we met with none but adult males of *T. affinis*.

The tail of the finest in my collection measures 15¼ inches in length.

107. Terpsiphone princeps (Temm.).

(173.) A specimen in the Shanghai Museum was killed at Shanghai on 17th May.

Fam. Ampelidæ.

108. Ampelis garrulus, L.

(201.) Appears in flocks at Shanghai in winter, but is not very common. A flock frequented our garden in the middle of the busy streets for some time in January. They would sit perched on the thin twigs at the very top of a small tree overhanging the road, so closely together that a circle of two feet diameter would cover the lot. They would remain perfectly motionless, all in the same attitude and facing exactly the same way, for hours, only dashing suddenly off at intervals with a shrill piping for a short flight. I never saw them on the ground or moving about individually, but always perched in the same manner on the same tree.

On April 4th I met with a large flock in the country, rched in a similar way in a copse behind a farm, and firing into them brought down four of this species, and six of the red-tailed *A. japonicus*, males and females in equal proportion.

The males of both species can be readily distinguished by the brighter colour of the under tail-coverts and band on the tail.

109. Ampelis japonicus (Siebold).

(202.) *Ampelis phœnicopterus*, T. & S.; Swinhoe, P. Z. S. 1871, p. 374.

Less common than the foregoing, but still occurs every winter, and, as mentioned above, mixes with *A. garrulus* in flocks.

Fam. Hirundinidæ.

110. Hirundo gutturalis, Scop.

(193.) These Swallows begin to arrive in the middle of March, and are numerous by the end of the month; they remain until the first week in November. A great many nest in the shops and huts of the towns and villages, the nests being placed within easy reach of the hand. The natives protect them, and consider their presence of good omen.

111. Hirundo alpestris, Pall.

(194, 195.) Arrives rather later than the last-named, and leaves about the same time. Not nearly so common, but still numerous enough. Also breeds in the natives' houses.

I can throw no light on the vexed question of the various subspecies of this group, and all the specimens I have examined appear to be of one species.

112. Cotyle riparia (L.).

(197.) Not very common, and I have not found their breeding-haunts, but I have seen the birds on the Yangtse in May, June, and July.

113. Chelidon lagopus (Pall.).

(200.) A specimen in the Shanghai Museum was taken on Gutzlaff Island, at the mouth of the Yangtse.

Fam. Nectariniidæ.

114. Zosterops simplex, Swinhoe.

(134, 136.) *Zosterops simplex* and *Zosterops subroseus*, Swinhoe, P. Z. S. 1871, p. 350.

Zosterops simplex, Styan, Ibis, 1887, p. 227.

A common summer species. I met with large flocks during the last days of October, when it was probably preparing to move south. A pair nested in a garden at Kiukiang in June—a small cup-shaped nest, hung in a bush about four feet from the ground. I did not see the eggs.

Mr. Seebohm has kindly shown me the type of *Z. subroseus*, and agrees with me that it is inseparable. The rosy tint on the lower parts is now invisible in the dry skin, and the specimen has no other characters to distinguish it from *Z. simplex*.

115. Zosterops erythropleurus, Swinhoe.

(135.) I have never met with this bird in a wild state, but Swinhoe says it is found from Shanghai to Pekin, and David gives its southern range as South-west China.

Fam. Fringillidæ.

116. Carpodacus erythrinus (Pall.).

(505.) A single specimen shot at Kiukiang, 19th April.

117. Pyrrhula griseiventris, Lafr.

(502.) Inserted on the authority of Swinhoe, who met with it in Shanghai in winter.

118. Fringilla montifringilla, L.

(480.) A common winter species.

119. Passer montanus, Briss.

(490.) Our common Sparrow. At the end of October 1883 I witnessed what seemed to be a migration of them among the islands off the coast. On Gutzlaff, in particular, there were thousands. About a hundred accompanied us on board from other islands, and left us to go ashore at Gutzlaff. They were very tame and hungry, as if fatigued after a journey. As food is far more plentiful on the mainland, where the rice was just being gathered, than on these rocky

slets, I think they must have been travelling birds. I have heard a Tree Sparrow singing—not very loud and not very musically, but still a proper song, and not a mere Sparrow's chatter.

120. Passer rutilans, Temm.

(491.) A hill species. Scarce. I have obtained it at Kiukiang in May and among the Chekiang Hills in March.

121. Eophona melanura (Gm.).

(500.) A common resident. Gregarious in winter.

122. Coccothraustes japonicus, T. & S.

(501.) "Shanghai to Pekin" (*Swinhoe*).

123. Chloris sinica (L.).

(487.) This bird breeds at Kiukiang, where I have obtained *young* and *old* birds in June. Most of them, however, leave in April and return in the autumn. In winter they are found in flocks all over the hills up to 2000 feet, but avoid the plains. A good songster.

124. Chrysomitris spinus (Linn.).

(485.) Found in flocks in winter as late as first week in April. Prefers hilly country.

125. Emberiza spodocephala, Pall.

(475.) Very common all the winter, arriving in October and leaving again in April. David (Ois. de la Chine, p. 330) says that a few remain to breed; but he doubtless confused this species with the following.

126. Emberiza melanops, Blyth, J. A. S. B. xiv. p. 554.

This species, which appears to be a perfectly good one, has been confused with *E. spodocephala*, and in the Cat. Birds Brit. Mus. xiii. p. 523, Blyth's name is treated as a synonym. It can be readily distinguished at all seasons by the greenish tint of the upper parts, head, neck, throat, and chest, which in the other species are grey, with a brownish wash. The breast, belly, and under tail-coverts are bright sulphur-yellow, and not, as in *E. spodocephala*, pale yellow verging into white. The females may be also distinguished by the brighter yellow tinge of the whole under surface.

E. spodocephala breeds in Siberia and winters in Chin generally, and in Nepal, whence the British Museum h specimens—types of *E. sordida*, Hodgson.

E. melanops breeds in the Yangtse Valley, where it arrives at the middle of April, and doubtless in many other parts of North China. It winters in Manipur, Tipperah, Assam, and N.E. Bengal. The British Museum has a fine series from the Hume Collection.

This bird arrives in the Yangtse Valley just when the reeds on the marshes are a few feet high, and these seem to be its favourite resort.

127. Emberiza fucata, Pall.

(469.) Breeds at Kiukiang; but its numbers are largely increased in winter, when it is one of the commonest birds on the Yangtse. It assumes breeding-plumage towards the end of March.

128. Emberiza rustica, Pall.

(468.) A very common bird in winter, especially in the mulberry districts.

129. Emberiza pusilla, Pall.

(467.) Common all the winter, arriving in October and remaining till April. Also abundant among the mulberries.

130. Emberiza tristrami, Swinhoe.

(471.) One was sent me from the rock of Shaweishan, at the mouth of the Yangtse, on 12th October. The only other time I have met with it was on April 23rd to 26th, when there were a number in one spot on the Lushan Hills, evidently on migration, as a week later they had all left. They seem to live chiefly on the ground among low scrub, and are difficult to obtain.

131. Emberiza castaneiceps, Moore.

(473.) *Emberiza ciopsis* (nec Bp.), Swinhoe, P. Z. S. 1871, p. 388.

Breeds at Kiukiang. A common bird, addicted to hilly country, though found in less numbers on the plains. It is found on the more open parts of the wooded ranges, and is

ne of the few birds which frequent the absolutely bare (except for grass) hills so common in China.

132. EMBERIZA ELEGANS, Temm.

(465.) Not uncommon in winter on hill-sides, frequenting bamboo-clumps and the rough brambly scrub around farm-clearings. A sweet songster.

Breeds at Ichang on the Upper Yangtse.

133. EMBERIZA CHRYSOPHRYS, Pall.

(470.) Not uncommon during migration in April and May. I found it abundant in the Lushan Hills at the end of October. Perhaps a few remain all winter, for I have one shot in December.

134. EMBERIZA AUREOLA, Pall.

(478.) Appears in vast numbers in the middle of April and leaves again in May. They frequent the grassy plains and the reed-beds on the marshy banks of the river. A clump of reeds with a hundred or so of these birds perched on them, their brilliant yellow breasts exposed to the sunshine, presents a very curious appearance. I don't think any remain to breed; but early in September flocks of young birds appear and frequent the paddy-fields till the end of October. Adults are much scarcer in the autumn. This bird is the "Rice-bird" of Canton residents, and, when caught in good condition, is deservedly considered a luxury.

135. EMBERIZA RUTILA, Pall.

(477.) Rather scarce; but a few pass through in April and May.

136. EMBERIZA PASSERINA, Pall.

(464.) *Schœnicola pallasi*, Swinhoe, P. Z. S. 1871, p. 389.

Abundant in the reed-beds of the Yangtse in winter. Some of the males retain a great deal of black on the throat, but not on the head.

137. EMBERIZA YESSOENSIS, Swinhoe.

Emberiza yessoensis, Styan, Ibis, 1889, p. 445.

Not uncommon in winter about Shanghai, but far less so than the last-named species.

138. Plectrophanes lapponicus (Linn.).

(463.) On 28th March I met with a large flock of this species on some open fields near Shanghai. They were very wild, and I only shot one—a male in winter plumage.

139. Padda oryzivora (Linn.).

(496.) "Shanghai" (*Swinhoe*).

I am told small flocks pass through Shanghai every autumn.

140. Munia acuticauda, Hodgs.

(495.) Large parties frequent the bamboo-copses round Shanghai and the gardens of the settlement. A pair nested in a garden in the heart of the settlement in September, the young being successfully reared in October. The nest was placed in a thorn, about 10 feet above the ground, and was a large globular construction of coarse grass and leaves, with no lining to speak of. Eggs pearly white.

The species is found on hill-ranges up to 2000 feet.

141. Munia topela, Swinhoe.

(494.) Obtained once in Kiangsi by David.

I obtained a single specimen at Kiukiang in May.

Fam. Alaudidæ.

142. Alauda arvensis, L.

Common between October and March.

Many specimens are identical with European skins; others are referable to the race *A. cantarella*; but in habits and range they are inseparable.

143. Alauda cœlivox, Swinhoe.

This species arrives in large numbers early in March and leaves again in October. The grassy plains swarm with them. They are low-flying birds, rarely soaring to any great height, and often singing on the ground. They will allow one to approach within two or three yards, and then skim along, with a slow hovering flight, a few feet above the ground.

Fam. Sturnidæ.

144. Acridotheres cristatellus (L.).

(524.) One of our commonest birds. Breeds in hollow trees, roofs of houses, &c. Nests made of small sticks, roughly lined; eggs 5, bright blue, hatch out in May. In the nesting-season these birds are very pugnacious, and desperate fights take place between two or three couples, in which the females take their part.

In winter they congregate in very large flocks, and frequent the outskirts of the villages, feeding, when times are hard, on the foulest matters. The nestlings are fed, to a great extent, on green leaves.

145. Sturnia sturnina (Pall.).

(521.) *Temenuchus dauricus*, Swinhoe, P. Z. S. 1871, p. 384.

Flocks of this bird pass through in May and again in September.

(*Note.*—In the Shanghai Museum is a specimen of *S. sinensis* labelled 26th Oct.; but there can be little doubt that this is a mistake. The occurrence of this species at all would be doubtful, and at the end of October extremely so.)

146. Spodiopsar cineraceus (Temm.).

(519.) Large flocks arrive at the end of September and in October, and remain until the end of April.

147. Spodiopsar sericeus (Gm.).

(520.) Curiously enough I have never met with this bird on the Yangtse itself, though on the south side of Hangchow Bay I have seen large flocks in winter, and David met with it as far north as Shensi province.

148. Pastor roseus (L.).

The specimen recorded in 'The Ibis,' 1889, p. 446, is still the only one known to have occurred in China.

Fam. Corvidæ.

149. Corvus torquatus, Linn.

(530.) A very common resident. They begin nesting

early in March, and probably rear two broods, for I have taken fresh eggs on 31st May. Generally seen singly or in pairs; but in winter a number will sometimes congregate together. When out shooting I have been followed for a long distance by at least thirty of them hovering close overhead, attracted by my dog. They will sometimes follow one thus for a mile.

150. Corvus levaillanti, Linn.

(528.) *Corvus sinensis*, Swinhoe, P. Z. S. 1871, p. 383.

Very common. Nests in March and April.

Bold, fearless, and noisy.

151. Corvus pastinator, Gould.

(531.) Common. Especially abundant in the cultivated delta near Shanghai. In some parts of this country, notably near Taitsan, where there are fine trees, mixed flocks of many thousands of Rooks and Jackdaws may be seen. They begin to nest towards the end of March. I have shot young birds in February which still retained a full growth of rictal bristles.

152. Colœus dauricus, Pall.

153. Colœus neglectus (Schl.).

(532, 533.) These two species, distinct in their extreme forms, interbreed so freely, and occur in so many intermediate stages, that I deal with them together. In the large flocks of Jackdaws near Shanghai *C. dauricus* predominates, but many *C. neglectus* and hybrids are included. The following are the results of three shots into different flocks :—

(1) 4 *dauricus*, 2 *neglectus*, 1 hybrid.
(2) 5 „
(3) — — 2 hybrids.

Besides these I have examined many hybrids in which the underparts show every gradation from ashy grey to almost black.

154. Pica caudata, L.

(537.) *Pica media*, Swinhoe, P. Z. S. 1871, p. 382.

Very abundant and fearless. They begin to nest in March, and by May the young are flying about.

155. Cyanopolius cyanus (Pall.).

(538.) Very abundant. In April they come into our gardens, nest in May, and the young are hatched out early in June. The nests are placed in the forks of willows and poplars, sometimes several in one tree, and much resemble those of the Common Jay; they are built of rough sticks and lined with moss and hair. The eggs, 5 or 6 in number, vary much in ground-colour—some bluish grey, some dull olive-brown, others dull stone-colour; they are spotted with two shades of brown. The birds are very bold and fearless, and in voice and habits resemble Jays rather than Magpies. In the autumn they desert the gardens, and roam restlessly about the country in large parties, constantly on the move from copse to copse, and are then rather shy of approach.

156. Urocissa sinensis (Linn.).

(539.) A common hill-bird, extending into the plains when richly wooded, as in some parts of the silk districts near Kahing. A noisy bird, with a great variety of notes. Wanders about the wooded hill-sides in large parties.

157. Garrulus sinensis, Swinhoe.

(544.) Fairly plentiful. A hill-bird, but strays sometimes into the plains. I believe it nests in April. In habits resembles our Common Jay.

Fam. Pittidæ.

158. Pitta nympha, T. & S.

(225.) *Pitta moluccensis* (Müll.); Swinhoe, P. Z. S. 1871, p. 374.

A specimen in the Shanghai Museum was taken on the Tungsha lightship outside Shanghai. One in my collection was taken at Shanghai during the autumn migration, and another was taken at the same place in October.

(To be continued.)

XXXI.—*Notes on some of the rarer Western Palæarctic Birds.* By H. E. Dresser, F.L.S., F.Z.S.

The study of ornithology has the great advantage of being practically endless, and every year opens out fresh fields to the student. Fresh material tends always to throw some new light on the subject, and however carefully an article may have been written, a lapse of a few years is sure to bring forward fresh facts rendering it necessary to largely revise, if not to re-write the information. When, in 1874, I prepared the article on *Sylvia melanocephala* in the 'Birds of Europe,' I deemed it advisable to unite with that species both *S. momus* and *S. mystacea*. In 1880 I ascertained that *S. momus* would have to be specifically separated from *S. melanocephala*, but from lack of material I decided to keep *S. mystacea* with it. Mr. Seebohm, the following year, in the Brit. Mus. Catalogue, followed my example. Since then, however, I have received three examples of the true *S. mystacea* from Dr. G. Radde, and have examined several other specimens. This fresh material has clearly demonstrated to me that *S. momus* and *S. mystacea* are specifically different. The old male of *S. momus* has the crown and nape of a very deep black, the division between the black and the grey of the back being very sharp and clear; the underparts are very white, with the very faintest vinous tinge on the abdomen, whereas the old male of *S. mystacea* has the crown and nape dull black, this colour gradually merging into the grey of the back on the nape; the chin and a line bordering the black (which extends below the eye as in *S. momus*) are pure white; the throat and breast are pale chestnut or dull vinous red, gradually fading on the abdomen to white, the flanks, however, being very pale reddish.

Sylvia momus is extremely close to *S. blanfordi*, of which only one specimen, the type, is known, and appears to differ chiefly in having the rectrices margined and tipped with white, the under surface of the tail in *S. blanfordi* being nearly black, and in having the legs yellowish brown, whereas in *S. blanfordi* they are said to be dark bluish grey,

	Culmen.	Wing.	Tail.	Tarsus.	
Sylvia momus, ♂, Jericho	0·5	2·15	2·2	0·75	Mus. H. B. Tristram.
„ „ ♀, Hebron	0·5	2·15	2·1	0·75	„ „
„ „ ♀, Damascus	0·5	2·18	2·2	0·75	„ „
„ „ ♀, Engedi	0·5	2·12	2·2	0·75	„ „
Sylvia mystacea, ♂, Lenkoran	0·48	2·35	2·1	0·75	Mus. H. E. Dresser.
„ „ ♂, Tedschen	0·5	2·3	2·2	0·75	„ „
„ „ ♂, Lenkoran	0·5	2·3	2·2	0·75	„ „
„ „ ♂, Shiraz	0·5	2·42	2·35	0·75	Mus. Brit.
„ „ ♀, „	0·48	2·3	2·2	0·75	„ „
„ „ ♂, Afghanistan	0·5	2·42	2·32	0·75	„ „
„ „ ♂, Fao	0·5	2·28	2·2	0·75	„ „
„ „ ♂, N. Africa?	0·5	2·35	2·3	0·75	„ „

and are black in the dried skin. *S. mystacea*, on the other hand, reminds one greatly of *S. subalpina* in general appearance, though it has the underparts much paler; but the whitish mystacal line is very clearly defined in both these species.

The measurements of the specimens examined are given on p. 361.

The last of the above-cited specimens is stated to have come from N. Africa, but no authority is given, and it is stated to have been purchased, so I give the locality with a query, this being the only record of *S. mystacea* having been obtained in N. Africa.

These two species differ also in the coloration of the soft parts. According to von Heuglin, *S. momus* has the legs yellowish red, the bare skin round the eye red, and the iris "*tum helvola tum lateritia.*" On the labels of Canon Tristram's specimens of this species the iris is marked as being lemon-yellow, but he does not give any further particulars. In *S. mystacea* the beak is (according to Ménétriés) brown, the lower mandible yellow on the basal half, the iris clear chestnut-red, and the bare skin round the eye yellow; the legs isabelline, and the claws black. Blanford does not state the colour of the iris, but figures it as being reddish brown; the legs are, he says, brown.

In accordance with what has been stated above, the synonymy of these two Warblers will now stand as follows, viz.:—

SYLVIA MOMUS.

Curruca momus, Hempr. & Ehr. Symb. Phys. Av. i. fol. *bb* (1833).

Melizophilus nigricapillus, Cab. Mus. Hein. i. p. 35 (1850).

Sylvia bowmani, Tristram, Ibis, 1867, p. 85.

S. melanocephala minor, Heugl. Orn. N.O.-Afr. i. p. 303 (1869).

S. melanocephala nubiæ, Licht. fide Heugl. *l. c.*

S. melanocephala, Dresser, B. of Eur. i. p. 401 (1874) (nec Gmel.).

S. momus (Hempr. & Ehr.), Dresser, B. of Eur. i. p. 407 (1880, partim).

S. mystacea, Seebohm, Cat. Birds Brit. Mus. v. p. 20 (1881, partim).

SYLVIA MYSTACEA.

Sylvia mystacea, Ménétr. Cat. Rais. p. 34 (1832).

S. rubescens, Blanf. Ibis, 1874, p. 77; Eastern Persia, ii. p. 177, pl. xii.

S. momus, Dresser, B. of Eur. i. p. 407 (1880, partim).

S. mystacea, Ménétr., Seebohm, Cat. Birds Brit. Mus. v. p. 20 (1881, partim).

So far back as 1885 I received from Malta a very fine specimen of *Falco barbarus*, and I thought that I had recorded its occurrence. But Count Salvadori, who lately examined the specimen, remarked that he had not seen any record of it; and finding that I have never mentioned the fact, I take this opportunity of repairing the omission. The specimen was sent to me by Dr. David Bruce, who was then quartered at Malta. He wrote to me stating that he had purchased it in the flesh in the Valetta market on the 22nd April, 1885, and not knowing what it was, sent it to me for identification, and kindly made me a present of it. The bird is not quite in fully adult plumage, but has the rufous nape well developed, and the underparts but slightly marked with a few dark stripes.

In 1885 the late E. F. von Homeyer described as a new species (Zeitschr. f. d. gesammte Orn. 1885, p. 185, pl. x.) a Flycatcher intermediate between *Muscicapa atricapilla* and *M. collaris*, under the name of *Muscicapa semitorquata*, and stated that this form or species was the only one found in the Caucasus, and that he had examined six specimens from there, all of which agreed closely *inter se*.

I find, on looking over my series, that I possess one specimen of this form, an adult male, from Ortakeuy in Turkey, obtained by Robson on the 6th April, 1865, which agrees exactly with von Homeyer's description and plate. It appears

to me to approach much more closely to *M. atricapilla* than to *M. collaris*, and I am somewhat doubtful as to whether von Homeyer was justified in according to it specific rank; but if, as stated by him, this form alone inhabits the Caucasus, it should at all events be regarded as a local race.

Dr. Radde ('Ornis Caucasica,' p. 286) remarks that out of more than a hundred examples of Pied Flycatchers sent to him from Lenkoran he did not find a single typical *M. collaris*, but that they differed curiously from true *M. atricapilla*, and had a peculiar tendency towards *M. collaris*. This confirms von Homeyer's statement. Moreover Dr. Radde gives a careful description of his specimens, which tends to show that, though they vary somewhat, yet they all seem to be referable to von Homeyer's *M. semitorquata*.

I cannot say whether this form is found in Persia, as the specimens of Pied Flycatchers brought back by Mr. Blanford were, as he says, in immature plumage. I have examined the series in the British Museum, and do not find any specimen referable to the present form. According to Dr. Sharpe, however (Ibis, 1891, p. 110), a specimen received from Bushire agrees with von Homeyer's description of *M. semitorquata*.

XXXII.—*On a Collection of Birds from Erzeroom.*

By H. E. Dresser, F.L.S., F.Z.S.

In 1880 my friend the late Mr. James Zohrab, who was then H.M. Consul at Erzeroom, made a collection of skins and eggs, which he sent to me soon afterwards. I made a careful examination of the collection, and drew up a list of them with notes, intending to publish it. I did not then carry out the intention, but put the list on one side. As, however, so little has been recorded relative to the ornithology of this district of Asia Minor, it may be of interest to enumerate the species obtained by Mr. Zohrab, so I give the list below; and, as I have still in my possession nearly all the specimens referred to, I have been able to examine them and to revise the notes

made upon their receipt. Unfortunately, Mr. Zohrab's eggs had been packed in sawdust, and as most of this had filtered out in transit, there were but few specimens undamaged when I unpacked them, and the salvage from the terrible wreck was indeed small. However, I managed to save a few interesting examples, which I have still in my collection. There were also many others of interest, though hopelessly damaged, and I was able to compare the pieces with perfect eggs in my collection before throwing them away.

The species represented in the series were the following :—

Turdus musicus, Linn.

Two specimens, rather pale in colour, but otherwise not differing from British examples.

Turdus torquatus, Linn.

A single specimen in autumn plumage, which agrees closely with the British form. It does not possess the broad white margins to the feathers which distinguish the form noticed by Stejneger (Proc. U. S. Nat. Mus. 1886, p. 365) as distinct from *T. torquatus* under the name *Turdus alpestris*, Brehm.

Monticola saxatilis (Linn.).

One adult female, in full plumage.

Saxicola œnanthe (Linn.).

Six specimens, all in adult plumage. This species is noted as being very numerous.

Saxicola isabellina, Rüpp.

One adult bird.

Saxicola finschi, Heugl.

Two males, in adult dress, agreeing closely with specimens obtained in the Taurus by Mr. C. G. Danford. This Chat breeds near Erzeroom, as eggs were sent by Mr. Zohrab which closely agreed with authentic eggs in my collection, but they were in such a hopelessly smashed state that I could not possibly mend them.

Pratincola rubetra (Linn.).
One adult bird.

Ruticilla phœnicurus (Linn.).
Five adult males; said to be common.

Ruticilla ochrura (Gmel.).
One adult pair; sent as "Black Redstarts," without any further remarks. It is interesting to have these specimens from the locality whence Gould described this species under the name of *Ruticilla erythroprocta*. I may here remark that in 1880 Mr. C. G. Danford gave me a couple of what he said were exceedingly fine skins of the Black Redstart, both very old males, which he had shot in Asia Minor the year before. I put them on one side, and did not embody them in my collection till some time after, and then, when I placed them in my series of *Ruticilla titys*, I at once saw that they were different, and on taking them to the British Museum I found on comparison that they agreed with Gould's types of *R. erythroprocta*. A nest and eggs were also sent by Mr. Zohrab along with the two birds above referred to, and fortunately one egg survived the general wreck, and is now in my collection. The nest is small, composed of fine rootlets and bents, with but little hair and moss, and the egg is white, closely resembling those of *Ruticilla titys*.

Cyanecula wolfi, C. L. Brehm.
Two adult males were sent, as also a nest with four eggs, which latter closely resembled eggs in my collection obtained in Germany.

Erithacus rubecula (Linn.).
One rather pale specimen, which agrees with West-European examples, and is not referable to *Erithacus hyrcanus*.

Phylloscopus trochilus (Linn.).
Two adult examples.

Motacilla alba, Linn.
One specimen, in change of plumage.

Cortacilla melanocephala, Licht.
One adult bird.

Anthus pratensis (Linn.).
One specimen.

Anthus campestris (Linn.).
One specimen, not differing from examples from Southern Europe.

Lanius collurio (Linn.).
One adult male, rather pale in general tone of colour.

Hirundo rustica, Linn.
One pair.

Petronia stulta (Gmel.).
Six specimens, all very clearly and well marked.

Montifringilla alpicola (Pall.).
Only three specimens were sent, though it was marked on the list as being very common. When, in 1876, I wrote the article in the 'Birds of Europe' on *M. nivalis* (vol. ii. p. 617) I was inclined, owing to lack of material, to look on the present as a somewhat doubtful species, but since then I have had an opportunity of examining many specimens from Turkestan besides these three from Erzeroom, and I am now convinced that the Eastern and Western forms must be specifically separated, *Montifringilla alpicola* having the crown and nape dull brown instead of ashy grey. This difference is very well shown in Dr. Radde's plate in his recently published work on the birds of the Caucasus ('Ornis Caucasica,' taf. viii.). Compared with specimens from Turkestan, these examples from Erzeroom agree very closely, but are, if anything, rather paler in tone of colour.

Fringilla cælebs, Linn.
One adult female.

Linota cannabina (Linn.).
One old male, rather brighter in colour than average European specimens.

Linota brevirostris, Gould.

This bird must be very common near Erzeroom, as specimens were sent, nearly all of which were in full breeding dress, also several nests with eggs, one clutch of which fortunately arrived in good condition, and is now in my collection.

Erythrospiza sanguinea (Gould).

Although this bird was marked as being common, only three specimens were sent, along with a nest with eggs. But these latter were so broken that I was unable to patch up a single one to add to my collection.

Emberiza miliaria, Linn.

Two specimens.

Emberiza citrinella, Linn.

Three specimens.

Emberiza hortulana, Linn.

One female only.

Alauda arvensis, Linn.

One specimen.

Melanocorypha calandra (Linn.).

One adult bird.

Otocorys penicillata (Gould).

Said to be common. Five specimens, closely agreeing with others in my collection from Turkestan, were sent, and also a nest with four eggs, which, however, were hopelessly smashed.

Sturnus purpurascens, Gould.

Several specimens, together with more than a dozen eggs, were sent. The eggs were fortunately nearly all uninjured.

Corvus monedula, Linn.

Two specimens, closely resembling examples from Western Europe, but having the collar rather whiter, and being somewhat smaller in size.

Corvus frugilegus, Linn.
Cyselus apus (Linn.).
Iynx torquilla, Linn.
Upupa epops, Linn.
} One specimen of each of these birds.

Bubo ignavus, Forst.
One rather large and pale specimen, probably a female, but the sex was not marked.

Athene glaux (Savigny).
One pale specimen.

Circus æruginosus (Linn.).
Two females, together with several eggs.

Aquila mogilnik (Gmel.).
One nearly adult specimen.

Falco tinnunculus, Linn.
One female.

Ardea purpurea, Linn.
One immature bird.

Nycticorax griseus (Linn.).
Two adults and one young bird.

Tadorna casarca (Linn.).
One male and several eggs.

Chaulelasmus streperus (Linn.).

Fuligula ferina (Linn.).

Erismatura leucocephala (Scop.).

Porzana maruetta (Leach).

Grus virgo (Linn.).

Glareola melanoptera, Nordm.

Vanellus vulgaris, Bechst.

Gallinago major (Gmel.).

Gallinago cœlestis (Frenzel).

Totanus calidris (Linn.).

Sterna fluviatilis, Naum.

Podiceps cristatus (Linn.).

Podiceps griseigena (Bodd.).

Podiceps nigricollis (C. L. Brehm).

Of the last fourteen species one specimen only of each was sent, with the exception of *Podiceps griseigena*, of which there were a pair of adult birds and several eggs. There were also eggs of *Podiceps nigricollis* sent, but all of them were broken. All the specimens were stated to have been obtained in the neighbourhood of Erzeroom, but no notes accompanied the collection, and merely a list, on which several species were marked as being common, was appended.

XXXIII.—*On a Collection of Birds from Western Szechuen.*

By Henry Seebohm.

Mr. A. E. Pratt has lately returned from an entomological expedition to the Chinese frontiers of Thibet, and has brought with him a small collection of birds, chiefly from a locality 13,500 feet above the sea-level, a little to the west of Ta-chien-lu, about 30° north latitude and 102° west longitude, ten days' journey south-east of Moupin, where l'Abbé David made so many interesting discoveries.

Although there are no novelties in the collection, there are examples of several species of great interest.

Merula kessleri.

There are four males and two females in the collection, whence it may be inferred that this fine Ousel is not uncommon in Western Szechuen. There is no example of *Merula gouldi* in the collection, which is rather remarkable, as l'Abbé David did not find *Merula kessleri* in either China or Thibet, but states that *Merula gouldi* was very common both in Western Szechuen and in Eastern Thibet. I have examples of both these species collected by General Prjevalski in Kansu. Mr. Pratt's examples were all obtained amongst

the pines and rhododendrons above Ta-chien-lu, about 13,000 feet above the sea-level.

MERULA RUFICOLLIS.

There are two examples in Mr. Pratt's collection which are only referable to this species. They have much rusty-red on the breast and tail, but none on the back or flanks.

GRANDALA CŒLICOLOR.

There are several examples of this species in the collection. It lives on the rocks close to the limit of perpetual snow, and only descends to 8000 feet during exceptionally severe snow-storms. It is an insect-eating bird, and is said to look exactly like a Swallow on the wing.

NILTAVA SUNDARA.

There is one example of this species in the collection. Mr. Pratt picked it up dead near a glacier 16,000 feet above the sea.

PYRRHOCORAX GRACULUS.

An example in the collection measures 12¼ inches in length of wing from carpal joint, 2 inches in length of bill from frontal feathers, and 2·2 inches in length of tarsus. These may be regarded as typical measurements, rather larger than the form usually found in the extreme west of the Palæarctic Region (wing 10¾ to 12 inches), or than that found in the extreme east of that region (wing 10¾ to 12 inches), but not quite so large as those that are sometimes found in the intervening district from Asia Minor across Afghanistan and Turkestan to the Himalayas (11 to 13¼ inches). It seems probable that when larger series have been examined neither the supposed large rare *Pyrrhocorax graculus himalayanus* (Gould), nor the supposed small race, *Pyrrhocorax graculus brachypus* (Swinhoe), will be maintainable. Dr. Sharpe is in error in giving the name *Fregilus graculus*, var. *orientalis*, precedence over that of Swinhoe. It was not given by Dybowsky (J. f. Orn. 1868, p. 332), as stated by him in the third volume of the 'Catalogue of Birds in the British Museum,' but four years later by Taczanowski (J. f. Orn. 1872, p. 454).

Mr. Pratt found the Chough near two lakes which he discovered above Ta-chien-lu about 16,000 feet above sea-level. They appeared to be breeding in some caves in the rocks, within sight of a large glacier.

CORVUS PASTINATOR.

There is an immature example of this species in the collection. It agrees in every respect with adult examples of the species from China and Japan, except that it still retains the feathers which cover the nostrils.

PARUS BEAVANI.

There is an example in the collection of this miniature of *P. rufonuchalis*. It was common in the forests about 13,000 feet above the sea-level, and bred in holes in the trees. The eggs resemble those of *Parus cristatus*.

TROGLODYTES NIPALENSIS.

Mr. Pratt found a nest of this Wren near his camp (13,000 feet) in a stump of a rotten tree. The nest was domed, and the eggs do not differ from those of *Troglodytes parvulus*.

TICHODROMA MURARIA.

There is an example of this species in the collection in adult summer plumage. In young in first plumage of the Wall-Creeper, whilst the bill is rather short, and before it has become much decurved, the throat and upper breast are grey, almost as dark a grey as the lower breast and belly. The crown is almost as dark as it is in summer plumage. It appears that the immature plumage is retained during the first winter. Mr. Dresser in his 'Birds of Europe,' and Dr. Gadow in the 'Catalogue of Birds,' describe the plumage of the young as similar to that of the adult in winter, which is certainly not the case.

LANIUS ERYTHRONOTUS.

There is an example of this species in the collection.

PERICROCOTUS BREVIROSTRIS.

There is an example of this species in the collection.

POMATORHINUS GRAVIVOX.

There are two examples in the collection of this very distinct species, which was described in 1873 (David, Ann. Sc. Nat. xviii. Art. v. p. 2), and figured in 1877 (David et Oustalet, 'Les Oiseaux de la Chine,' pl. 49).

When Mr. Wardlaw Ramsay wrote his monograph of the genus *Pomatorhinus* (Ibis, 1878, p. 143) he had had no opportunity of examining an example of *P. gravivox*, otherwise he would never have united it with *P. macclellandi* from Assam, nor would Dr. Sharpe have repeated the error in the seventh volume of the 'Catalogue of the Birds in the British Museum.'

I have already had occasion to point out how absolutely distinct *P. swinhoei* is from *P. erythrocnemis* (Proc. Zool. Soc. 1890, p. 342). I have now much pleasure in vindicating the character of another of the species of l'Abbé David, and of pointing out its true affinities. It may be somewhat closely allied to *P. swinhoei* and *P. erythrocnemis*, but is quite distinct from both of them, and differs still more widely from *P. macclellandi*.

It differs from its Assam ally in many ways, but the two points which catch the eye at once are its much larger size and the blackness of the spots which are so conspicuous on its breast. It is one of the largest species in the genus: wing 3·7, tail 4·6, culmen 1·4, and tarsus 1·4 inches. In the colour of its upper parts it certainly does resemble *P. macclellandi*, but there the resemblance ceases. In the colour of its underparts it resembles *P. erythrocnemis*, except that the throat is nearly white and the lower throat and upper breast are spotted with nearly black.

So far as is known, there are only three species of *Pomatorhinus* which combine the two characters of having no white eye-stripe, but possessing nearly black pectoral spots. As *P. swinhoei* was omitted by accident from the key to the species of its genus in the Catalogue of the Birds in the British Museum, I append diagnoses of these three species, which scarcely differ in size:—

Pomatorhini pectore maculis nigris ornato; superciliis haud albis:

- dorso castaneo; pectoris lateribus et tibiæ plumis canis ..... *swinhoei*.
- dorso rufo-brunneo; pectoris lateribus et tibiæ plumis brunneis.... *erythrocnemis*.
- dorso cano-brunneo; pectoris lateribus et tibiæ plumis castaneis ..... *gravivox*.

It is rather curious that the Formosan species should be intermediate between that found on the mountains of North Fokien and that inhabiting the mountains of the Upper Yang-tze; but as it is only found in Formosa at an elevation of at least 2000 feet, it may enjoy a climate intermediate between those inhabited by its two allies.

Mr. Pratt found it about 10,000 feet above the sea, amongst the rhododendrons.

Trochalopteron elliоti.

An example in the collection agrees with specimens collected by General Prjevalski in Kansu. Mr. Pratt found it about 10,000 feet above the sea in company with the following species.

Leucodioptron chinense.

Mr. Pratt found this bird very common at about 10,000 feet above the sea-level.

Coccothraustes carneipes.

There is an example of this species in the collection.

Carpodacus dubius.

There are two males of this species in the collection, which resemble two males collected by General Prjevalski in Kansu. I have three females from the latter locality. This sex appears to have been unknown to Dr. Sharpe when the twelfth volume of the 'Catalogue of Birds in the British Museum' was written. They resemble the females of *C. thura* in having the rump and most of the upper tail-coverts suffused with yellow, but they differ from them in not having the throat and breast suffused with buffish brown.

The males of *C. dubius* and *C. thura* are so much alike that were it not for the difference between the females they could

scarcely be regarded as distinct. When carefully compared it appears that the male of *C. dubius* is somewhat greyer in the brown of its upper parts, and slightly deeper in the red of its underparts.

I am inclined to think that *C. thura* is confined to the Himalayas, and that the pair of birds which l'Abbé David obtained in Western China, and identified as *Propasser thura*, ought to have been referred to *C. dubius*.

CARPODACUS RUBICILLOIDES.

A female of this species in the collection agrees with other females collected by General Prjevalski in Kansu. The rump is not suffused with either red or yellow; most of the feathers have a broad dark shaft-streak, which is conspicuous on the underparts, including the flanks and under tail-coverts, and on the upper parts except on the rump and upper tail-coverts, where it is very obscure. This brings us down to the bottom of page 390 in Dr. Sharpe's key to the species in the twelfth volume of the 'Catalogue of Birds in the British Museum,' where it completely breaks down. *C. roseipectus* has probably been inserted by accident, as it belongs to the smaller group on the next page, and brings the key to a premature end, where it now stands. The characters which follow are of no value: "wing over 3·6 inches" will not include any female of *C. grandis* in my collection, and does not include the female of *C. rhodochlamys* described in the Catalogue. I quite agree with Dr. Sharpe (*op. cit.* p. 407) where he says that the female of *C. rhodochlamys* is not distinguishable from that of *C. grandis*, and consequently I disagree with his assertion (*op. cit.* p. 391) that the former differs from the latter in having the rump streaked with blackish brown. The nearly uniform rump is characteristic of *C. ruticilla* and *C. severtzovi*, which differ from each other in their under tail-coverts, the former species having very broad and the latter very narrow dark centres to these feathers. These two species are larger (wing $4\frac{1}{2}$ to $4\frac{1}{4}$ inches); *C. rubicilloides* occupies a medium position (wing $4\frac{1}{8}$ to $3\frac{7}{8}$ inches); whilst *C. grandis* and *C. rhodochlamys* are smaller (wing $3\frac{5}{8}$ to $3\frac{3}{8}$ inches).

ÆTHOPYGA DABRYI.

Mr. Pratt's collection contains a male of this pretty little Sun-bird, the type of which was collected on the hills above Ta-chien-lu by Monseigneur Chauveau, and was sent by him to M. Dabry, after whom it was named (*cf.* Sclater, Ibis, 1870, p. 296).

It was got at Ta-chien-lu, where it is said to come every year when a certain plant is in flower about May, but as soon as the flower is over to leave and breed in some other locality.

PICUS CABANISI.

There is an example of this species in the collection. There is very little white on the tertials, and consequently it must be referred to the race which is most abundant in South China, and which, as it was described first, must be regarded as the typical race. In North China a form occurs which differs from *Picus cabanisi* in the same manner that *Picus major japonicus* differs from typical *Picus major*. In both cases the typical forms have little or no white on the tertials, whilst in the allied races these feathers have broad white bars across them. In both cases the two forms completely intergrade.

PICOIDES FUNEBRIS.

An example of this species, which is otherwise only known from the type in the Paris Museum, is perhaps the most interesting bird in the collection ; it is an adult male. The type is a young male, and was obtained by l'Abbé David at Moupin. The adult differs from the young in having the brown on the underparts replaced by black, with here and there a short streak of white in it.

The Three-toed Woodpecker ranges from Scandinavia to Kamtschatka, extending north of the Arctic Circle in Siberia and down to the Italian Alps in Europe and to Turkestan and Manchuria in Asia. Like many other birds of which the breeding-range extends across the Palæarctic Region, it is represented by a more or less central pale race where the mean temperature during the moulting-season is lowest, and

by an Eastern and a Western dark race where it is highest. The typical race from Scandinavia is, unfortunately, an intermediate form between the arctic race from Siberia, *Picoides tridactylus crissoleucus*, and the western subtropical race from Switzerland, *Picoides tridactylus europæus*. These three races completely intergrade, and are consequently only subspecifically distinct. It is impossible to say whether the eastern races also intergrade. I have never seen an example from Mantchuria, nor have I ever heard of examples having been procured in North China or South-east Mongolia.

Picoides funebris must be provisionally regarded as specifically distinct. It is possible that the intermediate forms between it and the typical form have become extinct; it is more probable that they survive, but have not yet been obtained.

The Eastern and Western forms of the Three-toed Woodpecker differ considerably from each other. It is not known that any of the Old-World forms of this bird differ structurally from each other in any way. In *P. funebris* there is less white on the back than in *P. europæus*, and much less than in *P. crissoleucus*, and the white feathers are not crossed as they are in Swiss birds by a subterminal black band. The same difference also applies to the underparts. In typical examples of *P. crissoleucus* the underparts are white, with an occasional tiny streak of black. In *P. funebris* the underparts below the throat are black, with an occasional tiny streak of white. In *P. europæus* the underparts below the throat are black, with large white spots on each side of the feather, which sometimes meet and make a white bar. The fact that young in first plumage of *P. crissoleucus* and of *P. europæus* are more marked with black on the underparts than adults are, whilst those of *P. funebris* are less so, points to a somewhat intermediate common ancestor.

Mr. Pratt's example was obtained amongst the pines and rhododendrons, 13,000 feet above sea-level.

Gecinus guerini.

An example of this species in the collection has the front half of the occiput crimson, the hind half grey striped with black, and the nape black. It therefore belongs to the

typical form and not to the Formosan subspecies *Gecinus guerini tancola*, typical examples of which have much more black on the crown.

It only occurs up to 5000 or 6000 feet above sea-level.

ARDEA PRASINOSCELES.

There is a nearly mature example of this species in the collection, which was collected about 10,000 feet above the sea.

IBIDORHYNCHUS STRUTHERSI.

There is a slightly immature example of this species in the collection. It was found on marshy ground near one of the lakes, about 14,000 feet above the sea.

SCOLOPAX RUSTICULA.

A Woodcock in the collection does not differ from European examples. It ranges from 10,000 to 12,000 feet above the level of the sea during the breeding-season.

SCOLOPAX SOLITARIA.

Five eggs from the pine-forests above Ta-chien-lu agree exactly with eggs of this species in the Hume collection from Native Sikkim.

GALLICREX CRISTATUS.

There is an example of this species in the collection. It frequents reedy places up to 13,000 feet above the sea.

CROSSOPTILON TIBETANUM.

There is an example of this species in the Swinhoe collection which was sent from Moupin by l'Abbé David. It agrees in every particular with seven examples brought from Western Szechuen, but they all differ from Hodgson's type in the British Museum in having no trace of a white patch on the outer tail-feathers. On the other hand they differ from the descriptions and figures of *Crossoptilon drouyni*, which was sent to the Paris Museum from Moupin by M. Dabry, the French Consul at Hankow, in having much less grey and much more dark brown bronzed with purple and green on the remiges and rectrices. David and Oustalet regard these

differences as questions of age and sex, but among the eight examples in my collection I see no difference of any kind (though some have very large spurs, and others very small rudiments of these appendages) except that in one of them (with scarcely the rudiment of a spur) there is scarcely any purple (only green) gloss on the tail-feathers. It is also worthy of remark that the white patches on the outer rectrices of Hodgson's type are much more developed on one side than on the other.

There is no reason to suppose that Hodgson's type came from the Himalayas. Nothing whatever was known of its locality beyond the fact that it was brought to the capital of Nepal by the Nepalese envoys to Pekin on their return journey, and was believed to be from Thibet.

This bird lives in the pine-forests from 10,000 to 12,000 feet above sea-level. They are gregarious birds, and 40 or 50 may be found roosting in company on the pine-trees.

Five eggs vary in size from 2·42 inches by 1·7 to 2·3 inches by 1·72. In colour they resemble eggs of *Perdix petrosa*.

CERIORNIS TEMMINCKI.

Three examples of this curious bird show the wattles extended to their full length, as they are only to be found during the breeding-season. It is a ground species, hiding in the jungle under the pine-trees. It is not known to occur under 10,000 feet above the sea.

LOPHOPHORUS LHUYSI.

There are two examples of this remarkably handsome bird in the collection, but unfortunately one of them is without a head. Along with *Grandala cœlicolor* it is found at a higher altitude than any other species. It is especially fond of the root of a bulbous plant called pey-mon (*Fritillaria roylii*), which it digs out of the ground on the rocky moors near the limit of perpetual snow, about 16,000 feet above the sea-level. They roost on the stunted rhododendrons, or descend to the pines.

PUCRASIA XANTHOSPILA.

There is an example of this species in the collection, but from the abraded condition of its wings and tail it seems to have been a cage-bird. It was brought in by a Thibetan to the camp, 13,000 feet above sea-level, but Mr. Pratt did not meet with it alive.

THAUMALEA AMHERSTIÆ.

There are two male Lady Amherst's Pheasants in the collection. These handsome birds live amongst the bamboos in the open spaces in the forests from 10,000 to 12,000 feet above the sea. Below the Ichang Gorge this species is replaced by the Golden Pheasant (*Thaumalea picta*).

PHASIANUS DECOLLATUS.

Of all the true Pheasants this is perhaps the rarest in collections, but in Ta-chien-lu it is the commonest. Mr. Pratt has brought home two examples, but unfortunately they are to all appearance not quite thoroughbred. A few of the feathers on the hind neck are crossed by a terminal or subterminal white band. The type in the Swinhoe collection does not show any trace of white on the neck, but in typical examples of *Phasianus torquatus* there is a broad band of white completely round the neck, which is broadest on the fore neck.

Below the Ichang Gorge, *Phasianus torquatus* is common, but above its place is taken by *P. decollatus*. The latter frequents the grassy slopes on the spurs of the mountains up to 9000 feet. In confinement Mr. Pratt observed that it always roosts on the ground. It is found in the brushwood, but avoids the forests.

LERWA NIVICOLA.

There is an example of this species in the collection. It has generally been supposed to live on the heathy moors near the limit of perpetual snow, but Mr. Pratt found it in the forest not more than 5000 feet above the sea. When put up in the open it made for the forest and sought shelter under the rhododendrons.

ITHAGINIS GEOFFROYI.

There are a pair of these birds in the collection. Mr. Pratt procured a clutch of seven eggs from a nest on the ground under the brushwood in the forest, 13,500 feet above the sea. It is a very common bird, and alights and probably roosts in the pine-trees. The eggs vary in size from 2·05 inches by 1·3 to 1·85 by 1·32 inch; in colour they resemble handsome eggs of *Tetrao tetrix*.

XXXIV.—*On British Fossil Birds.* By R. LYDEKKER, B.A.

OWING to the absence in the British Isles of strata corresponding to the freshwater Miocene beds of France in Gers, Allier, and the Auvergne, in which well-preserved bird-remains are of such common occurrence, the list of fossil birds found in this country is comparatively small. The total number of species recorded, indeed, is only slightly over 60; and since some 45 of these belong to existing species, of which the remains are found in caverns, the fens, and other superficial deposits, the list of extinct forms sufficiently well described to be admitted as valid ones falls short of 20. It must not, however, on this account be presumed that the subject of British Fossil Birds is one of only slight interest or importance. Indeed, the very reverse of this is the case, for while the existing species the remains of which occur in the superficial deposits afford some interesting information in regard to geographical distribution, the extinct species found in the London Clay belong either to types totally unknown elsewhere, or represented abroad by kindred but distinct genera. Again, the little that is yet known of the extinct birds of the Upper Eocene beds of Hordwell, in Hampshire, indicates that we have there an avian fauna which contains types at present unknown in the corresponding strata of the Paris basin. Unfortunately the bird-remains from these Hordwell beds are comparatively rare, are frequently very imperfect, and are distributed through several museums, so that the means of comparison and the consequent determi-

nation of the affinities of their owners are matters of some difficulty. There is moreover, doubtless, much to be done in collecting bird-bones from these deposits, and also in recording where specimens already collected are preserved; and one of the results of the present article may be to direct attention to these points.

Since so few ornithologists have that intimate acquaintance with those minute osteological differences in birds which are essential for the determination of fossil specimens, it is somewhat difficult to write an article on the subject of fossil birds, which shall not be, on the one hand, an elementary treatise on avian osteology, or, on the other, burdened with technical expressions and terms, the meaning of which will be found difficult to comprehend. Bearing in mind this difficulty, it has been thought best to avoid osteological descriptions as much as possible—merely pointing out, when required, some of the more striking features by which particular bones of certain groups may be recognized. While on this subject, attention may, however, be directed to the imperfection of all collections of avian osteology, the best of them only having skeletons of a certain number of species of a larger or smaller number of genera. This deficiency—which is especially noticeable in the Anseres—renders it absolutely impossible to determine specifically a considerable number of bird-bones obtained from the British Pleistocene deposits; and this impossibility will continue until our national collection obtains skeletons of all the larger birds, not only of the British Isles, but also of the greater part of the Palæarctic region.

A further difficulty in the study of fossil birds should not be passed over without a brief notice. This difficulty lies in the circumstance that the osteological differences by which the "long-bones" of most of the groups of existing birds are separated from one another are so slight and trivial that when we come to extinct genera it is frequently well-nigh impossible to determine how much value we should attach to the differences we may observe in these bones, in regard to the affinities of their owners to existing types.

In the present survey of our knowledge of British Fossil Birds it will be convenient to take them in their geological sequence, commencing with the superficial deposits, and ending with the Cambridge Greensand—the lowest English horizon from which bird-remains have yet been obtained. References to genera and species hitherto described will be found in Woodward and Sherborn's 'Catalogue of British Fossil Vertebrata,' and in the writer's 'Catalogue of Fossil Birds in the British Museum.'

I. Birds of the Superficial Deposits.

Under this heading we may include all the fossiliferous deposits down to the Norwich Crag, which is of uppermost Pliocene age; the so-called Forest-bed, which some authorities refer to the Pleistocene, and others to the Pliocene, being included in the present section. The deposits thus included comprise the fens of Cambridgeshire, Lincolnshire, &c., some portions of which probably belong to the historic period, while the lower beds are doubtless prehistoric, and still older ones of Pleistocene age. The turbaries of Walthamstow, Essex, which have furnished remains of Red Deer and other Mammals not now found in that district, apparently indicate a horizon not far removed from that of some portion of the fen-deposits. Then, again, we have the numerous cavern-deposits, where bird-remains are found in association with those of the Mammoth, Woolly Rhinoceros, and Cave-Hyæna; also the brick-earths of the Thames Valley at Grays, Ilford, and elsewhere, where the same Mammals also occur. At various places on the coast of Norfolk, such as Palling and Mundesley, there occur superficial deposits yielding bird-remains, some of which should probably be referred to the recent, and others to the upper part of the Pleistocene period; the above-mentioned Forest-bed being on a lower horizon.

So far as can be determined, with one exception, all the remains of birds obtained from the deposits mentioned above appear to be referable to existing species. When, however, we bear in mind the slight differences between the bones of

many existing species of birds, and also recollect that many of the Mammals of the Pleistocene period are extinct, the suggestion arises that if these fossil birds were before us in their flesh and feathers some of them would present differences from their living representatives which might entitle them to rank as distinct species. Still, however probable this idea may be, our only course is to take the evidence as it is presented to us; and this is to the effect that no differences of specific value can be detected between the bones of the British Pleistocene birds and those of the present day.

In treating of the birds of the superficial deposits (and likewise when we come to those of the older horizons) it will be convenient to consider them in natural sequence under their respective groups.

Passeres.—The list of fossil Passerines is very short, and presents nothing interesting from a distributional point of view. An ulna of a small bird from the celebrated cave of Kirkdale, in Yorkshire, figured in Buckland's 'Reliquiæ Diluvianæ,' has been referred to the Lark (*Alauda arvensis*); but it may be questioned whether such a specimen is sufficient to admit of the determination of the genus and species, and, in any case, there is no definite information as to the horizon from which it was obtained. From a cave at Knockninny, in Ireland, the Rev. Professor Haughton records a skull of the Starling (*Sturnus vulgaris*). The three remaining species all belong to the *Corvidæ*. Of these, several bones of the Raven (*Corvus coraæ*) have been obtained from a cave at Shandon, near Dungarvan, Co. Waterford, Ireland; but whether they came from the same horizon as the one yielding teeth and bones of the Mammoth does not appear certain. An ulna of the same species from Kirkdale cave is figured by Buckland in the work already cited; while a femur referred to the same bird has been mentioned by Mr. J. A. Smith as having been obtained from superficial deposits in Linlithgowshire. The bones of the Raven, it may be observed, are easily distinguished from those of all other Passerines by their superior size; but agree with those

of other members of that group in their general characters. Thus the coracoid may be recognized by its length and slenderness, the small subclavicular process, without a perforation at its base, and the descending hook-like process from the head. The humerus is a very characteristic bone, having a forked ectepicondylar tuberosity at its lower end near the radial condyle, and a minute tubercle on the middle of the palmar surface of the same, just above the condyles. The tibia may be recognized by the width of the gorge separating the equal-sized and everted condyles on the anterior surface of the lower extremity, in the middle of which is a small depression for the attachment of the articular ligament. Part of a smaller tibia presenting the above characters from the superficial deposits of Palling, Norfolk, belongs to the Crow (*C. corone*=*C. cornix*); whilst the former existence of the Chough (*Pyrrhocorax graculus*) in Yorkshire is proved by an ulna from Kirkdale cave preserved in the British Museum. Of late years the nearest localities to Yorkshire where the Chough has been recorded are the neighbouring counties of Cumberland and Westmoreland.

Striges.—The leg-bones of the Owls are so easily recognized that there is no possibility of confounding them with those of any other birds except *Pandion* among the Accipitres. Thus the tibia is peculiar among European birds in having no bony bridge over the grooves for the extensor tendons on the anterior surface of the lower end. Again, the tarso-metatarsus is comparatively short and wide, with the lower part of the front of the shaft convex, and a deep depression on the upper part of the same; the hinder surface being deeply channelled, and the three distal condyles reaching to nearly the same level, and arranged in an arch. In the tarso-metatarsus of all the larger species there is (as in *Pandion*) a bony bridge over the inner half of the large superior depression on the front surface. The only two Owls hitherto recorded from British strata are the Eagle Owl and the Snowy Owl. The Eagle Owl (*Bubo ignavus*), now so rare in England, is represented by an incomplete tarso-metatarsus from the Norfolk Forest-bed; this bone being com-

paratively long in *Bubo*. In the Snowy Owl (*Nyctea scandiaca*) the tarso-metatarsus is much shorter. An entire specimen of this very characteristic bone has been obtained from Kent's Hole cavern, near Torquay, and is preserved in the British Museum. A living example of this bird has once been recorded from Devonshire; but the occurrence of its remains in the caverns of France shows that the southern limits of its normal range were formerly much lower than is now the case.

Accipitres.—In the Old World Accipitres, exclusive of the Owl-like *Pandion*, the tarso-metatarsus differs from that of the Striges by the flatter plane in which the distal condyles are placed; and also by the absence of the bony bridge over the outer part of the depression at the upper end of the front surface. The tibia likewise differs in the marked flattening of the lower end, and in the presence of a bony bridge over the groove on the anterior face of the same; the front surfaces of the lower condyles being but very slightly prominent. The Pleistocene representatives of this group are three or four in number. The largest of these is represented by a terminal claw of the first or second digit of the foot obtained by Colonel Wood from a cave at Gower, in Glamorganshire, and presented by him to the British Museum. This specimen was obtained in company with remains of extinct mammals, and appears to have belonged either to the Golden Eagle (*Aquila chrysaëtus*) or to an equally large species. The superficial deposits of Walthamstow, Essex, have yielded the left tibia of a species of *Haliaëtus*, which, while differing in several respects from the corresponding bone of the European White-tailed Eagle (*H. albicilla*), comes so close to that of *H. pelagicus*, of Siberia, as to indicate that it belongs either to that or to a closely related species. Assuming this reference to be correct, it would appear to be a more marked instance of the southward extension in Pleistocene times of northern species than the one already alluded to under the head of the Snowy Owl. From a cave at Berry Head, near Torbay, Sir R. Owen, on page 558 of his 'British Fossil Mammals and

Birds,' mentions bones of an Accipitrine rather larger than the Peregrine Falcon; nothing is, however, known as to what has become of these specimens, and nothing can, therefore, be predicated as to the species to which they belonged, although it is quite possible that they should be referred to the Buzzard. Satisfactory evidence of the existence of the last-named species (*Buteo vulgaris*) in the Pleistocene of Devonshire is afforded by three specimens in the British Museum from Brixham cave, near Torquay. One of these specimens is an imperfect sacrum and pelvis, which exhibits the sudden deflection of the hinder part of the ilia so characteristic of the Accipitres.

Steganopodes.—In this group the most remarkable feature in relation to the British superficial deposits is the occurrence of a species of Pelican in the Norfolk fens, as shown by an imperfect immature humerus in the Woodwardian Museum at Cambridge. Pelicans, it need scarcely be said, are unknown to the existing British fauna, the few individuals that have reached our shores having been blown thither. This explanation, as M. Milne-Edwards remarks in his classic work on fossil birds, will, however, not serve in the case of the Norfolk Pelican, since the humerus by which it is known indicates a bird too young to have performed such a long flight. We are, therefore, compelled to regard this Pelican as indigenous to England, and since the humerus in question is larger than that of *Pelecanus onocrotalus*, and when adult would have attained still more considerable dimensions, there is a possibility that it indicates a peculiar species*.

Few bird-bones are more characteristic than the coracoid of the genus *Phalacrocorax*, in which the shaft is very slender, the subclavicular process approximated to the head, the intermuscular ridge on the anterior surface very pronounced, and the sternal extremity with a distinctive "tenon-and-mortise" articulation. A coracoid of this description from the Pleistocene brick-earth deposits of Grays, in Essex, is

* For a description of the type specimen see A. Newton, Proc. Zool. Soc. 1868, p. 2, and 1871, p. 702.

preserved in the British Museum, and, since it is indistinguishable from the corresponding bone of the Common Cormorant (*P. carbo*), has been referred by M. Milne-Edwards to that species. The proximal extremity of a coracoid from the Norfolk Forest-bed is considered by Mr. E. T. Newton as sufficient evidence of the existence of the Cormorant at that still earlier epoch. Remains of the Cormorant are also recorded by Mr. S. Laing from "kitchen-middens" in Caithness, which have likewise yielded bones of the Shag (*P. graculus*) and of the Gannet (*Sula bassana*).

Herodiones.—The only remains of this group from British superficial deposits are a few bones of the Bittern (*Botaurus stellaris*) from the Cambridgeshire fens, figured in the great work of M. Milne-Edwards. Among these are a humerus and a tarso-metatarsus; the former of which exhibits the characteristic slenderness and slight expansion of its extremities distinctive of the *Ardeidæ*; while the latter, besides exhibiting the comparatively long and slender shaft, large proximal talon, and the disposition of the three distal trochleæ on nearly the same horizontal line, which are characteristic of the Heron family, also shows the relative shortness and stoutness by which the metatarsus of the Bittern differs from that of the Heron. The Cambridgeshire and Norfolk fens were among the last strongholds of the Bittern in this country.

Anseres.—As might have been expected from their habits, bones of Anseres are among the commonest bird-remains found in the British superficial deposits; but from the lack of a sufficiency of recent skeletons in our museums for comparison, to which allusion has already been made, many of these specimens cannot be specifically—or even generically—determined; while in other cases some of the determinations which have been made must be regarded as more or less provisional. The bones of Anseres are generally easily recognized; this being especially the case with regard to the tarso-metatarsus, tibia, humerus, and coracoid, which are some of those most commonly met with. The most characteristic features of the tarso-metatarsus are its shortness and

stoutness, the nearly cylindrical middle region of the shaft, the absence of any groove down the back of the latter, the closed tubes perforating the hinder part of the proximal extremity, and the reflection of the small and short second or occipital trochlea. The inflection of its distal extremity, epoch; and bony bridge over the extensor groove is deeply by Dr. Buck. no tubercle, alone suffices to distinguish the Duck, resembl the somewhat longer and more slender tibia Such a statem*ulica*) presents an approximation to the same inclusion of comparatively long and slender humerus may certain wbe recognized by the very large size of the aperture generic pneumatic foramen at its proximal extremity; while the tarsometatarsoid is equally slender, and sufficiently characterized by Co. lightness of its articulation with the sternum, the high thetion and crotchet-like form of the subclavicular process, thothe abrupt truncation of the lower part of the posterior border.

Among the Geese, or *Anserinæ*, remains of the Grey Lag Goose (*Anser cinereus*),—now so rare in this country, and only breeding on a few Scottish lakes, although formerly abundant in the eastern counties,—have been obtained from the fens of Cambridge and Norfolk, as well as from river-deposits near Salisbury; while some bones in the British Museum from the Pleistocene brick-earth of Grays are probably likewise referable to this species. To the somewhat smaller Bean Goose (*A. segetum*), which, although never breeding in the British Isles, is very abundant during the winter in Ireland, have been referred provisionally certain bones from Shandon cave, Co. Waterford; while several bones in the British Museum from Kent's Cavern, Torquay, cannot be distinguished from corresponding recent bones. Remains of Geese from the brick-earths of Ilford and Grays, which have not been specifically determined, are rather larger than the corresponding bones of the recent skeleton of a Bean Goose with which they were compared. Mr. E. T. Newton also refers to an undetermined Goose a metacarpus from the Norfolk Forest-bed. On the Continent we have evidence of a species of *Anser* from the Upper Miocene of Œningen, on

the borders of Baden and Switzerland, as well as from the Lower Miocene of Allier, so that the genus is comparatively an old one. In the allied genus *Bernicla*, the humerus may be distinguished from that of *Anser* by the sudden rise of from delto-pectoral crest from the shaft; while the coracoid is newton as slender and has a larger pneumatic foramen. Co...rant at that senting these characters from the Shandon cavnt are also reford, have been provisionally referred to the ...idens" in Caith- (*B. leucopsis*), but it is by no means certain the Shag (*P. gra-* belong to the commoner Brent Goose (*B. brenta*. species have been tentatively assigned a radius from British hamstow, and a coracoid from Kirkdale cave. *Botaurus*

Among the Swans (*Cygninæ*) remains indistinguish...great from those of the Hooper (*Cygnus musicus*) have been...merus tained from the brick-earths of Ilford and Grays, and the from superficial deposits at Dungarvan, Co. Water... its Ireland, while M. Milne-Edwards records others from the fens of Cambridgeshire. A series of bones from Southery fen, Norfolk, preserved in the British Museum, may belong either to a female of this species, or to the somewhat smaller Polish Swan (*C. immutabilis*). To the still smaller Bewick's Swan (*C. bewicki*) have been provisionally assigned some bones from the Shandon cave, Co. Waterford, and also a tarso-metatarsus in the British Museum from the peat of Monmouthshire.

Coming to the Ducks or *Anatinæ*, we have first to notice the occurrence of a species of *Tadorna* in the Pleistocene of Brixham cave, near Torquay, as exemplified by a large series of specimens in the British Museum. These bones indicate a bird of somewhat larger size than the Ruddy Sheldrake (*T. casarca*). One of these specimens shows the great development of the keel of the sternum, and the square shape of the pneumatic foramen leading into this keel, by which *Tadorna* may be distinguished from *Anas*. Remains of the Mallard (*Anas boscas*) are recorded by M. Milne-Edwards from the fens of Cambridgeshire, and egg-shells from a river-deposit near Salisbury have likewise been referred to this species. Bones of the Common

Teal (*Querquedula crecca*) have also been recognized by M. Milne-Edwards among those obtained from the Cambridgeshire fens. A single coracoid from the Norfolk Forest-bed described by Mr. E. T. Newton appears to indicate the occurrence of the Shoveller (*Spatula clypeata*) at that epoch; and another coracoid from Kirkdale cave was stated by Dr. Buckland to have belonged to "a small species of Duck, resembling the Summer-Duck" of North America. Such a statement cannot, however, be taken to justify the inclusion of *Æx sponsa* in our Pleistocene fauna. It is uncertain whether various bones of Ducks which have not been generically determined should be referred to members of the present or of the following subfamily.

Co. The members of the subfamily *Fuligulinæ* are readily distinguished from the typical *Anatinæ* by the remarkable thickening of the upper part of the anterior surface of the head of the tibia, as well as by certain differences in the form of the humerus. A series of bones, including the characteristic tibia, from the superficial deposits of Bacton, in Norfolk, preserved in the British Museum, appear referable to the Pochard (*Fuligula ferina*). The Eider Duck (*Somateria mollissima*), indigenous in the northern part of the British Isles, is known in a fossil state by a skeleton obtained from superficial deposits, which may be of Pleistocene age, at Stratheden, Scotland. A coracoid from Shandon cave, Co. Waterford, has also been referred to this species, and if rightly determined is of considerable interest, the Eider-Duck being now an extremely rare visitor to Ireland. Lastly, we have a portion of a skull from superficial deposits at Tyrie, Scotland, which has been provisionally assigned to the Common Scoter (*Œdemia nigra*).

Columbæ.—The only recorded instances of the occurrence of the remains of Pigeons in British Pleistocene deposits are two in number. The first is an ulna from Kirkdale cave, which was stated by Buckland to indicate a species larger than our wild or domestic kinds, and the second a metacarpus of *Columba livia* from the peat of Monmouthshire.

Gallinæ.—Most of the bones of the Gallinæ are easily re-

cognized, some of the most characteristic being the coracoid, the humerus, the metacarpus, and the tarso-metatarsus. Thus the coracoid is extremely long and narrow, with the subclavicular process aborted and its sternal surface short and oblique. The short humerus has a very characteristic curvature, a small and incurved delto-pectoral crest, and the aperture of the pneumatic foramina of moderate size, and generally opening on the flat surface of the bone. The metacarpus, except in *Numida*, the *Cracidæ*, and the *Turnicidæ*, differs from that of all other birds, with the exception of certain Passerines, in having a thin flange of bone projecting from the stouter to the smaller bar. The stout and moderately long tarso-metatarsus is somewhat flattened from great to back, with two strong ridges on the hinder surface, its single tube at the proximal end, and the second distal trochlea rather shorter than the fourth and somewhat reflected.

In the *Tetraonidæ*, evidence of the former existence of the Capercaillie in England is afforded by a series of bones discovered in a cave near Teesdale, Yorkshire, of which an account will be found in the last edition of 'Yarrell.' The writer is also inclined to believe that a coracoid in the British Museum from the superficial deposits at Ostend, near Bacton, Norfolk, should be referred to a young individual of this species.

The Black Grouse (*Tetrao tetrix*) is represented by a femur from Kent's Cavern, Torquay, as well as by a humerus in the British Museum from the peat of Monmouthshire; there is also a humerus recently recognized by the writer in the Dublin Museum, which was obtained from a cave in county Waterford. The latter specimen is of especial interest, as there is no other record that the Black Grouse was ever indigenous in Ireland. Of not less interest is the former occurrence in that country of the Ptarmigan (*Lagopus mutus*), as proved by several bones from the Shandon cave, Co. Waterford. It was originally suggested by Prof. A. Newton, to whom they were submitted, that these bones might belong to small females of the Red Grouse (*Lagopus scoticus*), but there can be no hesitation in regarding them as referable to

the Ptarmigan. The former occurrence of this species, coupled with the probable contemporaneous existence of the Eider Duck in Ireland, points to its Pleistocene avian fauna having been of a more northerly type than it is at the present day,—an inference supported by the occurrence of the Reindeer and the Mammoth in the Irish cavern-deposits. As regards the *Phasianidæ*, remains of the Partridge (*Perdix cinerea*) have been obtained from Kirkdale cave.

Fulicariæ.—The only species of this group occurring in British deposits is the Common Coot (*Fulica atra*), remains of which were recorded by M. Milne-Edwards from the fens of Cambridgeshire, while the writer has recently recognized a tibia among a series of bones from the Ballynamintra cave, Co. Waterford, preserved in the Dublin Museum. Although the leg-bones of the Fulicariæ are generally more like those of the Gallinæ than any other group, there is a tendency to an inflection of the lower end of the tibia, which attains its maximum in *Fulica*, but, as already observed, the tibia of this genus may be readily distinguished from that of the Ducks by its greater relative length and slenderness.

Alectorides.—According to Yarrell, the recorded instances of the occurrence of the Crane (*Grus cinerea*) in Ireland are only four in number, but from the discovery of its remains in the "kitchen-middens" of Ballycotton, Co. Cork, we must consider that it was formerly indigenous in that country, as it certainly was in the English fens.

Limicolæ.—The humerus of the Limicolæ differs from the corresponding bone of all the groups hitherto considered in the presence of a distinct ectepicondylar process projecting from the outer border of the lower end immediately above the radial condyle. It is suggested by Dr. Buckland that a small humerus of this type from Kirkdale cave belongs to the Snipe (*Scolopax gallinago*), a reference which may very probably be correct.

Pygopodes.—The *Alcidæ* are distinguished from the other members of this group by the comparative length of the femur, by the absence of a long ankylosed spine-like patella to the tibia, and by the comparative shortness and stoutness of the

tarso-metatarsus, in which the lateral compression of the shaft is but slight, and its second trochlea only moderately reflected. In this family remains of the Great Auk (*Alca impennis*) have been found in superficial deposits in the Cleadon Hills, Durham, and likewise at Oronsay and Caithness, in Scotland, while the "kitchen-middens" of Caithness have also yielded remains of the Razor-bill (*A. torda*). The extreme shortness, width, and strong curvature of the femur of the *Colymbidæ*, the production of the patella into a long spine ankylosed to the tibia, and the excessive lateral compression of the comparatively long and slender tarso-metatarsus, in which the small second trochlea is so much reflected as to become almost behind the third, suffice to distinguish them very widely from the corresponding bones of any other birds. In this family remains of the Red-throated Diver (*Colymbus septentrionalis*) have been obtained from Shandon cave, Co. Waterford, and also from the river-deposit of Mundesley, Norfolk, which is of later age than the Forest-bed. Bones of the Crested Grebe (*Podiceps cristatus*), which was formerly abundant in the "broads" of Norfolk and the fens of Lincolnshire, have been recorded by M. Milne-Edwards from the fen-deposits of Cambridgeshire.

II. Birds of the Pliocene.

If we exclude the Norfolk Forest-bed from the Pliocene, only two species of birds have been recorded from these deposits in Britain.

Tubinares.—One of the most unexpected "finds" in the Red Crag of Suffolk was the tarso-metatarsus and one phalangeal of the foot of a species of Albatross (*Diomedea*). The tarso-metatarsus of the Albatross is a very characteristic bone, somewhat smaller and relatively more slender than that of a Swan; from which it is distinguished by the more equal size of the three distal trochleæ, the second of which is only slightly shorter than the fourth, and is but little reflected, while the foramen between the third and fourth is situated much higher up than in the Anseres. Moreover, the front surface is distinctly grooved, and there is no closed tube at

the upper end. An ulna from the underlying Coralline Crag preserved in the Museum of Practical Geology appears to belong to the same species. Seeing that no Albatross is now found anywhere near the British Isles, it is probable that the bones from the Crag indicate a distinct species, for which the name of *D. anglica* has been suggested by the writer.

Pygopodes.—According to Prof. W. H. Flower, a humerus from the Norwich Crag preserved in the Museum at Norwich belongs to the Guillemot (*Uria troile*), colonies of which bird existed up to about the middle of this century on the neighbouring cliffs of Cromer and Hunstanton.

III. Birds of the Upper Eocene (Oligocene).

Before noticing the birds from the Upper Eocene beds of Hordwell, Hampshire, it should be observed that an imperfect coracoid of a large bird from the Lower Miocene beds of Hempstead, in the same county, preserved in the Woodwardian Museum at Cambridge, has been made the type of the genus *Ptenornis*. The very slight description which has been given of this specimen, and the absence of a figure, render it, however, impossible to come to any conclusion as to its affinities. With one exception, all the bird-remains from Hordwell have been referred to extinct genera.

Accipitres.—Evidence of the existence of an Accipitrine bird, but little smaller than the Golden Eagle, is afforded by two terminal phalanges of the feet from the Hordwell beds preserved in the British Museum. Possibly these specimens may prove to belong to an Accipitrine from the corresponding horizon of the Paris basin described by M. Milne-Edwards as *Palæohierax gervaisi*.

Steganopodes.—The ulna of a Cormorant is distinguished from that of all other birds by the crotchet-like process projecting outwards and downwards from the surface for the condyle of the humerus. The proximal end of an ulna somewhat smaller than that of the Cormorant, preserved in the British Museum, has a somewhat similar process, and thus appears to indicate the occurrence in the Hordwell beds of a Cormorant-like bird, for which the name *Actiornis anglicus* has been suggested by the writer.

Herodiones.—In this group the family *Plataleidæ* appears to be represented in the Hordwell beds by a bird allied to the Ibises, and of the approximate dimensions of the existing *Ibis rubra*, which the writer has proposed to designate *Ibidopsis hordwelliensis*. It is typified by the lower part of a tibia, which agrees in all essential characters with the corresponding bone of *Ibis*—especially in the absence of a tubercle near the bridge over the extensor groove,—but differs in the relative width of the anterior gorge between the two condyles. The rostrum of a long-billed bird from the same deposits, agreeing with that of *Ibis* in having a lateral groove, but deflected only at the tip, probably belongs to this extinct genus, and if so well distinguishes it from living Ibises.

Odontoglossæ.—The English Upper Eocene deposits have hitherto yielded no remains of true Flamingoes, or of the allied but more generalized *Palælodus*, which are so common in the Lower Miocene of the Continent. There is, however, undoubted evidence of the occurrence of British Flamingo-like birds at the epoch of the Hordwell beds. Thus a humerus in the British Museum, measuring somewhat less than five inches in length, agrees so closely with the much larger humerus of a Flamingo that it scarcely presents characters of generic distinction. It is highly probable that this specimen should be referred to that imperfectly known genus of Flamingo-like birds from the lowest Miocene of France described as *Helornis**, in which the general characters are those of *Phœnicopterus*, but the legs were proportionately shorter. The writer has therefore proposed to designate the English bird as *Helornis* (?) *anglicus*. Two imperfect specimens of the tibia of a Flamingo-like bird from Hordwell indicate a considerably larger species, which should, perhaps, be likewise referred to *Helornis*. There is some doubt as to the serial position of a still larger Hordwell bird indicated by a nearly entire coracoid in the British Museum measuring somewhat more than 2½ inches in length. On the whole, however, this specimen seems to come nearer to the corresponding bone of the Flamingoes than to that of any other

* Originally incorrectly given as *Elornis*.

group; and the writer is accordingly inclined to think that it may belong to the imperfectly known genus *Agnopterus*, from the corresponding beds of the Paris basin, which appears to be more or less closely allied to the Flamingoes, although not improbably indicating a distinct family. The upper part of a large femur from Hordwell, preserved in the Museum of Practical Geology, and remarkable for the great length of its neck, agrees in relative size with the coracoid, and may therefore have belonged to the same bird, which the author has designated *Agnopterus* (?) *hantoniensis*.

Alectorides.—Two very characteristic features occur in the osteology of the Cranes. The first is the presence of an enormous pneumatic foramen on the inner surface of the lower end of the coracoid. The second is the great width of the gorge separating the two condyles on the anterior face of the lower end of the long tibia, and also the sunken position of the bony bridge over the extensor groove, which carries a small tubercle; moreover, the inner condyle of the tibia is placed considerably to the inner side of the corresponding border of the shaft, while on the opposite border of the anterior surface of the lower end there is a distinct groove for the tendon of the external peroneus muscle. All the characters above mentioned are displayed in the lower part of a tibia in the British Museum from Hordwell, indicating a Crane somewhat smaller than *Grus virgo*, which the writer has proposed to call *G. hordwelliensis*. A coracoid of a much smaller bird in the same collection shows the enormous pneumatic foramen characteristic of the Cranes, and in the opinion of the writer clearly indicates a small member of the family, which may be known as *Geranopsis hastingsiæ*.

Pygopodes.—A small coracoid from Hordwell in the British Museum shows the peculiar crotchet-like process projecting from the upper part of the hinder border of the lower extremity characteristic of the *Colymbidæ*; and the writer has accordingly referred the owner of this bone to the genus *Colymboides*, founded upon the evidence of other remains from the Lower Miocene of France, with the affix of *C. anglicus*.

Finally, nothing can at present be said as to the affinities of the upper part of a tibia from Hordwell in the Woodwardian Museum at Cambridge, briefly described, without a figure, as *Macrornis tanaupus*. Mention must also be made here of a tarso-metatarsus from Hordwell, noticed on p. 557 of Owen's 'British Fossil Mammals and Birds.' This specimen was formerly in the collection of Mr. J. W. Flower, but was subsequently transferred to the Museum at Oxford. There, however, according to information kindly supplied to the writer by Prof. A. H. Green, it cannot now be found, although it may be stowed away in certain cases not yet unpacked. According to Sir R. Owen, this bone closely resembles a tarso-metatarsus from the Paris basin figured in Cuvier's 'Ossemens Fossiles,' vol. iii. pl. lxxii. fig. 2; and it doubtless indicates a species different from any of those noticed above from the Hordwell beds.

IV. Birds of the Lower Eocene.

A long gap occurs between the horizon of the Hordwell beds and that of the London Clay, which is the next deposit in descending order where bird-remains are met with. Here, as might be supposed, not only are all the genera extinct, but many of them depart very widely from existing types, and at least some of them indicate extinct families; although all the Carinate genera appear referable to existing ordinal groups. It is in the Lower Eocene that in Europe we first meet with remains of birds that may apparently be referred to the Ratitæ. The majority of the Lower Eocene bird-remains have been obtained from the Isle of Sheppey; but unfortunately, both here and elsewhere, they generally consist of isolated bones (which are frequently imperfect), so that there is in many cases a certain amount of difficulty and uncertainty in determining the number of species we have to deal with.

Accipitres.—The earliest evidence of the occurrence of remains of birds from the London Clay was afforded by a specimen from Sheppey which came into the possession of John Hunter before the year 1793, and is now in the Museum

of the Royal College of Surgeons. This specimen, which was described and figured in Owen's 'British Fossil Mammals and Birds,' under the name of *Lithornis vulturinus*, comprises the mutilated sternum, coracoids, a vertebra, portions of the femur and tibia, and some other imperfect bones. Relying chiefly on the characters of the sternum, which must have belonged to a bird with this part of the skeleton either entire or having only shallow notches on its distal border, Sir R. Owen came to the conclusion that the specimen indicated a small Accipitrine bird more nearly allied to the American *Cathartidæ* than to any other existing type. It indicates a bird of the approximate size of the Peregrine Falcon (*Falco peregrinus*); but the shaft of the coracoid is proportionately much narrower, and the femur smaller and weaker than in any living Accipitrine genus. The present writer cannot find any especial approximation to these peculiarities in the skeleton of the *Cathartidæ*, the Sparrow-Hawk coming nearer in the former, and the Kites (*Circus*) in the latter respect. As tending to confirm the conclusion that *Lithornis* is truly an Accipitrine, important evidence is afforded by a pelvis and sacrum from Sheppey presented to the British Museum by Mr. W. H. Shrubsole. This specimen, which agrees in relative size with the typical sternum, shows the marked deflection of the dorsal aspect of the hinder part of the ilia, which is such a marked peculiarity of the Accipitres, and is found in no other living birds. The British Museum also possesses an imperfect sternum, associated with some other broken bones, which appears referable to this species.

So far, therefore, as the available evidence goes, it points to the conclusion that *Lithornis* is the earliest known representative of the Accipitres, although it is probable that it cannot be included in any of the existing families. It is, however, much to be wished that we could obtain a specimen of the tarso-metatarsus, which would set the question at rest; and it is only fair to observe that if, as appears to be the case, *Lithornis* was comparatively common in the old Sheppey area, this circumstance is somewhat against its Accipitrine

nature, since the fossil remains of raptorial birds are in most cases relatively much more rare than those of other groups.

Steganopodes.—In the year 1857, the late M. Edouard Lartet described the humerus of a large bird, remarkable for its extraordinary length, which had been obtained from the Miocene of France, under the name of *Pelagornis miocænus*. This extraordinary bone, which is considerably longer than the humerus of the Albatross (*Diomedea exulans*), was regarded by its original describer as indicating a bird allied to the group containing the Albatrosses. M. A. Milne-Edwards, however, by whom the specimen was subsequently described and figured, pointed out that it differed *in toto* from the humerus of the Albatross, as was especially shown by the relatively small expansion of its proximal extremity, the slight development of the delto-pectoral crest, and, above all, by the absence of the ectepicondylar process on the radial side of the distal extremity, the presence of which is so characteristic of this bone in all the Tubinares and their allies. Moreover, since in all the features in which the humerus of *Pelagornis* differed from the corresponding bone of *Diomedea*, it resembled that of the Gannet (*Sula*), M. Milne-Edwards came to the conclusion that it certainly indicated a genus of Steganopodes more or less closely allied to the Gannet. Indeed, this humerus, in spite of its enormous length, evidently indicated a bird of comparatively weak flight; and M. Milne-Edwards therefore felt himself justified in saying that "it is probable that *Pelagornis* was a bird of massive proportions, and much better adapted for swimming than for flight," and concludes that its tarso-metatarsus must have been as relatively short as in the Gannet.

With the exception of another humerus subsequently found, nothing more, so far as the writer is aware, is known of *Pelagornis*. In the year 1877, however, Mr. Shrubsole submitted to Sir R. Owen two associated broken bones of a large bird from the London Clay of Sheppey, which was described by the Professor in the 'Quart. Journ. Geol. Soc.' for the following year under the name of *Argillornis longipennis*. These broken bones proved to be portions of the

two humeri of a bird which was recognized by their describer as closely allied to the French *Pelagornis*. Although he quotes M. Milne-Edwards's figure of the type of the latter, Sir R. Owen totally ignores the observations of that zoologist as to the Steganopodous affinities of *Pelagornis*, and proceeds to compare *Argillornis* with *Diomedea*, in consequence of which he misinterprets some of the features of the humerus in his figures. From an examination of these humeri (which are now in the British Museum) the present writer is convinced, not only of their close affinity with *Pelagornis*, but also of their relationship to *Sula*. It is, indeed, at first sight somewhat difficult to point out how the type of humerus in *Argillornis* can be generically distinguished from that of *Pelagornis*; although, from the characters of the undermentioned ulna, it is probable that the one differed from the other in the presence of a distinct olecranal fossa. A fragment of the shaft of a similar humerus had been previously described in 1854 by the late Dr. Bowerbank as *Lithornis emuinus*; the generic name is, however, preoccupied by the above-mentioned Accipitrine genus, and since the specific one is inapplicable to a short-legged volant bird it has been rejected in favour of the Owenian term. In 1866 Prof. H. G. Seeley, when describing a somewhat similar fragment of bone, which he identified with the so-called *Lithornis emuinus*, proposed to replace the name *Lithornis* by *Megalornis*, but the latter term had been employed in 1840 by Dr. Gray in a different sense. The fragment of bone in question was regarded by its describer as part of the tibia of a Ratite bird; but Sir R. Owen pointed out a serious objection to this view, and it is probable that the specimen is really part of the distal extremity of the left humerus of *Argillornis*.

The British Museum possesses part of the proximal extremity of a left ulna from Sheppey, which from its size and general character is evidently referable to the genus under consideration. This bone, which has a well-developed olecranon, closely resembles the ulna of the Gannet, and is clearly unlike that of the Albatross; it may, however, be generically distinguished from that of *Sula* by the absence

of the large pneumatic foramen which is so conspicuous on the anterior surface of the proximal extremity of the latter. In this respect the fossil agrees with the ulna of the Cormorants (*Phalacrocorax*), although it differs in other points.

One other specimen which has been referred to *Argillornis* must not be passed over without special mention. This specimen is an imperfect cranium from Sheppey, now in the British Museum, which was described and figured by Sir R. Owen in the 36th volume of the 'Quart. Journ. Geol. Soc.' From its somewhat small relative size as compared with the type humeri, this specimen may have belonged to a female bird, or may possibly indicate another species of the same genus. In describing this important specimen, the Professor, probably led away by his previous views as to the affinities of the humeri, compares it with *Diomedea*. It is, however, at once distinguished from the skulls of all the Tubinares by the presence of the distinct transverse hinge-joint between the frontals and the rostrum characteristic of the Steganopodes, and likewise by the absence of those deep supraorbital grooves which are so conspicuous in the skull of the Albatross. Now the presence of such a transverse hinge, coupled with the absence of supraorbital grooves, is one of the most characteristic features of the skull of the Steganopodes; and when we add to this that the general contour of the specimen (allowing for the effects of crush) is very similar to that of the skull of *Sula*, while the lateral groove formed by the junction of the two elements of the horny sheath of the rostrum has precisely the same position in the two genera, we shall have no reasonable doubt in concluding that the fossil skull indicates a Steganopodous bird. Further evidence to the same effect is afforded by the depression of the external surfaces of the lachrymals, and by the position and contour of the aperture of the posterior nares.

It is accordingly apparent that both the humerus on which the genus *Argillornis* was established, and the skull probably referable to the same genus, indicate Steganopodous birds of which the nearest existing allies are the Gannets. And it may be added that this interpretation of the affinities of these

specimens is much more in harmony with the estuarine conditions which, from other lines of evidence, are inferred to have prevailed in Sheppey during the early Eocene epoch, than the view that these extinct birds were allied to such a purely pelagic type as the Albatross.

Another bird from the Sheppey Eocene seems to come nearer to the existing Steganopodes than to any other living forms, although clearly indicating a peculiar family. This is the *Odontopteryx toliapica* of Owen, founded upon the imperfect hinder portion of a skull described in the 'Quart. Journ. Geol. Soc.' for 1873. This skull, which is somewhat larger than that of the Common Gannet, differs from that of all other known birds in having the oral margins of both beper and lower jaws armed with a number of pointed serra- In as, some of which were larger than the others. In this the ect it agrees exactly with certain Indian Chelonians, of lom genera *Hardella* and *Batagur*; and it is evident that the horny covering of the jaws must have had serrations fitting on to those of the underlying bones, as is the case in the Chelonians referred to. Certain existing members of the Steganopodes, such as the Frigate-bird (*Tachypetes*) and the Gannet (*Sula*), approximate to *Odontopteryx* in having small serrations on the horny margins of the jaws, but these serrations are directed backwards instead of forwards. More important evidence of affinity is afforded by the deep grooves which occur on the jaws of the fossil, and show that their horny sheaths were composed of several distinct pieces, as is the case in *Tachypetes* and *Sula*. The fossil genus was regarded by its describer as allied to the Anseres, and the mandible was accordingly restored with a large recurved postarticular process. But the skull differs from that of all the Anseres in the shape of the quadrate, in which the posterior surface is broad, and emarginate externally, while the cup for the head of the quadrato-jugal is directed immediately outwards. Moreover, the depressed general contour of the cranium, and apparently also the form of the lachrymals, are of the general type obtaining in the Steganopodes. The fossil skull differs, however, from all the existing

members of that group in having no distinct temporal fossæ. In addition to the skull, the British Museum possesses the proximal extremity of a left ulna, which may very probably be referred to the present species, although, perhaps, not to the same sex as the skull. This bone is very similar to the larger ulna of *Argillornis*, and, if rightly referred to *Odontopteryx*, clearly points to the Steganopodous affinities of that genus. The proximal portion of a tarso-metatarsus from Sheppey, recently presented to the national collection by Mr. W. H. Shrubsole, may likewise be provisionally assigned to *Odontopteryx*, and, so far as its condition permits of forming a judgment, appears to be of a Steganopodous type. It is probable, however, that this tarso-metatarsus differed from the corresponding bone of the existing representatives of the group in the much smaller development of its talon (hypotarsus)—a feature which appears to be characteristic of many of the earlier birds.

Herodiones.—The Herons and their allies present the peculiar feature of the extensive overlapping of the distal extremities of the two coracoids, the grooves in the sternum for their reception likewise overlapping one another in a similar manner. There is, indeed, a somewhat similar overlapping of the coracoids in the Flamingoes (*Phœnicopterus*), but in that genus the keel of the sternum is given off at a lower level than in the Herons. Some of the characteristic features of the tarso-metatarsus of the Herons have been mentioned when treating of the birds of the superficial deposits.

During the excavation of the tunnel of the North-Western (then London and Birmingham) Railway through the London Clay of Primrose Hill, there was discovered the sternum of a bird of about the size of the Purple Heron, which presents the overlapping of the coracoidal grooves and the relative high position of the keel characteristic of the existing Herons. This specimen, now in the British Museum, was described and figured in Owen's 'British Fossil Mammals and Birds' without any name; since, however, it clearly indicates a distinct genus, the writer has proposed to designate the bird to

which it belonged as *Proherodius oweni*. Quite recently the writer has had submitted to his notice the almost entire right tarso-metatarsus of a bird obtained from the London Clay near St. James's Park by Mr. W. J. S. Abbott, of 3 St. Peter's Road, Tufnell Park, N.W., which there is every reason to believe is referable to *Proherodius*. This bone, which agrees in relative size with the typical sternum, has unfortunately lost the middle and outer trochleæ from the distal extremity, although sufficient of their points of attachment remains to indicate their general proportions and relations. Now the general characters of this specimen are so essentially those of the modern Herons that the presumption is so strong as to amount almost to a certainty that it belonged to the bird primarily indicated by the sternum. In certain minor points, however, such as the inequality in the length of its three distal trochleæ, and the slight development of its proximal talon (in which there is no closed tube for the passage of tendons), this bone differs from the tarso-metatarsus of all existing *Ardeidæ*, and thus clearly shows that its owner belonged to a distinct family. The characters in which it differs from the *Ardeidæ* seem, however, to be generalized ones—this being certainly the case with the simple talon, and probably also with the inequality in the length of the trochleæ; and we may therefore fairly presume that we have in *Proherodius* the ancestral generalized type of the modern Herons.

Gaviæ.—The last of the Carinate birds from the London Clay to which a separate name has been assigned is typically known by the hinder part of a cranium from Sheppey, which has long been in the British Museum, and was figured in 1838 by the late Mr. König under the name of *Larus toliapicus*. In redescribing the specimen in his 'British Fossil Mammals and Birds,' Sir R. Owen came, however, to the conclusion that the owner of this skull had no sort of affinity with the Gaviæ, but was more nearly allied to the Kingfishers, and the new generic name *Halcyornis* was accordingly suggested. Now, although there is no question as to the generic distinctness of *Halcyornis* from *Larus* and its modern

allies, it appears to the present writer, after careful examination, that the original determination of Mr. König was much more nearly correct than the one subsequently advanced, and that the genus should probably find a place near the *Laridæ*. The whole form of the skull is, indeed, essentially Laroid, and quite unlike that of the Kingfishers; and, although Sir R. Owen was right in referring to the absence of distinct supraorbital grooves, yet, as there are traces of such grooves, we cannot on this account remove the genus from the Gaviæ, more especially as we might well expect to find these grooves less developed in an early ancestral type. Moreover, while a Kingfisher would not be the kind of bird whose remains we should expect to meet with in the Sheppey deposits, we should naturally look therein for the bones of Gulls. That Gulls did occur in those beds is proved by the distal extremity of a humerus in the British Museum, which exhibits the deep depression on the palmar aspect of that part of the bone, and also the point of attachment of the ectepicondylar process; both of which structural features are absolutely characteristic of the Larine humerus. And since there is the further probability that this Larine humerus may actually have pertained to *Halcyornis*, with the skull of which it agrees in relative size, we shall certainly be justified in placing that genus near the Gaviæ.

Other imperfect bones of Carinate birds, such as the sacrum figured on page 553 of Owen's 'British Fossil Mammals and Birds,' have been obtained from Sheppey, although none of those which have come under the author's notice are sufficiently well preserved or sufficiently characteristic to admit of the determination of their affinities. With the exception of the presumably Accipitrine genus *Lithornis*, the remains of which might well accompany those of truly estuarine birds, all the birds yet known from the old Eocene estuary of the Thames region are precisely tho which we should expect to meet with in deposits of tf nature of those of Sheppey. Thus the Gannets and Corma rants of the present day were represented by the gigant *Argillornis* and the smaller *Odontopteryx*, while the place of

the Gulls which may now be seen around the Sheppey cliffs was taken by *Halcyornis*; and *Proherodius*, the remains of which have hitherto been found further inland, probably filled the *rôle* of the modern Herons in the surrounding swamps and marshes.

Ratitæ.—Many years ago certain limb-bones of an enormous bird were discovered at Meudon, in France, in Tertiary strata somewhat lower than the London Clay. For this giant bird the name *Gastornis* (a term, by the way, which ought in strictness to be discarded on account of its barbarism, being compounded from the French Christian name "Gaston" and the Greek "ornis") was proposed. Other remains of the same genus were subsequently discovered in beds of nearly similar age at Rheims; while the right of the genus to occupy a place in the British fauna rests on the evidence of several imperfect limb-bones found a few years ago by Mr. H. M. Klaassen in the Woolwich and Reading beds of Crark Hill, near Croydon. The latter specimens were described by Mr. E. T. Newton in the 'Trans. Zool. Soc.' vol. xii. (1886), and were considered to indicate a new species, for which the name *G. klaasseni* was suggested. The Woolwich and Reading beds, it may be observed, lie below the horizon of the London Clay, from which they are separated by the intervening Oldhaven and Blackheath beds; and they are therefore not far separated in time from the beds which yielded the typical species of *Gastornis*.

The various species of *Gastornis* indicate birds of the approximate dimensions of some of the larger species of the New Zealand *Dinornithidæ*. They are characterized by the comparatively long and slender tarso-metatarsus, and also by the marked inflection of the distal extremity of the tibia, which has a bony bridge crossing the extensor groove of the anterior surfa*nbus*

Much discussion has arisen as to the affinities of these huge ocene birds: the general consensus of opinion inclining to e view propounded by M. Milne-Edwards, that they were more r less closely allied to the Anseres. This opinion appears to have been mainly based on the inflection of the lower end

of the tibia, and on the general absence of a bony extensor bridge in this bone among the Ratitæ. When, however, we reflect on the question of their alleged affinity to the Anseres it is very difficult to see how this view can be sustained. Thus, in the first place, it is impossible to imagine how such gigantic birds could have been swimmers, the very weight of their bones being probably enough to sink the greater part of their bodies below the surface of the water. And, in the second place, if they were not swimmers it is probable that the resemblance of their tibia to that of the Anseres is an accidental one, seeing that we must almost certainly regard its form in the latter group as connected with the function of swimming.

Then comes the question why *Gastornis* should not be referred to the Ratitæ, where, from its giant bulk, the *primâ facie* view would refer it. That the presence of the extensor bridge of the tibio-tarsus is no bar to this view is proved by the invariable presence of the same bridge in all the *Dinornithidæ*. Moreover, that member of the latter family described by Sir R. Owen under the name of *Dinornis elephantopus* presents an inflection of the lower end of the tibia at least as well marked as in *Gastornis*. Again, if the tibia of the latter be compared with that of the extinct Australian *Dromornis*, such a marked resemblance between the two will be observed as to render it almost certain that they are in some way connected, although the extensor bar is absent in the Australian genus.

It appears, therefore, to the writer that *Gastornis* should certainly find a place among the Ratitæ; and this leads to the further conclusion that the absence of the extensor bridge in the tibia of all the existing representatives of that division is in all probability an acquired feature, and that *Gastornis* and the *Dinornithidæ* present the original plan of structure which is also common to the greater number of the Carinatæ, the absence of the tibial bridge in that division occurring only in specialized groups like the Owls, Parrots, and Hornbills. It will further be obvious that if this view be sustained it will strongly support the conclusion that the Carinatæ and Ratitæ

were both derived from a common Avian stock, and have not originated separately from Reptiles.

The skull of a large bird from the London Clay described by Sir R. Owen in the 'Trans. Zool. Soc.' vol. vii. (1869) as *Dasornis* (correctly *Dasyornis*) *londiniensis*, and referred to the Ratitæ, appears to indicate a bird allied to *Gastornis*. Since, however, this skull differs to a certain extent from an imperfect example of that of the latter genus obtained by Dr. Lemoine from Rheims, it affords evidence that the large British Ratite bird of the London Clay was generically distinct from its ally of the underlying Woolwich and Reading beds.

V. Birds of the Cretaceous.

The well-known coprolite-beds of the Cambridge Greensand yielded so far back as 1858 not only the first evidence of Cretaceous birds, but also of the existence of the Avian class in the Mesozoic period. These remains were at first referred by Prof. H. G. Seeley to two genera, under the names of *Palæocolymbus barretti* and *Pelagornis sedgwicki*. The second generic name was, however, preoccupied, and when the specimens were subsequently described in the 'Quart. Journ. Geol. Soc.' for 1876, both species appeared under the name *Enaliornis*; but it may be questioned whether the substitution of this name for *Palæocolymbus* was not *ultra vires*.

Like all the remains from the Cambridge Greensand, the bones of *Enaliornis* are for the most part more or less broken and water-worn fragments; the most satisfactory specimens being examples of the distal end of the femur and tarso-metatarsus. Both the latter bones approximate so markedly to the corresponding portions of the skeleton of the Divers (*Colymbus*) that there can be but little hesitation in regarding the bird to which they belonged as more or less remotely allied to that genus. The tarso-metatarsus approximates to that of the *Colymbidæ* in its lateral compression, in the quality in the size and length of the third and fourth trochleæ, and in the shortness and extreme reflection of the second

trochlea. The femur likewise presents the extreme flattening from front to back characteristic of the corresponding bone of *Colymbus*, and was also relatively short.

A tarso-metatarsus from the Cretaceous rocks of the United States described by Professor O. C. Marsh as *Baptornis* so closely resembles that of *Enaliornis* as to indicate that it belonged to a closely allied, if not generically identical, bird, and from this type of tarso-metatarsus it is but a step to the still more remarkable one of the American Cretaceous genus *Hesperornis*. It is therefore probable that both *Enaliornis* and *Baptornis* were furnished with teeth, and were more or less intimately related to *Hesperornis*. It is scarcely necessary to mention that very different views have been entertained as to the affinities of the latter. Thus Professor O. C. Marsh, its original describer, while comparing its bones *seriatim* with those of *Colymbus*, spoke of it as a "swimming Ostrich," a confusion of ideas which it is somewhat difficult to understand. Subsequently Professor Alfred Newton decisively referred the genus to the Ratitæ, a view which has been recently disputed by Professor D'Arcy Thompson in a recent issue of the 'Studies from the Museum of University College, Dundee.' Herein it is concluded that *Hesperornis* was a flightless bird so closely allied to *Colymbus* that it must find a position in the same subclass or order. In spite of the weight attaching to any opinion expressed by the Cambridge Professor, the present writer, from his own studies, can but range himself on the side of Professor D'Arcy Thompson, and conclude that *Hesperornis*, and probably *Enaliornis* and *Baptornis*, must be placed in a distinct group of the Carinatæ, for which Professor Marsh's name Odontolcæ may be retained.

Thus concludes this brief summary of the present state of our knowledge of British Fossil Birds. It is hoped that this attempt to bring together in a concise form t present state of the subject will result in so stimulati of collectors that the list of species and genera will ere lo be largely augmented.

XXXV.—*Note on the Collared Petrel* (Œstrelata torquata) *recently reported to have been killed on the Welsh Coast.* By Osbert Salvin, M.A., F.R.S., &c.

(Plate IX.)

In the 'Zoologist' for December last (1890, p. 454), Mr. Harting gave a short account of a Petrel a specimen of which had been submitted to him for identification by Mr. J. W. Willis Bund. The same specimen has since been sent to me by our Editor, with a request that I would write a few notes on it and on the species to which it belongs, to accompany the figure of it that it has been thought desirable to place before the readers of 'The Ibis.'

Regarding the capture of the specimen, Mr. Willis Bund sends the following account:—

"The Petrel was killed between Borth and Aberystwith either at the very end of November or the beginning of December 1889. It was first seen flying slowly, and when it sat on the water was fired at and missed; it did not fly far, and was shot at again and killed. It was first shown to the vicar of the parish of Llanfihangel Geneu-'r Glyn (the Rev. J. M. Griffiths), who advised the man who shot it to take it to the Aberystwith bird-stuffer Hutchins, as he did not know what it was. Hutchins bought it from the man, and showed it to me in, I think, February 1890, as a Sooty Shearwater. I said that it was not that bird, but that I could not say what it was. I did not buy it at the time, but at last, when at Aberystwith subsequently, I purchased it."

The bird in question belongs, no doubt, to the species described in 1860 as *Procellaria torquata* by John Macgillivray, the well-known traveller and collector in many of the islands of the South Pacific Ocean.

That an individual of this species should have strayed so far from its usual home is a remarkable circumstance, for hitherto the home of *Œstrelata torquata* has been supposed to be limited to a rather restricted area in the South Pacific Ocean, extending from the New Hebrides to the Fiji Islands. But the range of many Petrels is hardly less surprising.

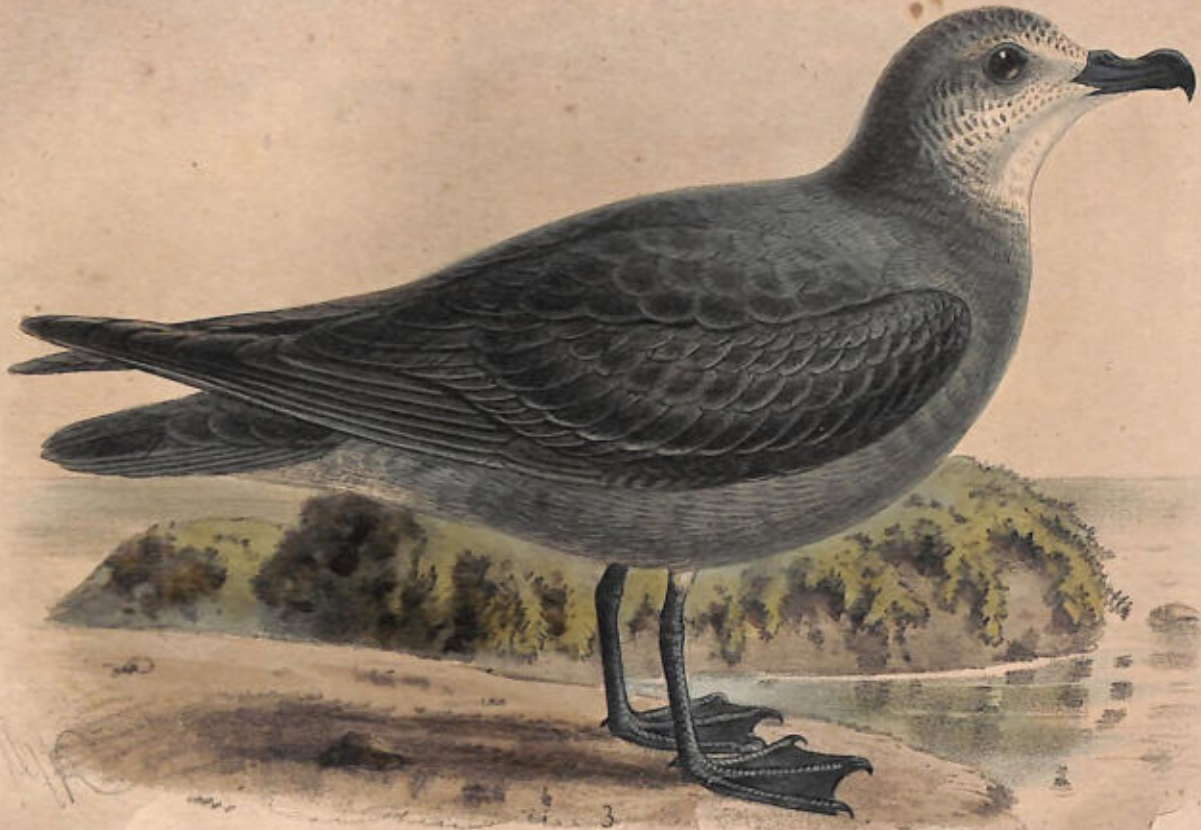
A congener of the present bird, *Œ. hæsitata*, has been killed on more than one occasion in Europe, its home being, if it still lives, the Windward Islands of the West Indies. *Bulweria columbina*, well known as an inhabitant of the seas of the Canary Islands and Madeira, has lately been traced to the Sandwich Islands, and *Puffinus griseus* has a nearly world-wide range. Other instances of equally extensive range in members of this family could easily be mentioned.

The history of *Œ. torquata* is not a long one, and the main facts concerning it have been already given by me in this Journal (Ibis, 1888, p. 359). It was first discovered by John Macgillivray on Aneiteum, one of the New Hebrides group of islands, and was described by him in the 'Zoologist' for 1860 (xviii. p. 7133). Macgillivray obtained several specimens, some of which passed into the British Museum, some into that of Leyden, and two were kindly ceded to me some years ago in exchange by the late John Henry Gurney. All of these appear to have had Macgillivray's labels attached to them. The British Museum specimens were included in Gray's 'Hand-list' (iii. p. 107) as *Procellaria aneiteumensis*. The Leyden birds were identified by Schlegel with Gmelin's *P. desolata* (Mus. Pays-Bas, *Procell.* p. 13), a name strictly applicable to a *Prion* found on the Island of Desolation, better known as Kerguelen's Land.

Macgillivray states that *Œ. torquata* is found on the islands of Tanna and Erromango, as well as on Aneiteum, and I have seen specimens from Fiji, obtained by Kleinschmit when collecting for the Godeffroy Museum in 1878.

Macgillivray says that on Aneiteum it breeds in burrows on the wooded mountain-tops in the interior of the island, the highest of which attains an elevation of 2700 feet. A young bird, not many days old, and covered with black down, was brought to him on the 14th February, but he did not obtain any eggs. The native name, he adds, is "Katébu."

Œ. torquata is a typical member of the genus *Œstrelata* of but belongs to the smaller, less robust section. It is, perhaps, most nearly allied to a species found further to the northward in the Pacific, which I described in 1888 as *Œ. hy-*



J. G. Keulemans del. et lith.

ŒSTRELATA TORQU.

Mintern Bros. imp.

poleuca. It has, like that bird, the whole of the inner webs of the primaries black to the shafts, and thus resembles *L. mollis*, but it is a smaller bird than either of these, and, moreover, has a shorter tail.

Macgillivray, in his description, alludes to the variation found in the specimens procured by him, which he attributes to difference of age. This variation chiefly affects the colour of the plumage of the under surface of the body, some specimens being nearly white, with a broken collar of grey on the breast, and others being grey from the breast downwards, the throat alone being white. It is now pretty well established that this variation is strictly individual, and not due to age or sex. I know of several cases of young birds which still have a good deal of down on their first feathers, which are those of the so-called fully adult, and not of an intermediate dark grey or brown stage.

The Aberystwith bird, as the Plate shows, is a dark individual, with the whole under plumage grey, with the exception of the throat. The outer four primaries are old, somewhat worn feathers; the rest are new quills, so that the bird was moulting when shot. This fact adds to our surprise that it should have strayed so far from its native haunts.

Macgillivray's description is as follows:—

"Above light grey, especially on the back, shoulders, and upper tail-coverts; the feathers of the two first situations often margined with white. Crown, back of head and neck, and auriculars sooty brown, which colour behind gradually blends with the grey of the back, and in front extends across the breast from each side to form an indistinct band. Wings, projecting an inch beyond the tail, dark sooty brown; the secondaries tinged with grey. Tail very evenly graduated, of twelve feathers, greyish brown. Face, cheeks, chin, and throat white; on the sides and front of the head the white merely tips the feathers, the base and centre of each being dark, giving a speckled appearance to the rest of that region. Lower surface white, except the undefined pectoral band; and on the sides, flanks, and under tail-coverts the feathers are minutely speckled with grey, and sometimes also have a

dark central line. Under wing-coverts white, showing as a conspicuous mark when the bird is on the wing, as in *Procellaria cooki*, to which, and to *P. mollis*, it is closely allied. Bill black; tarsi fleshy black; toes and webs, except basal portion of the latter, which are flesh-coloured, black. Total length $4\frac{1}{4}$ inches*; extent of wings 28; wing $8\frac{1}{2}$; tail $4\frac{1}{4}$; bill from rictus $1\frac{3}{10}$, and from base 1; tarsus 1; middle toe and claw $1\frac{4}{10}$. There is no outward sexual distinction."

XXXVI.—*Remarks on Macgregor's Paradise-bird*, Cnemophilus macgregori. By P. L. Sclater, M.A., Ph.D., F.R.S.

(Plate X.)

Mr. C. W. De Vis, of the Queensland Museum, Brisbane, has most kindly forwarded to me for examination the typical and unique example of the new Paradise-bird, *Cnemophilus macgregori*, discovered by Sir William Macgregor's expedition during the ascent of the Owen-Stanley Mountains, and described by Mr. De Vis in the report on Sir W. Macgregor's birds, which has been reprinted in the January number of this Journal (see above, p. 25). I have had the pleasure of showing this beautiful specimen to Count T. Salvadori, Dr. Bowdler Sharpe, and other experienced ornithologists, who all agree with Mr. De Vis that it is a new and very distinct form, and well worthy of generic separation from other known birds. I also exhibited the specimen at the Meeting of the Zoological Society on the 3rd of March last†, where it attracted general admiration.

I have now the pleasure of giving the first figure of this brilliant bird (Plate X.) and of offering a few remarks on its structure and affinities.

Mr. A. P. Goodwin, who first mentioned and shortly described the present species, called it a Paradise-bird, and

* Doubtless a misprint. The Welsh specimen, which is mounted, measures, roughly, from the tip of the bill to the tip of the tail 12 inches.

† See P. Z. S. 1891, p. 179.



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Hamara del. et lith. Mintern Bros. imp.

CNEMOPHILUS MACGREGORII

of the ient in the *melus macgregori* (Ibis, 1890, p. 153), be- bestasing char- most nearly allied to *Xanthomelus aureus.* ..i we shall s. c.) calls the species a "very distinct kind of Bower-bird," and states his opinion that its proper systematic position is between *Amblyornis* and *Xanthomelus.* I will therefore compare it with the latter form, of which a fine example belonging to the Leyden Museum has been kindly lent to me by Dr. Jentink.

There is certainly a general resemblance in colour and shape between *Cnemophilus* and *Xanthomelus,* and the feet in both forms are large and strong, although this feature is carried to a much greater extent in *Xanthomelus,* which has the tarsi much stronger and rather longer than *Cnemophilus.* In *Xanthomelus,* moreover, the scutellations of the front of the tarsus are well marked, whereas in *Cnemophilus* the scutella are fused into one nearly uniform plate. The wings of *Cnemophilus* are much shorter and more rounded than those of *Xanthomelus.* But it is in the bill of these two forms that the greatest divergence is observable.

In *Xanthomelus* the bill is long and strong, the loral plumes are short, and the base of the bill, nostrils, and culminal ridge are quite bare. In *Cnemophilus* the bill is shorter and not so thick, the loral plumes are elongated, projecting forwards, and covering the base of the bill so far as to partially cover the nostrils. Besides this the frontal plumes are elongated and elevated into a compressed ridge, which is carried forward over the culmen and backward to the base of the very singular thin crest, composed of five or six lengthened feathers, which springs up immediately behind the front.

In these last characters *Cnemophilus* is quite distinct from other birds, but obviously approaches *Diphyllodes.* I should be disposed, therefore, to place *Cnemophilus* along with the Paradise-birds rather than along with the Bower-birds, if these two groups are to be kept apart. But there can be no doubt that the Bower-birds are closely allied to the Paradise-birds, and several well-known recent authorities have united them into one family.

XXXVII.—*On the Birds of Madagascar, a*
tion with Native Folk-lore, Proverbs, and
By the Rev. James Sibree, Jr., F.R.G.S.*—

[Continued from p. 228.]

III.—The Passeres or Perching Birds.

The third Order into which Birds are divided by most naturalists contains that large group of feathered creatures which are the principal songsters of the woods, and which, as their name implies, are found chiefly in the forests, or at least where there are trees. As will be seen by referring to the tabular arrangement given herewith (Table III., pp. 436–442), there are no less than 60 species of perching birds found in Madagascar. The greater proportion of these are seen only in the lower and wooded regions of the island; although a few, as will be noticed presently, inhabit the barer regions of the upper plateau, with their scanty clothing of trees and shrubs.

The greater number of these Perching Birds are of somewhat sombre plumage of browns and greys, with the exception of the Sun-birds, the Swallow-Shrikes, and the Weaver-birds. Of about forty families into which the whole Order is usually divided, sixteen have representatives in the island, several of these, especially the Thrushes and Warblers, including many species. Among the Madagascar Passeres, therefore, we find Swallow-Shrikes, Shrikes, Flycatchers, Thrushes, Warblers, Babblers, Bulbuls, Butcher-birds, Sun-birds, Swallows, Weaver-birds, and Starlings. Of the Crows, Titmice, Wagtails, and Larks there is a single species of each family. The Order includes also two species of birds (*Philepitta*) which were at one time supposed to be nearly allied to the Paradise-birds of New Guinea and the Moluccas, but are now known to belong to a peculiar group of Passeres (*Oligomyodæ*), mostly found in South America†.

Many of the birds found in Madagascar are by no me

* Reprinted from the 'Antananarivo Annual,' 1890, with addit and corrections by the Author.

† *Cf.* Sclater, Cat. Birds Brit. Mus. xiv. p. 400.

of them in the power of producing sweet sounds of a very pleasing character and in considerable variety of note; and, as we shall see, there are some few whose song has even been considered to resemble that of our European Nightingale. In several accounts which have been given by travellers of their journeys through various parts of the country, reference is made to the silence of the woods, to the paucity of animal-life, and to the very few sounds heard either from beast or bird. Now, while it is quite true that the animal-life of Madagascar is very scanty, I am disposed to think that these descriptions have been somewhat exaggerated, and the reason probably is that most journeys have been taken during the colder season, when the woods are comparatively silent. But they certainly are not so at all times of the year; and I find in a journal of my own the following remarks upon the abundance of bird-life in the woods, when travelling from Màhanòro to Imèrina in the month of November 1883:—"I noticed that the forest was by no means so silent as I had remarked at other times when passing through it. Former journeys, however, were made in the colder winter months of the year, but now that the warm weather is approaching, some bird or other was almost always heard. Every quarter of a mile or so we heard the constant and noisy call of the Cuckoo (*Kànkàfotra*), *kow-kow, kow-kow*, repeated three or four times; then the flute-like call of another Cuckoo, the *Tolòho*, whose mellow notes were heard all the way from the coast to the forest; also the chirp and whistle of the *Railóvy*, or King Crow, as well as the incessant twitter of many small birds. Then came in now and then the long-drawn-out melancholy cries of the Lemurs high up among the trees."

So again, in memoranda of a stay at Ambòhidratrímo, at the edge of the upper forest, in December 1884, occurs the following:—"Here we sat down [on the margin of a forest-stream], enjoying thoroughly the beauty of the woods, and especially the singing of the birds. Never before had I heard in a Madagascar forest so many different notes, or so constant a sound of bird-life. Besides this there was the low undertone

of water flowing over the rapids some little distance a
and the hum of insects. It was a great enjoyment just
sit and listen, and see the birds as they frequently flew aroun
us and over our heads. Among these were the *Sòikèly*, a
species of Sun-bird, a very little fellow, which sat on the top-
most point of a bare upright branch; the *Railóvy*, a species
of Shrike or King Crow, with long forked tail; the Grey
Parrot (*Bolòky*), with a long repeated whistle, as if going up
the gamut; the *Vòrondèro* or Roller, with its prolonged
whistle ending in a sudden drop; the *Parètika*, one of the
Warblers, with a creaky little short note, something like a
child's rattle; together with these sounds was the *kow-kow*
of the *Kànkàfotra* Cuckoo, the varied mellow notes of the
Tolòho Cuckoo, the cooing sound of the *Fòny* or Wood
Pigeon, and also the call of one of the Hawks (*Bémànana*)."

Any one who has stayed at the edge of the upper forest* during the months of December or January, and has quietly watched for a short time among the woods, will not have had to complain of any scarcity of bird-life to admire and study. If we only remain perfectly still, the birds will come and alight all around us, seeking their food as they hop on the ground, or flutter from branch to branch. We may watch their nests and see their eggs, and then the young birds, noting from day to day how they develop, until one morning the nest is empty, for its little inmates have found out their power of wing, and have left to set up for themselves and add another little company to the tenants of the Madagascar forests. It may be truly said that the note of one bird or another is never silent at this time of year all day long, while some are heard also late at night.

A circumstance worth noting about the forest birds is thus described by the Rev. R. Baron, F.L.S.:—"The following phenomenon, which I have many times witnessed in the forests of Madagascar, has often struck me as singular. The birds

* A belt of forest, varying in width from 10 to 50 miles, surrounds the highlands of the interior of Madagascar and follows the coast-line at no great distance from the shore. On the eastern side it is divided into two belts for a distance of about 250 miles.

of t[illegible]not frequently seen except in flocks. A little twittering is be[illegible]t heard, one or two birds are seen, and then, in a few [illegible]inutes, one is surrounded by a large number appearing as [illegible] by magic. The same thing has been noticed by others. [illegible]ut the strange thing about it is that 'birds *not* of a feather flock together.' I have seen as many as twenty or thirty birds, of six or seven different species, all travelling in the same company. Can this be for mutual defence?"*

The people who live near the upper line of the eastern forest say that many of the birds come up from the lower and warmer and more extensive line of forest as the summer ap[illegible]roaches, but return as the season grows colder.

[illegible]Before proceeding to notice separately each family of this pa[illegible]der, another extract or two may be given from a traveller's sp[illegible]rnal, showing the variety of birds to be seen in some on[illegible]alities. In a pamphlet called 'The Bàra Land,' by the [illegible]v. W. Deans Cowan, the valley of the Isàhambàngana is thus described:—This valley "is one of the finest in this part of the country. It is now here more than three or four miles wide, and with its large river and many streams flowing into it from all sides, with its strips and patches of wood, its stretches of grass and its marshes, it is a pleasant valley, pleasant to the traveller, and a paradise to the naturalist." "I took my way down to the shady banks of a small stream flowing east to the river. Birds were in plenty: Black Parrots; the Fork-tailed Shrike (*Railómbo*) poured out its varied song of mimicry from the topmost branches; the White-browed Warbler (*Fitatrála*) sung his sweetest, whilst Doves sat silent in the branches over the water. The Kingfisher sat motionless on his favourite perch, and the Sandpiper (*Fandiafàsika*) was bobbing along the sand-reaches. The Oriole, the Wagtail, the Hoopoe, and a large bird like a Shrike were there; even the small Sun-bird (*Anatsòy*) darted from place to place, his bright colours sparkling in the light. In about half an hour I had picked out and obtained the specimens I wanted, among which was a small Owl, very dark brown with white spots—it was new to me (*Ninox su-*

* 'Antananarivo Annual,' vi. p. 85.

perciliaris)." "Just at the crossing I got another of. Coua Cuckoos (*Taitso*)." "On the way to the next villa we passed a small marsh on which were numbers of Muscovy Ducks, and among the long grass in the valley the Guinea fowl were seen in hundreds."

Referring to my observations in the preceding paragraphs, Mr. Cory* says:—"I think the want of bird-life in Madagascar is very marked when compared with England. I was very much struck with this scarcity of life in the woods on my first arrival. I have been in the forest at all times of the year, and although your remarks are very true, and there *are* a good many birds in summer, yet, if you try bird's-nesting here, you will soon find out how few and far between the nests are. Every now and then a small flock of birds, as you describe, comes and twitters round you, but even then they are not many."

I agree with Mr. Cory in the general accuracy of his statement; all I wished to show was that there is not such a complete want of bird-life in the Madagascar woods as is sometimes affirmed. From what M. Pollen and other travellers describe, the avifauna of the west side of the island must be far more abundant than is that of the interior.

The first bird in the arrangement of the Order Passeres is the White-necked Crow; and although he can by no means be reckoned as a song-bird, he is a very prominent member of the avifauna of Imèrina—indeed, of the whole of Madagascar,—and must therefore have a few words of description. This Crow—called *Goàika* by the Malagasy, probably from its harsh croak—is larger than a Magpie, with glossy black plumage, but with a collar of pure white, and a square white patch on his breast, so that he has a very clerical appearance, and is not nearly so sombre and undertaker-like as his English cousin. The Goàika is very common everywhere, being often seen in large numbers, especially near the markets, where he picks up a living from the refuse and the

* The Rev. C. P. Cory, B.A., of the S. P. G. Mission in Madagascar, to whom I am greatly indebted for much valuable information and criticism in these papers.

ered rice. He is a bold and rather impudent bird, and of th
ten seen fighting with the smaller Hawks. One day, bea
lking with a friend near Ambóhimànga, we came upon a large flock of Crows, and wishing to obtain a specimen, my friend fired and shot one of them. For a moment there was a dead silence, but after a few seconds the whole flock set up an angry scream of rage and defiance, and, flying swiftly backwards and forwards, came so close to our faces that I feared they would strike at our eyes. Their anger and indig-
nation at the death of their comrade, and their wish to is
venge him, were unmistakably manifested in their beha-
bo
our. This Crow is occasionally kept by the Malagasy as a W
bird, and is sometimes taught to keep the fowls away the
m the paddy-rice which is placed on mats to dry in the par
. Mr. Cory says: "The nest of the Crow is placed on spe
s or rocks, and is defended fiercely from all enemies. on
eggs are exactly similar in markings to those of the English Carrion Crow, but are rather rounder in form."

As might be expected, the Goàika is referred to in many Malagasy proverbs, two or three of which may be here quoted and translated, thus: "Like the Crow's coat—finished while it is young;" "Don't be lustrous outside (only), like a Crow;" "Many are the Crows, and one can't tell which is male and which female, for all have white necks; but whoever eats the arum (*Saonjo*), him will I punish;"* "Do like the soldiers: get up before the Crows, awake before the Warblers" (*Fitatra*). The bird is also alluded to in a native song, in the verses of which the Kite, the Brown Stork, the Lark, and the Cardinal-bird are successively mentioned; and the last verse runs as follows: "'Where are you from, old fellow, you Crow there?' 'I come from Antanánarivo.' 'How about the proclamation there?' said I. 'The proclamation,' said he, 'is severe enough.' 'What was it all about?' said I. 'Thieves,' said he, 'are to be killed.'"

The next family of the Perching Birds, that of the Swallow-Shrikes, contains in Madagascar six species, all of which are

* Several other proverbs also refer to the Crow's white neck and its eating the edible arum or *Saonjo*.

of genera peculiar to the island. One of these, Bern
Swallow-Shrike, is a large bird, rufous-brown in col
Of this Swallow-Shrike M. Grandidier says: "The ma
utters a frequent plaintive little cry, and appears to be much
attached to his mate. If she falls by a gun-shot, he descends
like an arrow, placing himself near her on the ground, and it
is not difficult to take him. But when the male bird is killed,
the female, on the contrary, flies far away." Another species,
Cyanolanius bicolor, as its name implies, is of two strongly
contrasted colours, blue above and ashy white below; another,
Leptopterus viridis, is blackish green above and pure whit
below; while others, again, are reddish brown and white. Few
none of these birds frequent the central regions, their nati
names are mostly obscure; some appear to be imitative
their cry, as *Trétréky* and *Tsétèky*; while *Fòndrapòry* possi
refers to the yellow colouring of the lower part of the
body.

The Fork-tailed Drongo, the only representative of its family in Madagascar, is a rather common bird, dark bluish green in colour, with a long tail, forked at the extremity. It lives in small companies, perching on dead branches, house-roofs, or on cattle-folds, and dashing off frequently in pursuit of insects, with a heavy clumsy flight. This *Railóvy* or *Railómbo*, by which names it is known in the interior, is alluded to in many of the fables and folk-tales of the Malagasy as "a well-behaved bird, with a long crest, and having a variety of note" (see fable quoted above, p. 211, in referring to popular notions about Owls). One of the Railóvy's provincial names, *Andóvy*, seems to come from a root *dóvy*, "an enemy," probably from some superstition connected with it. M. Pollen gives the following, amongst other particulars, about this bird; he says: "The Railóvy may be seen in every part of the island which naturalists have visited. It is a very active bird and an excellent singer. Perched on a dead branch, it keeps up a constant noise, its strong voice giving forth several notes which very much resemble those of an organ. It also likes to imitate the cries of other birds, especially those of the *Tolòho* Cuckoo. In the spots fre-

of thted by a large number of these Drongos, each one reserves to itself a hunting-ground, in which he tolerates the presence of no other birds, even of his own kind, not excepting those which are stronger than himself. When this bird has seized an insect, he returns immediately with his prey to the tree he had quitted. He is in the habit of warning, by a certain cry, all the other birds in the neighbourhood; so that when a bird of prey appears, he darts fiercely upon him and pursues him to a great distance. The nest of the Railóvy is, if possible, built on a branch overhanging a stream, and both the male and female birds take turns in the incubation. When the young are able to quit the nest they usually take their places in a row, on the branch of a tree, to which the parent birds come to supply them with food." Mr. Cowan speaks of finding the Railómbo "all over the Bára land, even on the desolate Hòrombè."

The Cuckoo-Shrike (*Graucalus cinereus*) is also said to be pretty common, going in companies of eight or ten, but it is less known than the Railóvy. One of its provincial names (*Vórontàniómby*) seems to imply that it is an attendant upon cattle, as are other Madagascar birds, especially the White Egret or *Vórompòtsy*.

Three Flycatchers are found in Madagascar; of one of them, the brown-tailed species, M. Pollen says that it has a loud monotonous cry of *tuw, tuw, tuw*. M. Grandidier, however, speaks of its song as being agreeable, resembling that of the Robin, and from it comes one of its names, *Kítikítika*.

Another species, as its name of "Changeable" Flycatcher denotes, undergoes remarkable changes of colour according to its age and sex. The female bird is entirely of a reddish brown, except the cap and nape, which are dark green. The young male has, during the first month, the same livery as the female, but its plumage soon changes to a beautiful maroon-red; then very soon the two middle tail-feathers become greatly lengthened, the quills being black, with a white fringe; the wing-coverts become partly white and partly black; and the feathers of the head change to dark green, with brilliant metallic reflections. At the breeding-

time the back and throat take the same tints as the [illegible] and the belly and breast become white. This bird is fo[illegible] all over the island; it is always in motion, flitting fro[illegible] branch to branch in search of its insect food. Every time it moves it straightens its long tail and utters a peculiar little cry.

Of the third species (*Pseudobias wardi*), M. Grandidier says that its song is agreeable, resembling that of the Warblers. It hardly quits the summits of the highest trees*. The native names, at least with our present knowledge, or rather ignorance, throw no light on the habits of these Flycatchers.

We now come to *the* singing birds of Madagascar, those belonging to the families of the Thrushes (Turdidæ) and the Babbling Thrushes (Timeliidæ), with their twelve or thirteen species each.

Of the White-browed Warbler (*Copsychus albospecularis*), M. Pollen remarks: "This songster *par excellence* bears among the Antankàrana the name of *Sìkitìly*, but among the Sàkalàva that of *Todiana*. Its song is so powerful, varied, and agreeable that it might rival the best singing birds of Europe. This bird may be seen hopping lightly and briskly from branch to branch, all the time keeping a sharp look-out on what passes around. After assuring himself that no one is watching him, he perches perfectly erect on a branch and gives forth in a full volume of sound his melodious song, beating at the same time with his tail. This song much resembles that of the Nightingale, but it is more varied and shorter. The hen bird is very rarely seen." So again, of Newton's Warbler, M. Pollen says that its song resembles that of the Nightingale, but is less varied; while of the Delicate Warbler, he notes that its whistling song is sweet and agreeable.

The native names of these singing birds do not throw much light upon their habits. Three or four species are called *Tèkitèky*, probably a name imitative of their cry. One of

* Mr. Wills remarks on this, "I have seen them in the bushes by the side of the forest streams. I doubt their frequenting *high* tree tops."

of the (*Ellisia* sp.) is called *Làvasalàka*, or "Long-loin-cloth;" bea' reason for this odd name is probably from its long tail, wic native *salàka* often being allowed to hang down behind, especially if ornamented with beads or embroidery. Another of these birds (Newton's Warbler) is known as *Vóronjózóro*, "Papyrus-bird," and *Vòrombéndrana*, a word of the same meaning, and also *Vòrombàraràta**, "Bamboo-bird," names all no doubt describing its usual haunts. The word *Fítatra* —possibly from a root meaning "expanded, drawn out," and so referring to the duration of the notes of the birds—forms wholly or in part the names of three or four of the Warblers. The very wide-spread name of *Jìjỳ* applied to one of them (*Eroessa* sp.) is doubtless the same as a word meaning "well delivered," or "recited," and so is also descriptive of its song. And another name, *Fìrìoka*, that of Crossley's Warbler, probably refers to its rapid darting flight, as it is also the name of the Madagascar Swallow, as we shall see presently.

Mr. Cory remarks: "The nest of the Fítatra Warbler (*Pratincola sybilla*) is built of small sticks and moss, and is placed, as a rule, on some low bush. Eggs, five to six, blue in colour. The eggs of the *Fìtatràla* (*Copsychus speculàris*) are similar to those of the Fítatra, but larger, and of a lighter blue."

The family Timeliidæ, which includes the Bulbuls, Babblers, and Grass-Warblers, appears to be less remarkable for its powers of song than the one just described. M. Pollen describes the notes of the Madagascar Bulbul (*Hypsipetes madagascariensis*) as "short, monotonous, and intermingled at every moment with the sounds *tuuc-tuuc* and *truit-truit*." Of the White-eye or Bush-creeper, he remarks that "its song is short and sweet, with a slight croak," and a cry resembling the syllables *pilupilu-pilu*. Dr. R. B. Sharpe thinks that there is a curious case of mimicry between one of the Bulbuls (*Tylas æduardi*) and a Shrike (*Vanga polleni*), and remarks that "if these are really two distinct species [as seems undoubted], we

* The *Bàraràta* (*Phragmites communis*, Trin.) is a very tall bamboo-like grass growing in marshes and by water-courses, with sharp needle-like points to its sheathing leaves.

have a case almost unrivalled in interest, the Shrike ass[illegible] the plumage of the Thrush to serve him in pursuit of his pr[illegible]

As we have already seen in many other cases, some of t[illegible] names of the birds belonging to this family are evidently imitative of their notes, such as *Tèkitèky* and *Tèkitékiàla*, names of the White-eyed Babbler and the Fantail Warbler. Another name, with several variations, of some of the Bulbuls, *Tsikoròvana*, possibly comes from a root *ròvana*, "a movement *en masse*," and so would seem to mean that these birds are seen in large numbers*. One bird of this same subfamily is called *Vóromasìaka*, "Ferocious-bird" (curiously enough, this is the one referred to above as being probably "mimicked" by a Shrike; and so possibly the Bulbul has been credited with the rapacity of the Shrike which he resembles); another of them is called *Vòromarénina*, "Deaf-bird;" while the word *bòka*, "leper," also enters into others of their names. As might have been expected, the White-eyes (*Zosterops*) have several names referring to the prominent white ring round their eyes; e. g., *Tsàramàso*, "Beautiful-eyes," *Sipàromàso*, *Parìamàso*, and also *Ramanjèreky*, from a root meaning "to be conspicuous," "to be obvious to the sight." The Fantail Warbler has, among other names, those of *Tily* and *Kitily*, "Watchman" or "Spy."

The White-eye (*Zosterops madagascariensis*) builds a very pretty open nest on the end of some hanging branch. Its eggs are very pale blue.

Two species of Feather-tailed Warblers (*Dromæocercus*) have been found in Madagascar. These birds have curiously formed tails, composed of several long stiff quills, with a very scanty pluming of fine hair-like filaments, and carry them cocked up at a rather high angle from the body. Like most of their congeners, these little birds are of sober brown and grey plumage.

One peculiar species of Tailor-bird has been found in Madagascar. The genus is widely spread over the whole of the Indian Peninsula.

Five species of Butcher-bird (or Shrike proper) are natives

* Mr. Wills says, "They are plentiful, but go in pairs, not in flocks."

of the island, and are all of peculiar genera. Of the curved-beak species (*Vànga*) M. Pollen observes that "it has a strong whistling cry, which is heard at a long distance, but it is melancholy and heart-touching. At intervals it utters a note like *tu-tu*, which often comes from a bird just above the head, and yet seems to proceed from some way off. If the sportsman will only imitate the bird's cry, he will see it, impelled by curiosity, descend from branch to branch until it comes near enough to be shot. These Shrikes lead a solitary life, each one having his own special hunting-ground in the forest. If one of them whistles, all the others in the neighbourhood instantly respond."

It has apparently not yet been ascertained whether these Madagascar Butcher-birds have the habit, followed by their relatives in other countries, of hanging up their prey of mice, small birds, and insects on the thorns round their nest, from which habit, indeed, the genus derives its English name. M. Grandidier, however, says he was told that the male birds of the curved-beak species sometimes eat their own young, though their usual food consists of orthopterous insects. This bird is called *Vòrombèngy*, "Goat-bird," by the forest tribes; and another species is termed *Kìboàla*, "Forest-quail," and *Vòrombènda*, "Rush-bird," as well as other names, the meaning of which is obscure with our present knowledge of provincial Malagasy.

Most of these Shrikes are greenish blue in colour, with white or grey on the breast and underparts of the body.

Of the family of Paridæ or Titmice, only one species inhabits Madagascar—the Coral-billed Nuthatch, a small tree-climbing bird, blue and brown in colour, which Dr. Sharpe terms "one of the most curious birds extant." It appears to connect the true Titmice and the Nuthatches, into which two subfamilies the Paridæ are divided. Nothing further seems at present known of this little bird, nor does its name of *Sakòdy* throw any light on its habits or peculiarities.

The family of Nectariniidæ, or Sun-birds, contains three species in Madagascar of these beautiful little songsters; one

of them, the Glittering Sickle-billed species, belongs to a genus (*Neodrepanis*) peculiar to the island. It is well known that many of the birds of this family rival in the Old World the gem-like and metallic tints of the Humming-birds in the New World, and this is true of the Madagascar Sun-birds. Of the *Nectarinia notata*, M. Pollen observes: "These charming birds live in flocks, and are almost always found together with the other species of *Nectarinia* and with one of the Warblers (*Eroessa* sp.). All day long one sees them darting among the branches of the trees and about the flowering shrubs, from which they suck with their long tongue the nectar which forms their principal food. They also feed on insects and on the fruit of the banana and the mango. Their song is long, very agreeable, but little varied; now and then they utter a cry resembling that of our Sparrow. These Sun-birds have the habit of suspending themselves by their claws from the small branches, like the Titmice. During the hottest part of the day they revel in the burning rays of the sun, loving to preen their plumage, which has been wetted by the heavy morning dews which fill the calyxes of the flowers. The nest of this bird is in the form of a pocket with a lateral opening, and these are usually found hanging from the extremity of a branch of some species of mimosa. They are constructed of small roots, dry leaves, and fine lianas, and are lined with spider's web. It is a curious fact that more males than females of this bird are always seen."

Mr. Cory observes here: "I have not myself noticed the excess of males over females among the Sun-birds; and I fancy, if people only took the trouble to look, they would always find somewhere in the vicinity of the cock-bird his less gaudy mate. Does not the male lose his brilliant colours in the winter, like the *Fody* (Cardinal-bird)? I am not quite certain myself."

Of the other species of *Nectarinia*, M. Pollen says that he has seen it "particularly abundant in the plains near Androntsànga (N.W. coast), and it constantly utters its note, which resembles that of a Woodpecker. Its chief food is the

nectar of the flowers of the *Acacia lebbek*"*. The male bird of this species is exquisitely coloured with metallic tints of purple, green, red, and yellow. The other species is black underneath, with green and purple metallic reflections on head, neck, back, and wings. The single species of *Neodrepanis* is yellow underneath, with green metallic colour above. Dr. R. B. Sharpe says that "this Sun-bird is evidently the type of an entirely new genus, and is undoubtedly distinct from every Sun-bird known to me or represented in the (British) Museum." As its Engli h and scientific names imply, its beak is very sharply curved.

These Sun-birds are of service in promoting the fertilization of some of the Madagascar trees, especially of the Traveller's-tree (*Ravenala madagascariensis*). Mr. G. F. Scott Elliot says: "The flowers are often visited by Sun-birds; *Nectarinia souimanga* was the commonest near Fort Dauphin. The correct position of the bird is to sit on the highest bract, and then to bend forwards and downwards to suck the sugary liquid by introducing its beak below the odd petal. In doing this it will explode a virgin flower, dusting its breast with pollen, while in older flowers it will touch the stigmatic surface, and so effect cross-fertilization. Sometimes it hops into the middle of the flower, however, and tries to reach the honey from the same bract by bending round the petals. Beetles and hymenoptera often visit the flowers to suck the sugary liquid which exudes over the edges of the bract. They will only produce fertilization by accident, however, while the narrow curved beak of the bird is excellently adapted to pass between the edges of the rigid bracts and suck the honey"†.

In the second chapter of this article, when speaking of the Woodpecker-like birds (see above, p. 226), we saw that some little reference is made to the Sun-bird in Malagasy folk-tales as having a melancholy note. The native names for these beautiful little birds almost all consist wholly or in part of the word *Sòy*, the meaning of which is at present unknown;

* Probably a mistake for *Albizzia lebbek*.

† 'Annals of Botany,' vol. iv. no. xiv. p. 261 (May 1890).

but we find *Sòikèly*, "Little Soy;" *Sòimànga*, "Beautiful Soy;" *Sòiangàly*, "Capricious Soy;" and also *Dandìana*, possibly meaning "Stepper." The word *Sòy* is also reduplicated in another name, *Sòisòy*.

Coming to the next family, Hirundinidæ, we find in Madagascar only two species—a Swallow and a Sand-Martin, both peculiar to this island. Of the first of these, M. Pollen observes its flight is very rapid, resembling that of the European Swallow. He also says: "I saw at Ambasòana a large flock of Swallows gathering together to set off for another part of the country. This flock formed a perfect cloud of birds; for ten minutes or so they darted backwards and forwards over the plain; they then immediately directed their course for the south-east, all uttering simultaneously the same cry."

Some of the native names for this Swallow evidently refer to its rapid flight, and contain the root *rìotra*, "rush passing rapidly," as in *Kirìondànitra*, "Sky-rusher," *Firìotsàndro*, "Day-rusher." It also shares the name of *Sìdintsìdina*, the "Flier," *par excellence*, with its distant relatives the Swifts (see above, p. 227).

The only species of the next family (Motacillidæ) in our list is the Yellow-bellied Wagtail, which is tolerably common along the streams in all parts of Madagascar. In its habits and appearance it seems to differ little, if at all, from the European species. It is often called *Fandìafàsika*, "Sand-stepper," a name it shares with a species of Sandpiper, which is also very plentiful. Its other names (*Trìotrìo*, *Trìotrìotsa*, &c.) are probably imitative of its cry.

We now come to the Weaver-birds, of which four species are found in Madagascar.

As will be seen by the Tabular List (p. 441), there are three species of Weaver-birds called by the Malagasy *Fòdy*, either in its simple form or compounded with some other word *. The most common as well as prominent

* The meaning of the word *Fòdy* I am unable to explain; probably it is one of the many names which the Malagasy brought with them from their distant fatherland.

This cese is the Fòdy or Cardinal-bird (*Foudia madagascariensis*), which lives in companies of from six to a dozen individuals, but is often seen in very large flocks near the rice-fields and plantations, where it does much damage to the crops. "The Tanàla, or forest people," says Mr. Baron, "during the whole time of the ripening of the rice, are obliged to guard their rice-fields from the attacks of these Fòdy by rattles and slinging of stones." As the rainy and hot season approaches, which is also the breeding-season with the vast majority of Malagasy birds, the male Fòdy changes colour from its ordinary sober coat of brown to a brilliant scarlet, with the exception of the outer wing-feathers and the tail; so that as it darts about in the sunlight it looks like a living flame. At the pairing-time, *i. e.* in October and November, the male birds, which seem more numerous than the females, pass the time in fierce conflict for the possession of the hen birds. M. Pollen says: "I have sometimes seen these Fòdy fighting with such fury that they have fallen from high above the trees to the ground, still fighting as they fell. At this time one may see the male bird perched on the highest part of a tree, uttering his monotonous cry of *spit-spit*. Immediately a hen bird appears in the neighbourhood he puffs out his plumage, erects his tail, and beats with his wings. He then pursues the hen bird with a rapid and direct flight until he either overtakes her or another male bird appears on the scene. In such case a combat ensues between the two, during which the hen bird escapes. The nest has almost the form of a pear, with a lateral opening, and is made of fine grass attached to three or four twigs of a mimosa, a tamarind, or a flamboyant tree. The eggs are from four to six in number, and are greenish blue in colour. The parent birds feed their young for a long time after they have quitted the nest." Mr. Cory tells me: "I once caught a young Fòdy in a spider's web; and Mr. Gregory obtained a Kingfisher in the same way."

Being so plentiful and conspicuous, it is not to be wondered at that the Fòdy, at least the male bird, or *Fòdilàhimèna*, as they call it (*i. e.* "Red-male-Fòdy"), has long

attracted the attention of the Malagasy, and is frequently alluded to in their folk-tales, proverbs, and children's games. Of the first of these classes of native wisdom, one or two examples have been already given in speaking of other birds (see above, p. 226); of the proverbs referring to this bird, the following may serve as specimens:—"Do not forbid to eat, like a Fòdy," probably meaning that the bird eats so much rice that there is little left for the owner. The same voracious habit is again referred to in the saying: "It is not right to act like a Fòdy when the rice is ripe: tasting before the owner." Again, presuming to be equal to one's betters is reproved in another proverb, which says: "A Rice-bird (*Tsíkirìty*) going together with a Fòdy: it is not the leader, but only a follower."

Of the two other species of Fòdy less seems to be known, since they are more strictly confined to the forest regions, as one of their names of *Fòdiàla*, or "Forest Fòdy," recognizes. The Sàkalàva Weaver-bird is termed *Fòdisay*, or "Lesser Fòdy:" the male bird has a yellow head and neck, the rest of the body being brown; while the hen bird is entirely pale brown. The Pensile Weaver-bird, as its name implies, builds a beautiful and ingeniously constructed hanging nest, shaped like an inverted chemical retort, which is suspended from the extremities of the branches of the trees, and usually over a running stream. These nests are about a foot or fourteen inches long, the bulb giving ample room for the eggs or nestlings, and the tube, forming the entrance from below, being about four inches in diameter. In the upper forests these nests are usually found singly, but in the lower forest and coast regions M. Grandidier says that they may be seen from thirty to forty in number, all hanging from a single tree. (Mr. Baron, however, tells me he is confident that the Weaver-birds building their nests in the numbers here described are a different species from the one in the interior, and that their nests are not retort-shaped. They are also extremely tame, and build near the villages.) The native name for this species, *Fòdifètsy*, *i. e.* the "Crafty Fòdy," recognizes this skill of the bird in thus protecting its young

This our is slaty black, with yellow throat and neck, and the nale bird has a black head.

The Tsíkirìty is a bird of the same family as the Fòdy, but of a different genus (*Spermestes*) and much smaller. M. Pollen remarks of it: "This charming little bird goes in flocks of from twenty to forty in number in the cultivated districts of the country. All day long one may see them in large numbers crossing with rapid flight the rice-fields, which they visit chiefly at the sowing time and in harvest. [They are also said to pull up the newly-planted *kètsa* or rice-plants.] They feed also on all kinds of seeds, especially on that of the chamomile. The whistling cry of this bird is like the syllables *spiti-spiti*, whence comes one of its provincial names. The places where the native women pound their rice are regularly visited by these birds, which feed upon the grain which falls from the rice-mortars and the winnowing fans. One may often see a score of these Tsíkirìty perched on a branch, and squeezed so closely together that one might take them to be glued one to the other." This little bird is much more plainly coloured than the three other Weaver-birds, its plumage being dark brown, the breast only having a warmer tint of reddish brown. Mr. Cory remarks: "I should have said that the Tsíkirìty was, in colour, greenish brown on the back, lighter on the breast, with dark, almost black, markings on the throat, and I always look upon it as a pretty bird. It builds almost everywhere, like our English Sparrow, in thatch, or trees, or old nests. Have you noticed how they fly in little 'bunches' and in perfect order? If the leader rises, all rise."

Two species of the Starling family are found in Madagascar, both belonging to genera peculiar to the island. Of the first of these (*Hartlaubia*), M. Grandidier says that it is intermediate between the Starlings, with which it is connected by its external characteristics and habits, and the Thrushes, which, in the skeleton, the *Hartlaubia* shows great similarity. It is a large brown bird, with a monotonous chirp like that of a Sparrow. They often perch together on a branch so closely that half a dozen or more may be killed with one shot.

Like the European Starling, they are excellent eating [illegible]equntiful vided they are taken at the proper season. Their nat[illegible]zai*ana*, *Hòtsa* throws no light on their habits; neither do their ot[illegible] twu- names of *Vòrontainòmby*, "Ox-dung-bird," and *Vòrontai-[illegible] nanòmby*, "Ox-land-bird," add much to our knowledge of their peculiarities.

The other bird of this family found in Madagascar also belongs to a genus peculiar to the island (*Falculia*), and is described as "a very aberrant form of Starling." It may be termed the "Robed (or Cloaked) Starling," from its specific name *palliata*. During Mr. Cowan's travels in the Bàra country, he says that on the banks of a small stream joining the Màmanantànana, "we were in search of the *Falculia* Starling. This bird gave us some little trouble. Sitting quietly on the branches, often high up, it kept uttering its plaintive but melodious notes, while we strained our eyes to catch a glimpse of it. Many times it happened to be sitting just before our very noses, but even then we failed to see it. This bird and the *Vànga* Shrike, both with bright plumage, are most tantalizing in this way."

Next to the Starlings comes one of the most curious and interesting in the whole avifauna of Madagascar from its abnormal structure and remote affinities—the *Eurycerus prevosti*, or "Prevost's Helmet-bird." The zoological affinities of this remarkable genus were for a long time a puzzle to ornithologists, who successively placed it among or near the Toucans, the Hornbills, the Swallows, the Crows, and the Starlings. It is, however, allied to the Starlings and the Swallow-Shrikes (Artamidæ), and is not far from the Drongo-Shrikes, but is yet so different that MM. Grandidier and A. Milne-Edwards have formed a special family, which they name Eurycerotidæ, for this solitary genus and species. Dr. R. B. Sharpe classes it with the Crows, but calls it a "unique and curious form." This bird is remarkable for a beak formed like a very capacious helmet, strongly compre[illegible]re also and swelled towards the base, which advances to just a[illegible] native as the eyes; and its very convex edge is terminated b[illegible]ody," sharp hook, which projects beyond a large tooth-like poi[illegible]ung

This extraordinary form of the beak is seen best perhaps in the skeleton, in which the beak is seen to be considerably larger than the skull. The bird is as large as a Starling, velvety black in colour, and with a saddle-shaped patch of light brown on the back extending to the base of the middle tail-feathers. This is probably alluded to in a Sàkalàva name for the bird—*Fòndrampòry*, "Yellow-rumped." The large beak is steely blue in colour, and is described by Mr. Crossley as pearly, like the inside of an oyster-shell, but the tints fade away soon after death.

One species of Lark is a native of Madagascar, and is very common on the bare downs of the interior provinces. In habits and appearance this bird is very much like the European species, but its song is less full and varied. After hovering some time, it may be seen mounting up in the air to a great height, uttering its trilling notes, as if in salute to the rising sun, and then letting itself fall suddenly to the ground. Seeds and insects, especially grasshoppers, form its food. This Lark is not at all shy, but is difficult to obtain, as it hides in the dry grass, which it exactly resembles in colour—a greyish brown. The eggs are laid in a slight hollow in the ground, quite exposed to observation, the protective resemblance of the hen bird to its surroundings preserving them from danger. M. Grandidier says that this Lark is most pugnacious, and that if two male birds are enclosed in a cage they fight furiously, until the combat ends in the death of one of them.

Many native proverbs refer to the *Soròhitra*, the Hova name for this Lark, some of which are obscure, but the following seem to refer to its peculiar flight already mentioned: "A Lark falling in the forest, because it doesn't know how to fly" (lit. "is a fool in flying"); "Thrown at, but not to be eaten, like a Lark on a grave." The unprotected state of the young birds when the hen is driven off the nest is referred to in the following: "A Lark's nestlings by the roadside: I did not cast them off, but they were forsaken by their mother." The Hova name appears to be derived from a root *ròhitra*, meaning "to go with a rush," or "to go in

Tabular List of Madagascar Birds.

(TABLE III.)

English Name.	Scientific Name.	Hova or General Name.	Provincial Malagasy Names.
Order III. PASSERES. (PERCHING BIRDS.)			
Family CORVIDÆ. (CROWS.)			
White-necked Crow	*Corvus scapulatus**.	Goàika (*T., N. Btm., Antk.**).	Gàgá (*Bts., Ba.*).
Family ARTAMIDÆ. (SWALLOW-SHRIKES.)			
Bernier's Swallow-Shrike	ORIOLIA BERNIERI.	.....	.....
White-headed Swallow-Shrike.	ARTAMIA LEUCOCEPHALA.	.....	Remàvo, Tséatéky (*N.S.*).
Anne's White-headed Swallow-Shrike.	ARTAMIA ANNÆ.	.....	Remàvo, Tsétèky, Trétréky (*N.S.*).
Two-coloured Swallow-Shrike .	CYANOLANIUS BICOLOR.	.....	Fòndra, Pòry, Sàrahèsa (*N.S.*), Raisàsatra (*Btm.*).
Green Straight-winged Swallow-Shrike.	LEPTOPTERUS VIRIDIS.	.....	Fantsàsatra (*Bts., Ba., T.*), Sòroánja, Vòrontsàsatra (*N.S.*), Vàntsatra (*Tm.*).
Red Swallow-Shrike	LANTZIA RUFA.	.....	Sikétriàla (*Btm.*).

...ious a ...from ...o see it. ...t plumage, ...

...liter... ...are also ...a native ...body," ...ung

	Family DICRURIDÆ. (DRONGOS.)		...anjèona ...ngàly
Fork-tailed Drongo	EDOLIUS FORFICATUS.	Railóvy (*N.E.*).	Railómbo (*Bts.*, *Ba.*, *T.*, Railònga (*T.*), Andóvy (*Ba.*), Dróngo, Tsàramàso (*N.B.*), Raidóngo (*Tm.*).
	Family CAMPOPHAGIDÆ. (CUCKOO-SHRIKES.)		
Ashy Cuckoo-Shrike	*Graucalus* CINEREUS.	.....	Vórontàniómby (*N.S.*), Angavè (*N.B.*), Androbakè (*S.E.Co.*).
	Family MUSCICAPIDÆ. (FLYCATCHERS.)		
Brown-tailed Flycatcher	NEWTONIA BRUNNEICAUDA.	.....	Trètrèmàvo (*Bts.*), Trétré (*T.*), Ketéketè (*N.B.*), Kítikítika (*E.Co.*).
Ward's Flycatcher	PSEUDORIAS WARDI.	.....	.....
Changeable Flycatcher	*Terpsiphone* MUTATA.	Ramanjèrika†.	Singétra (*Bts.*, *Ba.*, *T.*, *Tm.*), Tsilangétra (*T.*), Tsikètry (*N.B.*), Sikèty (*N.S.*, *N.B.*).

* As in the first part of this paper (above, p. 228), the names in small capitals show the genera and species of birds peculiar to Madagascar. The initials and contracted words are substitutes for the names of the different Malagasy tribes: see p. 203.

† Another Flycatcher, *Platystira affinis*, has been taken on the W. coast; but M. Grandidier believes it to be only a solitary example, brought over by a hurricane from Africa, and not a true denizen of Madagascar.

(TABLE III., *continued.*)

English Name.	Scientific Name.	Hova or General Name.	Provincial Malagasy Names.
	Family TURDIDÆ. (THRUSHES.)		
Imèrina Thrush	*Cossypha* IMERINÆ.	.....	Olióly (*Bts.*, *Ba.*, *T.*).
Sharpe's Thrush	*Cossypha* SHARPEI.	.....	Vòrompótotra (*N.S.*).
Delicate Warbler.....	EROESSA TENELLA.	.....	Jijy (*Bts.*, *Ba.*, *T.*, *N.S.*, *Tm.*), Tsitsy (*N.S.*), Tseré (*N.B.*).
Larger Delicate Warbler	EROESSA MAJOR.	.....	.....
Madagascar Warbler	ELLISIA MADAGASCARIENSIS.	Làvasalàka.	Tèkitéky (*N.S.*), Borétiky, Paréty (*N.B.*).
Fern Warbler	ELLISIA FILICUM.	.....	.....
Lantz's Warbler	ELLISIA LANTZII.	Parètika (*Ba.*, *T.*).	Andréta (*Bts.*), Andrétika (*N.S.*), Taméfé (*N.B.*), Kabànty (*Antk.*).
White-browed Warbler.....	*Copsychus* ALBOSPECULARIS.	Fitatràla (*Bts.*, *Ba.*, *T.*, *Tm.*).	Todía (*N.B.*).
Magpie Warbler	*Copsychus* PICA.	Fitatràla (*Bts.*, *Ba.*, &c.).	Todíana (*N.S.*), Sikitily (*Antk.*).
Newton's Warbler	*Calamoherpe* NEWTONI.	Vóronjózóro.	Vòrombéndrana (*Bts.*, *T.*), Vòrombàraràta (*Ba.*), Tèkitèky (*N.S.*), Vórongèndra (*Tm.*).
Crossley's Warbler	MYSTACORNIS CROSSLEYI.	.....	Firioka (*Bts.*), Sòratràla (*B N.S.*).

Madagascar Stonechat	*Pratincola* SYBILLA.	Fitatrâ ... (*Bts.*, *Ba.*, *N.B.*, *Tm.*).	Fitaténona (*T.*), Tanjèona (*N.S.*), Féta (*N.B.*).
Yellow-browed Warbler	CROSSLEYIA XANTHOPHRYS.	.....	Fòditàny (*T.*).

Family TIMELIIDÆ. (BULBULS.)

Madagascar Bulbul	*Hypsipetes* MADAGASCARIENSIS.	Tsikoròvana, Horòvana (*S.* and *S.E.*).	Sókorèva (*N.S.*), Sokónina (*Tnd.*).
Edwards's Bulbul	TYLAS EDUARDI.	.....	Vóromasiaka (*Bts.*), Bókamèna (*Ba.*), Andévokoròva (*T.*), Kànkimàvo (*N.S.*).
Madagascar Bulbul	TYLAS MADAGASCARIENSIS.	.....	Mókazàvona (*Bts.*), Bòkazàvo (*Ba.*), Vòromarénina (*Sak.*).
Belted Bulbul	TYLAS STROPHIATUS.	.....	.....
Madagascar Babbling Thrush..	OXYLABES MADAGASCARIENSIS.	.....	Fóditàny (*Bts.*, *T.*), Síròntsírona (*N.S.*).
Ashy-crown Babbling Thrush .	OXYLABES CINEREICEPS.	.....	.....
Bernier's Babbling Thrush....	BERNIERIA MADAGASCARIENSIS.	.....	Trátraka (*Bts.*, *Btm.*), Jobè (*N.S.*).
White-eyed Babbling Thrush .	BERNIERIA ZOSTEROPS.	.....	Farifotra (*Bts.*), Tèkitékiàla (*N.S.*), Tràtraka (*N.B.*).
Madagascar White-eye	*Zosterops* MADAGASCARIENSIS.	Parîamàso.	Sipàromàso (*Bts.*), Siay (*Ba.*, *T.*), Sóy (*N.S.*), Tsàramàso, Ramanjèreky (*N.B.*), Mangírike (*T.*).
Madagascar Fantail Warbler..	*Cisticola* MADAGASCARIENSIS.	Tsíntsina.	Kijòa (*Bts.*), Tily, Kitily (*Ba.*), Vinty (*T.*), Tèkitèky (*N.S.*), Kabânty (*Antk.*).

(TABLE III., *continued.*)

English Name.	Scientific Name.	Hova or General Name.	Provincial Malagasy Names.
Brown Feather-tailed Warbler.	DROMÆOCERCUS BRUNNEUS.	.....	Sèroka (*Ba.*), Sèrika (*Ba., T.*).
Seebohm's Feather-tailed Warbler	DROMÆOCERCUS SEEBOHMI.	.....	.....
Grandidier's Tailor-bird.....	*Orthotomus* GRANDIDIERI.	.....	.....
Family LANIIDÆ. (BUTCHER-BIRDS.)			
Madagascar Butcher-bird	CALICALICUS MADAGASCARIENSIS.	.....	Tòtikirosòy, Kiboàla (*Bts.*), Tsikatèokatèoka (*T.*), Titikoròsy, Fitilitatèma, Vòrombènda (*N.S.*).
Curved-beaked Butcher-bird ..	VANGA CURVIROSTRIS.	.....	Vànga (in all dialects), Vòrombèngy (*T.*).
Lafresnay's Butcher-bird	XENOPIROSTRIS LAFRESNAYI.	.....	Tsilovànga (*T.*).
Van Dam's Butcher-bird	XENOPIROSTRIS DAMI.	.....	.....
Pollen's Butcher-bird.....	XENOPIROSTRIS POLLENI.	.....	Kinkimaoro (*S.E. Co.*).
Family PARIDÆ. (TITMICE.)			
Coral-billed Nuthatch.....	HYPOSITTA CORALLIROSTRIS.	.....	Sakòdy (*N.B.*).
Family NECTARINIIDÆ. (SUN-BIRDS.)			
Sòimànga Sun-bird	*Nectarinia* SOUIMANGA.	Sòisòy (*Ba., T.*), Sòikèly.	Anatsòy (*Bts.*), Sòy (*VB N.B., Tm.*), Anjòy (*T*

Noted Sun-bird	*Nectarinia* NOTATA.	D	Dandiana (*Bts.*), Ramanjèona (*T.*), Sòy (*N.S.*), Sòiangàly (*N.B.*).
Glittering Sickle-billed Sun-bird	NEODREPANIS CORUSCANS.	.....	.....
Family HIRUNDINIDÆ. (SWALLOWS.)			
Madagascar Swallow	*Phedina* MADAGASCARIENSIS.	Kiriondànitra.	Firiringa (*Bts.*), Firio (*Ba.*, *T.*), Firiotsàndro (*Ba.*), Fino (*T.*), Sidintsidina, Manàvy (*N.S.*), Tibèriringa (*Tm.*).
Cowan's Sand-Martin.....	*Cotile* COWANI.	.....	Firiringa (*Bts.*).
Family MOTACILLIDÆ. (WAGTAILS.)			
Yellow-bellied Wagtail	*Motacilla* FLAVIVENTRIS.	Fandiafàsika.	Trìotriotsa(*Bts.*), Trìotrìo (*Ba.*, *T.*), Sèritsé (*N.B.*).
Family PLOCEIDÆ. (WEAVER-BIRDS.)			
Sàkalàva Weaver-bird	*Ploceus* SAKALAVA.	.....	Fòdisay (*N.S.*).
Pensile Weaver-bird	*Ploceus* PENSILIS.	Fòdifètsy.	Fòdisiày (*Bts.*, *Ba.*, *T.*), Fòdisè, Fòdiàla (*N.S.*), Fòdisaina (*Tm.*).
Madagascar Cardinal-bird	FOUDIA MADAGASCARIENSIS.	Fòdy.	Fòdy or Fòdimèna in all the dialects.
Dwarf Rice-bird	*Spermestes* NANA.	Tsikirity.	Tsipiritika (*Bts.*, *N.S.*), Sàkapìa (*Ba.*, *T.*), Tsiampiro (*T.*), Tsingòritsy (*N.B.*).

(TABLE III., *continued*.)

English Name.	Scientific Name.	Hova or General Name.	Provincial Malagasy Names.
	Family STURNIDÆ. (STARLINGS.)		
Madagascar Starling	HARTLAUBIA MADAGASCARIENSIS.	.....	Hòtsa (*Bts.*), Vòrontainòmby (*T.*), Vòrontainanòmby (*N.S.*), Bèritanòmby (*N.B.*).
Robed Starling	FALCULIA PALLIATA.	.....	Vòronjàza (*Bts., Ba., N.S.*), Kazàzaka (*Btm.*), Fitilisisiày (*N.S.*).
	Family EURYCEROTIDÆ. (HELMET-BIRDS.)		
Prévost's Helmet-bird	EURYCEROS PREVOSTI.	.....	Sikètribè (*N.B.*)., Fòndrampòry, Vòrontsàrahèsa (*S.*).
	Family ALAUDIDÆ. (LARKS.)		
Hova Lark	*Alauda* HOVA.	Soròhitra.	Vòrosòy (*Ba.*), Borìa (*Ba., T., N.B., Tm.*), Kòlokòlotàny (*N.S.*), Siròtsy (*N.B.*).
	Family PHILEPITTIDÆ. (PHILEPITTAS.)		
Boddaert's Philepitta	PHILEPITTA JALA.	.....	Varíamanàngana (*Bts.*), Asíty (*T., Bts.*), Tsóitsóy (*N.B.*).
Schlegel's *Philepitta*	PHILEPITTA SCHLEGELI.	.....	Asaity (*N.S.*).

companies." Its Sàkalàva name of *Kòlokòlotàny* apparently refers to its nesting on the bare ground—from *kòlokòlo*, "cherished, cared for," and *tàny*, "earth, ground." Mr. Cory says: "The Lark, I should say, was the commonest Malagasy bird, and more numerous than the Fòdy, also by no means difficult to obtain."

The long list of Madagascar Passeres is closed by the two species of the very peculiar genus *Philepitta*, which, as mentioned above, constitute by themselves one of the few families of the Oligomyodian group of the Order found in the Old World. I regret to be able to say but little of these rare birds. The colours of *Philepitta jala* are in the adult male almost black, but in the younger birds they are black, beautifully mottled with yellow. The male has a curious green caruncle p. 4 retching all round the head above the eyes*. In the other I ies, *P. schlegeli*, the same colours are found, but the ary-yellow tint is unmixed on the neck, breast, and belly, ne dark colour being confined to head, wings, and tail. The native names for these birds are obscure in meaning, throwing little light upon their habits; one perhaps, *Tsóitsóy*, is imitative of their cry.

[To be continued.]

XXXVIII.—*Diagnoses of new Species of Birds from Central East Africa.* By R. Bowdler Sharpe, LL.D., F.L.S., &c., British Museum.

In the next number of 'The Ibis' I shall, with the Editor's permission, continue my detailed account of my friend Mr. F. J. Jackson's collection. For the present I content myself with giving some diagnoses of species which I have satisfied myself, by a visit to the Museums of Berlin and Frankfort†, are not yet described.

* My friend Rev. J. Wills tells me, "The female is lightish brown, 64 h mottled breast, much like an English Thrush, and altogether unlike [T mate. The native name is *Ramanjèrika*, which is given by you (in Lor ror, I think) to *Terpsiphone mutata*, but which is also called by the Hova *Sikèty*."

† When Mr. Hartert was in London last spring he identified a little

Family Motacillidæ.

1. Macronyx wintoni, sp. n.

Similis *M. ameliæ* (De Tarr.), sed omnino minor, et rostro valde minore distinguendus. Long. tot. 7·2 poll. Angl., culm. 0·5, alæ 3·55, caud. 2·9, tarsi 1·2.

Hab. Kavirondo.

Family Nectariniidæ.

2. Nectarinia æneigularis, sp. n.

Nectarinia famosa (nec L.), Shelley, P. Z. S. 1885, p. 227.

Similis *N. famosæ*, L., sed multo minor, rostro valde curvato et gastræo viridi cyanescentiore distinguenda. Long. tot. 8, culm. 1·25, alæ 2·85, caudæ 4·3, tarsi 0·6.

Hab. Sotik.

3. Cinnyris reichenowi, sp. n.

Similis *C. chloropygiæ*, sed supra-caudalibus et fascia pectorali purpureis nec chalybeis distinguenda. Long. tot. 4, culm. 0·65, alæ 2·1, caudæ 1·4, tarsi 0·65.

Hab. Sotik.

Family Zosteropidæ.

4. Zosterops kikuyuensis, sp. n.

Similis *Z. virenti*, Sund., sed fronte lata flava et annulo ophthalmico albo majore distinguenda. Long. tot. 4·4, culm. 0·5, alæ 2·3, caudæ 1·65, tarsi 0·6.

Hab. Kikuyu.

Family Laniidæ.

5. Lanius mackinnoni, sp. n.

Similis *L. fallaci*, Finsch, sed saturatior, et speculo alari albo nullo, secundariis haud albo terminatis, et rectricum apicibus anguste albis distinguendus. Long. tot. 8·4, culm. 0·7, alæ 3·4, caudæ 3·7, tarsi 0·9.

Hab. Kikuyu.

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bird in Mr. Jackson's collection as *Sylvia lugens* of Rüppell, a spec omitted by Mr. Seebohm from the fifth volume of the 'Catalogue Birds.' I have compared this specimen with the type of *Sylvia luge* Rüpp., and find that Mr. Hartert's surmise was correct; but in my opini the bird is a *Parisoma*, and should stand as *Parisoma lugens* (Rüpp.).

Philipitt.

6. Laniarius castaneiceps, sp. n.

Similis *L. luhderi*, Rchnw., sed cauda rufescenti-brunnea distinguendus. Long. tot. 7·3, culm. 0·9, alæ 3·2, caud. 3, tarsi 1·1.

Hab. Mount Elgon.

Family Turdidæ.

7. Merula elgonensis, sp. n.

Similis *T. cabanisi*, Bp., sed gula et pectore concoloribus grisescentibus, haud striatis distinguendus. Long. tot. 8·5, culm. 0·9, alæ 4·2, caudæ 3·4, tarsi 1·15.

Hab. Mount Elgon.

8. Myrmecocichla cryptoleuca, sp. n.

Fur
milis *M. æthiopi*, Licht., sed nigricans, minime brunnescens.
p. 48 Long. tot. 7·5, culm. 0·9, alæ 4·6, caudæ 2·5, tarsi 1·35.
T
b. Kikuyu.
ger
Family Timeliidæ.
a
9. Crateropus buxtoni, sp. n.

Similis *C. plebeio*, Cretzschm., sed gula albicante, plumis gutturalibus medialiter albo lineatis, et dorsi plumis medialiter nigricantibus distinguendus. Long. tot. 8·5, culm. 0·95, alæ 4·15, caudæ 3·7, tarsi 1·3.

Hab. Turquel, Suk country.

Family Muscicapidæ.

10. Platystira jacksoni, sp. n.

Similis *P. cyaneæ*, sed alis nigris minime albo-notatis distinguenda. Long. tot. 5·3, culm. 0·65, alæ 2·7, caudæ 2·05, tarsi 0·75.

Hab. Sotik.

XXXIX.—*Notices of recent Ornithological Publications.*

[Continued from p. 293.]

64. *Borrer's 'Birds of Sussex.'*

[The Birds of Sussex. By William Borrer, M.A., F.L.S. 8vo. London: 1891. R. H. Porter.]

The late Mr. Knox's work, 'Ornithological Rambles in

Sussex,' admirable though it was at the time of its publication (1849), has long been out of date; and Mr. Borrer's handsome volume, with its five coloured plates by Keulemans, is undoubtedly a valuable addition to our county avifaunas. Much interesting matter will be found in the letterpress, but sometimes facts connected with Sussex have been omitted: for instance, the remarkable fertile hybrids between the Pied Wagtail (*Motacilla lugubris*) and the Grey Wagtail (*M. melanope*), produced in Mr. Monk's aviary at Lewes, are not mentioned. Mr. Borrer may have reasons for disbelieving in the locality assigned to the Short-toed Lark recorded from Amberley (Zoologist, 1888, p. 350); but he might at least mention them, and not pass over the statement in silence. Although unconnected with Sussex, there can be no objec[illegible] to the information given at p. 114, that the first British [illegible] of the Snow Bunting *with eggs* had lately [1888] bee[illegible] tained in Scotland; but Mr. Borrer must not suppose that [illegible] the earliest record, for a nest with five young birds was fou[illegible] in Sutherlandshire in 1885, and a coloured figure of one of the nestlings, with a photograph of the corrie where it was taken and full particulars, are given in Messrs. Harvie-Brown and Buckley's 'Fauna of Sutherland, Caithness, &c.' Again, it is incorrect to say of the Rustic Bunting that the only example which has occurred in England is the one taken near Brighton in 1867, for two other well-authenticated instances are on record (Zool. 1881, p. 465; 1883, p. 33). As regards the Pine Grosbeak, it is not in "the same paper" (Zool. 1877, p. 247), but in one in Zool. for 1890, p. 127, that Mr. Gurney alludes to a bird obtained at Shoreham. On the next page Mr. Gurney has recorded the significant fact that a few years ago some birds of this species were sent in a frozen state from Russia to the principal poulterer at Brighton!

Misprints are few in the present work, but there are several slips, and one of the latter is amusing. Mr. Borrer has got his heading "Mistletoe Thrush" severely correct (except for the omission of a hyphen), but on the next page, in the last paragraph, the old Adam breaks out, and "*Missel* Thrush"

appears in the form with which Willughby, White, Montagu, Yarrell, Hewitson, Cordeaux, Stevenson, the B.O.U. List, and other authorities have familiarized us!

65. *Brewster on new North-American Birds.*

[Descriptions of seven supposed new North-American Birds. By William Brewster. 'The Auk,' viii. p. 139.]

The subspecies described in this article are *Megascops asio* in *cni* from Colorado; *M. a. macfarlanei* from Washington *M. a. saturatus* from Puget Sound; *Contopus richard-*

70. *Ensulæ* from Lower California; *Ammodramus henslowii*

[Ueber *lis* from Dakota; and *Pipilo maculatus magnirostris,* Fürbringer. *arius lucasanus,* and *Sitta carolinensis lagunæ,* all p. 488. om Lower California.

gen 6. *Christy's Local Lists of British Birds.*

a [A Catalogue of Local Lists of British Birds, arranged under Counties. By Miller Christy, F.L.S. 8vo. London: 1891.]

Mr. Christy has done a good deed in preparing a catalogue of the local lists of British birds, which are now becoming very numerous. The titles of the works catalogued are placed under counties, the latter being divided into England and Wales, Scotland, and Ireland, and arranged alphabetically under these three heads. But the works themselves are arranged chronologically.

The list appears to contain about 450 titles.

67. *Dalla Torre on the Fauna of Heligoland.*

[Die Fauna von Helgoland. Von Prof. Dr. K. W. v. Dalla Torre. 8vo. Jena: 1889.]

It is now quite understood that Heligoland is to be the seat of a new Biological Station to be founded and endowed by the Imperial Government of Germany. To no better purpose in our eyes could the German people apply their recent acquisition. Under these circumstances Prof. Dalla Torre's *résumé* of what we as yet know of the Fauna

of Heligoland will come in very conveniently as a basis for future researches. Prof. Dalla Torre passed only a vacation in the island. His memoir is accordingly mainly a compilation, but appears to be thoroughly and conscientiously done. A complete review of the zoological literature relating to Heligoland is prefaced, and the titles of 128 memoirs on the subject are given in footnotes.

As regards the account of the birds given in the present memoir we need not say much. All observations on the birds of Heligoland depend upon Herr Gätke, who long studied its avifauna for the last thirty years. He has now published his long-promised volume on the subject, and it is to that volume that references must be made in future. But Dalla Torre's list will still be useful, as giving a good idea of the extraordinary wealth of the Ornis of Heligoland. It is arranged according to the system and nomenclature of Dresser's 'List of European Birds.'

68. *Dwight on the Horned Larks of North America.*

[The Horned Larks of North America. By Jonathan Dwight, Jun. 'The Auk,' vii. p. 138.]

Mr. Dwight has made a special study of the American Larks of the genus *Otocorys*, and with the assistance of his friends and correspondents has been able to examine a series of 2002 specimens of this group. The conclusion arrived at is that the various local forms "intergrade" so much that trinomialism does not satisfy the problem, although it "gives relief." Mr. Dwight concludes to call the form of N.E. North America *O. alpestris*, as identical with that of Northern Europe, and to arrange 10 other forms from different areas as subspecies. Of these, *O. a. adusta* from Southern Arizona and New Mexico, and *O. a. merrilli* from Eastern Oregon, Washington, and British Columbia, are now differentiated for the first time. A capital outline map is added showing the areas of the 11 forms very plainly.

69. *Evans on the Birds of the Spey Valley.*

[Birds observed in the Valley of the Spey, 1889. By Wm. Evans, F.R.S.E. 'Scottish Naturalist,' 1891, p. 5.]

The January number of the 'Scottish Naturalist' for this year commenced a new series, under the Editorship of Mr. W. Eagle Clarke, of the B.O.U. Amongst the ornithological papers is a list of the birds observed in the valley of the Spey, prepared by Mr. William Evans, also of our Union. Mr. Evans enumerates 90 species as observed during his holiday in this district in 1889, when his abode was at Kincraig, near Loch Insch. *Parus cristatus* was often seen in the pine-woods, and is "by no means rare;" they were always in company with Cole-Tits and Gold-crests.

70. *Fürbringer on the Systematic Position of* Hesperornis.

[Ueber die systematische Stellung der Hesperornithidæ. Von Max. Fürbringer. Ornith. Monats. Deutsch. Ver. z. Schutze d. Vogelw. xv. p. 488.]

In this memoir, after some prefatory remarks on the general history of the subject, Dr. Fürbringer recapitulates all that he said in his great work on the 'Morphology of Birds' on the systematic position of the Hesperornithidæ, and maintains that he has little or nothing to alter. It would appear, therefore, that he is not quite in accord with D'Arcy Thompson and Lydekker, who hold that *Hesperornis* is simply an old ancestor of the Colymbo-Podicipites and has nothing to do with the Struthiones.

71. *Godman and Salvin's 'Biologia Centrali-Americana.'*

[Biologia Centrali-Americana; or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America. Edited by F. DuCane Godman and Osbert Salvin. (Zoology.) Part XCI. 4to. London: 1891. Published for the Editors by R. H. Porter, 10 Chandos Street, Cavendish Square, W.]

The present part of the 'Biologia' (see above, p. 276) carries on the account of the Central-American Cotingidæ nearly to its termination. As regards the typical genus *Cotinga* some new advances are made. It is pointed out that the remarkable differences in the comparative lengths and forms of the primaries in the adult males are sufficient to distinguish the eight known species, or most of them;

and a new arrangement of the species of *Cotinga* based on these characters, which are illustrated by figures, is suggested.

72. *Goodchild on Crested Birds of Prey.*

[Notes on Crested Birds of Prey. By J. G. Goodchild, F.Z.S. Proc. R. Phys. Soc. Edinb. x. p. 202.]

Assimilative or protective coloration and even sexual selection, Mr. Goodchild says, appear hardly to have affected the Birds of Prey at all. Their colours are mostly sober combinations of white, with various shades of brown, grey, and buff, and almost their only decorative feature is the elongation of one or other of the various patches of head-feathers into a so-called crest. After discussing the various styles of crest, the author insists on regarding the "possession of a crest as a character older than the species," and upon studying the distribution of crested Accipitres, c[illegible] covers that with hardly an exception they are absent in th[illegible] Nearctic, Palæarctic and Australian Regions. For a hypothetical explanation of where this peculiar feature may have originated we must refer our readers to the author's own words.

73. *Goodchild on the Cubital Coverts of Birds.*

[The Cubital Coverts of the Euornithæ in Relation to Taxonomy. By J. G. Goodchild, F.Z.S. Proc. R. Phys. Soc. Edinb. x. p. 317.]

After some excellent prefatory remarks on modern principles of zoological classification, Mr. Goodchild puts forward his most recent views on the disposition of the cubital coverts in the Euornithes (for we cannot follow him in his irregular plural of *ornis*), as arrived at since the publication of his paper on the same subject in 1886 (P. Z. S. 1886, p. 184). Mr. Goodchild adopts, with some small modifications, Wray's nomenclature for the feathers of the bird's-wing published in 1887 (P. Z. S. 1887, p. 343). His general conclusion is that "a particular style of overlap or imbrication of the several feathers in each row of the external

cubital coverts and a particular number of feathers in each row are absolutely constant for all the individuals of the same species, for all the species of the same genus, and for all the genera in the same family or even order." For instance, all the Acromyodine Passeres and nearly all the Mesomyodians "exhibit absolutely the same general style of wing-coverts," which is not found in any other group of birds. This principle applies also with more or less truth to the other Orders. Mr. Goodchild points out eleven different "styles" into which the Euornithes fall when considered under this aspect, commencing with the "Cypseline Style" (the most simple) and ending with the "Tubinarine Style," under which head he includes the CATHARTÆ. "So far as wing-style is concerned the American Vultures differ entirely from the normal Birds of Prey, and exactly agree with the Petrels, the Albatrosses, the Frigate-birds and the Adjutants." Mr. Goodchild has also made a discovery which may help to solve the great mystery of "aquincubitalism" (*cf.* Ibis, 1890, p. 79). It would appear that "from the point where the fifth cubital remex is missing there is a marked disturbance in the position of all the coverts." But upon this intricate subject we must refer our readers for further information to the author's paper.

74. *Goss's Birds of Kansas.*

[History of the Birds of Kansas. By N. S. Goss. Royal 8vo. Topeka, Kansas: 1891.]

Col. Goss has favoured us with a copy of his volume on the Birds of Kansas, which we have great pleasure in commending to our readers. It gives us an account of the 343 species and subspecies which have been recognized as occurring within the limits of this central State of the American Union. The arrangement and nomenclature followed are naturally those of the A.O.U., and the descriptions are mostly copied from the standard works on American Ornithology.

The volume is illustrated by "photo-gravures" of 529

mounted specimens which form the "Goss Collection." This in the prospectus of the work is described as follows :—

"The Goss Ornithological Collection is solely the work of this author. Each specimen has been obtained and preserved by his own effort, and the entire collection—which is one of the largest in the country, the result of one man's exertions—has been presented to the State of Kansas, and is on exhibition in a room in the State House set apart by law for that purpose; and his entire time and fortune are devoted to its perfection; long and expensive trips are annually made to increase the collection. Within a few years he has generously prepared for the State, without cost, two separate catalogues of Kansas Birds."

75. *Hart on the Birds of Sinai.*

[Some Account of the Fauna and Flora of Sinai, Petra, and Wâdy Arabah. By Henry Chichester Hart. London. Published for the Committee of the Palestine Exploration Fund, 1891. 1 vol. 4to.]

Mr. Hart accompanied Prof. Hull in his geological expedition to Sinai and the Dead Sea in 1883. His main object was to study the Botany of the district, but other branches of Natural History were not neglected.

Mr. Hart commences with a narrative of his journey, interspersed with remarks on the Fauna and Flora. He then gives systematic lists of the species of various groups, accompanied by field-notes. The chapter on birds relates to species observed in Sinai, Arabia Petræa, and South Palestine from November to February. They were 94 in number. Amongst them are mentioned such interesting species as *Cercomela melanura, Sylvia nana, Argya squamiceps, Pycnonotus xanthopygus, Cinnyris oseæ, Passer moabiticus, Amydrus tristrami,* and *Rhynchæa capensis*, the last new to the Fauna of Sinai.

76. *Hartert on three new Birds.*

[Vorläufiges über einige neue Vogelarten. Von Ernst Hartert. J. f. O. 1890, p. 154.]

These are preliminary descriptions of supposed new species

discovered by Herr Hartert during his preparation of the catalogue of birds in the Senckenberg Museum. They are named *Crateropus larvatus* from Madras (!), *Iole schmakeri* from Mindoro, Philippines, and *Ammomanes lusitanica parvirostris* from Aschabat. *Crateropus larvatus* may be new, but is almost certainly not from any part of British India.

77. *Hartlaub on Birds from Eastern Africa.*

[Vierter Beitrag zur Ornithologie der östlich-äquatorialen Länder und der östlichen Küstengebiete Afrikas. Von Dr. G. Hartlaub. Abhandl. naturw. Ver. Bremen, xii. Heft 1.]

Dr. Hartlaub now gives us a fourth paper on the birds sent by Emin Pasha from Eastern Africa. The present memoir relates to collections made by Emin during his journey from Albert Nyanza to the coast along with Stanley's Expedition, and during his prolonged sojourn at Bagamoyo. At the latter epoch Emin was, as is well known, grievously ill and could not give that special attention to his specimens which was his ordinary habit. To these personal collections are added a series obtained by Bohndorf (well known for his splendid collection from the Niam-niam country, described by Dr. Sharpe in 1884*) at Mtoni, on the Kingani. Altogether, therefore, the present memoir relates to some 140 species, on the general distinctness of which from those of Emin's former collections from Wadelai and other neighbouring districts of the Equatorial Sudan Dr. Hartlaub comments strongly. The present collection contains examples of many species discovered by Fischer in Masailand, and of others obtained by Böhm and Fischer during their journey to the Tanganyika, together with many southern forms, such as *Malimbus rubriceps, Lamprocolius melanogaster, Laniarius quadricolor, Nectarinia mariquensis,* and *Turturæna delegorguei.* The following eight species are described as new:—*Calamoherpe griseldis, Pratincola emmæ, Bradypterus alfredi, Burnesia reichenowi, Erythropygia hartlaubi, Ploceus holoxanthus, Nectarinia filiola,* and *Sternula novella.*

* Journ. Linn. Soc., Zool. xviii. p. 419.

Dr. Hartlaub gives in his prefatory remarks a very useful list of 43 papers relating to the ornithology of this part of Eastern Equatorial Africa.

78. *Lawrence on the former abundance of Migrants near New York.*

[An Account of the Former Abundance of some species of Birds on New York Island, at the time of their Migration to the South. By George N. Lawrence. 'The Auk,' vi. p. 201.]

The veteran ornithologist, Mr. G. N. Lawrence of New York, records his early recollections of the abundance of autumnal migrants flying south in former years, when his home was on the high ground to the north of Manhattanville, and fronting the Hudson River. He was allowed to have a gun first in 1820 (!) and appears to have used it with great success on the enormous flights of Passenger Pigeons and other birds then met with. At the present time a single Passenger Pigeon would be a rarity in this district.

79. *Lawrence on a new Swift and a rare Petrel.*

[Description of a new Subspecies of Cypselidæ of the Genus *Chætura*, with a Note on the Diablotin. By George N. Lawrence. 'The Auk,' viii. p. 59.]

Mr. Lawrence separates the *Chætura* of Guadeloupe from its allied form of Dominica as *Chætura dominica colardeaui*. He adds a note on the "Diablotin" of Guadeloupe, which, according to the information received from Dr. Colardeau, is probably *Œstrelata hæsitata*. Dr. Colardeau does not believe that this bird is quite extinct in Guadeloupe.

80. *Leverkühn on strange Eggs in Birds'-nests.*

[Fremde Eier im Nest.—Ein Beitrag zur Biologie der Vögel. Von Paul Leverkühn. Nebst einer bibliographischen Notiz über Lottinger. 8vo, Berlin und London: 1891.]

In a memoir of some 200 pages, Herr Leverkühn discusses what is to us a somewhat novel ornithological

subject—that is, the behaviour of birds when strange eggs are introduced into their nests. We all know that a large number of Passerine birds do not object to Cuckoos' eggs, but it would seem that for some reason they are by no means always ready to adopt the eggs of other species. Herr Leverkühn divides his theme into four heads: (1) as regards eggs of the same species introduced by other birds; (2) as regards such eggs introduced by man; (3) as regards eggs of other species introduced by other birds; (4) as regards such eggs introduced by man; and gives us a mass of details under each head. We cannot exactly understand the drift of Herr Leverkühn's memoir as a whole, or make out that he comes to any very definite conclusions on the subject. But the habits of our feathered friends are always interesting under any aspect, and the essay will be read with pleasure by many students of bird-life.

A complete *résumé* of references to the nesting-habits of the Megapodes, introduced as a footnote (pp. 36–45), is a very useful compilation.

81. *Lilford's 'Coloured Figures of British Birds.'*

[Coloured Figures of the Birds of the British Islands. Issued by Lord Lilford, F.Z.S. &c., President of the British Ornithologists' Union. Part XI., September 1889; XII., January 1890; XIII., March 1890; XIV., May 1890; XV., July 1890; XVI., September 1890; XVII., February 1891. 8vo. London.]

We have been rather remiss, it may well be said, in not having chronicled the regular appearance of our President's series of illustrations of British Bird-life during the two years last past. Our last notice (Ibis, 1889, p. 386) related to Parts V. to X. We have now to record the issue of seven more parts, each containing 12 beautiful chromo-lithographs and the accompanying letterpress.

It is hardly necessary to state that the work is appreciated by the public as its merits deserve. It is sufficient, indeed, to point to the fact that the entire edition is already subscribed for, and that a second edition is in preparation. After this experience it can be no longer said that birds are

not good subjects for the improved modern art of chromo-lithography. At the same time, on examining Lord Lilford's plates, it becomes at once evident that some subjects are much better adapted for treatment in this way than others.

82. *Lydekker on Fossil Birds in the Dublin Museum.*

[Catalogue of Fossil Mammals, Birds, Reptiles, and Amphibians in the Science and Art Museum. By R. Lydekker, B.A. Dublin: 1891.]

Mr. Lydekker has catalogued the fossil remains belonging to the first four classes of Vertebrates in the Science and Art Museum at Dublin, and pronounces the collection to be one of great value in certain particulars. The specimens referable to the Class Aves are not numerous, but amongst them are some of considerable interest to British ornithologists. A right humerus from the Ballynamintra Cave in Waterford is assigned to *Tetrao tetrix*, and is "very important as proving the former existence of that species in Ireland, of which there has been no (prior) evidence." Similarly, bones from the same cave and from Shandon Cave in the same county testify to the former presence of the Ptarmigan (*Lagopus mutus*) in Ireland.

83. *Lydekker's Catalogue of Fossil Birds.*

[Catalogue of the Fossil Birds in the British Museum (Natural History), Cromwell Road, S.W. By Richard Lydekker, B.A. London: 1891.]

The study of fossil birds has been comparatively neglected by ornithologists, although it is obvious that, as in the case of other Vertebrates, we cannot hope to understand the Class Aves properly without a knowledge of its extinct forms. My. Lydekker's Catalogue gives us an excellent summary of the present state of our acquaintance with fossil birds, as he introduces into his series "all extinct birds (with the exception of those belonging to the Passeres and Picariæ) from the Tertiaries of Europe, which have received distinct specific names, and have been described or figured with sufficient exactness to entitle them to rank as species."

In recent birds, as is well known, more than half the characterized species belong to the great Order Passeres. But fossil Passeres are almost unknown. Some six pages only are devoted by Mr. Lydekker to this portion of the subject, and not a single extinct genus of Passeres is included in the list. On the other hand, we find nearly half the volume devoted to the remains of Ratitæ—an order very meagrely represented in modern days, but extensively diffused in former epochs. The "Imperfection of the Geological Record" is, of course, partly answerable for this strong contrast; but the Passeres are emphatically a modern and highly developed group, and the Ratitæ an ancient one of low organization.

Fossil birds, Mr. Lydekker tells us, are mainly known to us by more or less imperfect long-bones and coracoids, and on these remains principally their osteological characters are consequently based. The clearly drawn woodcuts interspersed throughout this volume mostly relate to these fragments, and will give much assistance to their study. One of the great features of the National Collection is the grand series of the remains of the Dinornithidæ of New Zealand, of which 22 species are embraced in the present Catalogue.

The following new genera of fossil birds are now first introduced:—

Actiornis (Phalacrocoracidæ); *Proherodius* (Ardeidæ), *Propelargus*, *Amphipelargus* (Ciconiidæ); *Ibidopsis* (Plataleidæ); *Geranopsis* (Gruidæ); *Milnea* (Œdicnemidæ); *Ægialornis* (Ægialornithidæ); *Pseudapteryx* (Apterygidæ); *Pachyornis* (Dinornithidæ); *Hypselornis* (Casuariidæ).

New species described in the volume are the following:—

Strix melitensis, Pelecanus fraasi, Actiornis anglicus, Proherodius oweni, Propelargus cayluxensis, Amphipelargus majori, Ibidopsis hordwelliensis, Elornis anglicus, Agnopterus hatoniensis, Fuligula arvernensis, Columba melitensis, Palæortyx cayluxensis, Grus hordwelliensis, Geranopsis hastingsiæ, Otis affinis, Milnea gracilis, Ægialornis gallicus, Diomedea anglica, Colymboides anglicus, Pseudapteryx gracilis, Megalapteryx tenuipes, Pachyornis immanis, Hypselornis sivalensis.

not good subjects for the improved modern art of chromo-lithography. At the same time, on examining Lord Lilford's plates, it becomes at once evident that some subjects are much better adapted for treatment in this way than others.

82. *Lydekker on Fossil Birds in the Dublin Museum.*

[Catalogue of Fossil Mammals, Birds, Reptiles, and Amphibians in the Science and Art Museum. By R. Lydekker, B.A. Dublin : 1891.]

Mr. Lydekker has catalogued the fossil remains belonging to the first four classes of Vertebrates in the Science and Art Museum at Dublin, and pronounces the collection to be one of great value in certain particulars. The specimens referable to the Class Aves are not numerous, but amongst them are some of considerable interest to British ornithologists. A right humerus from the Ballynamintra Cave in Waterford is assigned to *Tetrao tetrix*, and is "very important as proving the former existence of that species in Ireland, of which there has been no (prior) evidence." Similarly, bones from the same cave and from Shandon Cave in the same county testify to the former presence of the Ptarmigan (*Lagopus mutus*) in Ireland.

83. *Lydekker's Catalogue of Fossil Birds.*

[Catalogue of the Fossil Birds in the British Museum (Natural History), Cromwell Road, S.W. By Richard Lydekker, B.A. London : 1891.]

The study of fossil birds has been comparatively neglected by ornithologists, although it is obvious that, as in the case of other Vertebrates, we cannot hope to understand the Class Aves properly without a knowledge of its extinct forms. My. Lydekker's Catalogue gives us an excellent summary of the present state of our acquaintance with fossil birds, as he introduces into his series "all extinct birds (with the exception of those belonging to the Passeres and Picariæ) from the Tertiaries of Europe, which have received distinct specific names, and have been described or figured with sufficient exactness to entitle them to rank as species."

In recent birds, as is well known, more than half the characterized species belong to the great Order Passeres. But fossil Passeres are almost unknown. Some six pages only are devoted by Mr. Lydekker to this portion of the subject, and not a single extinct genus of Passeres is included in the list. On the other hand, we find nearly half the volume devoted to the remains of Ratitæ—an order very meagrely represented in modern days, but extensively diffused in former epochs. The "Imperfection of the Geological Record" is, of course, partly answerable for this strong contrast; but the Passeres are emphatically a modern and highly developed group, and the Ratitæ an ancient one of low organization.

Fossil birds, Mr. Lydekker tells us, are mainly known to us by more or less imperfect long-bones and coracoids, and on these remains principally their osteological characters are consequently based. The clearly drawn woodcuts interspersed throughout this volume mostly relate to these fragments, and will give much assistance to their study. One of the great features of the National Collection is the grand series of the remains of the Dinornithidæ of New Zealand, of which 22 species are embraced in the present Catalogue.

The following new genera of fossil birds are now first introduced:—

Actiornis (Phalacrocoracidæ); *Proherodius* (Ardeidæ), *Propelargus*, *Amphipelargus* (Ciconiidæ); *Ibidopsis* (Plataleidæ); *Geranopsis* (Gruidæ); *Milnea* (Œdicnemidæ); *Ægialornis* (Ægialornithidæ); *Pseudapteryx* (Apterygidæ); *Pachyornis* (Dinornithidæ); *Hypselornis* (Casuariidæ).

New species described in the volume are the following:—

Strix melitensis, Pelecanus fraasi, Actiornis anglicus, Proherodius oweni, Propelargus cayluxensis, Amphipelargus majori, Ibidopsis hordwelliensis, Elornis anglicus, Agnopterus hatoniensis, Fuligula arvernensis, Columba melitensis, Palæortyx cayluxensis, Grus hordwelliensis, Geranopsis hastingsiæ, Otis affinis, Milnea gracilis, Ægialornis gallicus, Diomedea anglica, Colymboides anglicus, Pseudapteryx gracilis, Megalapteryx tenuipes, Pachyornis immanis, Hypselornis sivalensis.

A new name (*Emeus gravipes*) is proposed for *Emeus gravis*, Owen.

The volume contains accounts of about 129 genera and 250 species of fossil birds.

84. *Meyer on an albino Grey-hen in male plumage.*

[Partieller Albinismus einer hahnenfedrigen Birkhenne. Von A. B. Meyer. 'Diana,' 1891, p. 162.]

Dr. A. B. Meyer has kindly sent us a number of 'Diana,' a Swiss sporting journal published at Berne, in which he has described a partially albino hen of *Tetrao tetrix* in male plumage. The specimen, obtained in Entlebuch, had been variously determined by those who had previously examined it. But it has now fortunately become one of the fine series of varieties and hybrids of the Tetraones in the Royal Zoological Museum at Dresden, and we may safely rely on Dr. Meyer's determination of it. His remarks on this curious bird will be read with interest.

85. *Meyer and Helm's Report on the Ornithological Observing-Stations for Saxony for* 1889.

[V. Jahresbericht (1889) der ornithologischen Beobachtungstationen im Königreich Sachsen, bearbeitet von Dr. A. B. Meyer und von Dr. F. Helm. 4to. Dresden: 1890.]

We have the pleasure of calling attention to another of this excellent series of reports (*cf.* Ibis, 1890, p. 251), which is a model of what such publications should be. It contains the accounts of 47 observers for 1889. There are 208 species of birds included in the list.

86. *North on the plumage of* Malurus.

[Notes upon the Plumage of the Adult Males in certain species of the Genus *Malurus*. By A. J. North, F.L.S. Proc. Linn. Soc. N.S. Wales, ser. 2, v. p. 505.]

Gould was in error, according to Mr. North and other Australian authorities, in asserting that the male *Maluri*

only assume their full dress during the pairing-season. It would seem that the fully adult plumage of the male, after having been once assumed, is never cast off again. This is certainly the case in *M. cyaneus*, and appears to be so in other species.

87. *Pelzeln on the History of the Bird Collection at Vienna.*

[Geschichte der Säugethier- und Vogel-Sammlung des k. k. naturhistorischen Hofmuseums. Von August von Pelzeln. Annalen k. k. naturh. Hofmus. v. Heft 4, 1890.]

Herr v. Pelzeln gives us here a very useful and interesting account of the history of the collections of Mammals and Birds belonging to the Vienna Museum, well known as one of the principal museums of Europe, and of which the proper title, under its new organization, is now the "Imperial Royal Court-Museum of Natural History." It was commenced in 1794, when the Emperor Francis the Second purchased of Joseph Natterer, his Falconer, a series of native mammals and birds, and gave him orders to make it as complete a collection of the Mammals and Birds of the Austrian Empire as possible. Joseph Natterer, Jr., succeeded his father as Custos of the Bird-collection in 1810. He was the elder brother of Johann Natterer, probably the best and most successful collector of birds that has ever lived, who was made "Custos-adjunct" to Joseph Natterer in 1835, after his return from his celebrated expedition to Brazil. Johann Natterer died in 1843, and his brother Josef in 1851, after which Heckel was Custos of the Ornithological Collection until his death in 1857, when he was followed by Herr v. Pelzeln, who on his recent retirement was succeeded by Dr. L. v. Lorenz.

Herr v. Pelzeln enumerates the various additions to the Ornithological Collection from its foundation to the present day, mentioning all the more important acquisitions, amongst which the most noteworthy, perhaps, are the series of Latham's types from the "Museum Leverianum" purchased in London in 1806, and the great Brazilian Collection of Johann Natterer.

88. *Pidsley and Macpherson on the Birds of Devon.*

[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. 8vo. London and Exeter: 1891.]

The outside of this work is embellished by a reproduction in gold of Mr. Lodge's beautiful illustration of the Goshawk, drawn expressly for Mr. Saunders's 'Illustrated Manual of British Birds.' Although, as we understand, substantial recompense was made to the publishers, the motive for this appropriation is not very obvious, inasmuch as the Goshawk is not included among the birds of Devon. Turning to the inside, we find a coloured frontispiece, by Mr. Keulemans, of a Buff-backed Heron in breeding-plumage, but seeing that Montagu's Devonian specimen—still in the British Museum—is in winter dress, an exact portrait of the only well authenticated British example would have been preferable. We cannot say how much worse the text would have been without the intervention of the Rev. H. A. Macpherson, but even his editorship has not availed to make a satisfactory work out of the odds and ends from 'The Zoologist' and other works, strung together by Mr. Pidsley. The treatment of many species is somewhat meagre, and, while we commend the author's discretion respecting the breeding-haunts of the Chough, there can be no reason for similar reticence as to a celebrated nesting-place of Cormorants in North Devon, visible for miles round. More also might well have been said of the ancient colony of Gannets on Lundy Island. In the fourth edition of 'Yarrell' a specimen of the Buff-breasted Sandpiper was recorded as having been shot on the above-named island, and as being in the collection of Dr. Woodforde, near Taunton, where numbers of ornithologists have seen it. Yet Mr. Pidsley ignores this, substituting a notice of a supposed specimen shot near Kingsbridge in 1857, which is set down in Mr. Harting's 'Handbook of British Birds' as a young *Machetes pugnax*. The notes by the editor, and his memoir of that excellent ornithologist, the late John Gatcombe, form the redeeming feature of this work.

89. *Pleske's 'Ornithographia Rossica.'*

[Ornithographia Rossica. Die Vogelfauna des Russischen Reichs. Von Th. Pleske. Band II. Lief. 4. *Hypolais* und *Lusciniola*; Lief. 3 & 4. Rohrsänger (*Acrocephalus*). 4to. St. Pétersbourg: 1890.]

We have now received Parts 3 and 4 * of this valuable work, which we are glad to see making good progress. They continue the history of the Sylviidæ of the Russian Empire and seem to be most carefully elaborated in every particular.

The following species are figured on plate iii.:—*Lusciniola* (*Herbivocula*) *schwarzi*, *L.* (*Herbivocula*) *neglecta*, *L.* (*Dumeticola*) *intermedia*, and *Acrocephalus* (*Calamodus*) *bistrigiceps*.

90. *Raeburn on the Great Skua.*

[The Great Skua (*Stercorarius catarrhactes*): its present status as a British Bird. By Harold Raeburn. Scott. Nat. 1891, p. 18.]

Mr. Raeburn gives us very interesting information on an ornithological subject which has recently attracted much public attention, and has actually been honoured with a "leader" in 'The Times' †, namely the present state of the three colonies of the Great Skua existing in the British Islands. These breeding-stations are all in the Shetland group—Foula, Unst, and Northmavin, the last named, originally the largest, being now almost deserted. In 1890 the only pair of young hatched on Northmavin were carried off. Altogether it is estimated that "about 75 pairs are the entire number of Great Skuas at present nesting on British soil."

91. *Sclater and Shelley on the Picariæ.*

[Catalogue of the Birds in the British Museum. Vol. XIX. Catalogue of the Picariæ: Scansores and Coccyges, comprising the families Rhamphastidæ, Galbulidæ, and Bucconidæ, by P. L. Sclater; and the families Indicatoridæ, Capitonidæ, Cuculidæ, and Musophagidæ, by G. E. Shelley. London: 1891.]

The nineteenth volume of the Catalogue of Birds, which has been recently issued, contains an account of the remaining

* *Cf.* previous notice, Ibis, 1890, p. 255.

† See 'The Times,' March 21st, 1891.

families of "Scansores," according to the arrangement adopted in this work, and of the two families of the suborder "Coccyges." The Picidæ, which are regarded as the first family of Scansores, were treated of by Mr. Hargitt in the eighteenth volume. The present volume commences with the Indicatoridæ and Capitonidæ, which have been catalogued by Capt. Shelley. Of the former family 12 species are recognized, represented in the collection by 86 specimens; of the latter 112 species, represented by 2183 specimens. Next follow the Rhamphastidæ (59 species, 673 specimens), Galbulidæ (21 species, 243 specimens), and Bucconidæ (43 species and 419 specimens), catalogued by the Editor of this Journal. The volume concludes with the Coccyges, catalogued by Capt. Shelley. Of this suborder the Cuculidæ contain 176 species, represented in the British Museum by 5423 specimens, and the Musophagidæ 25 species, represented by 204 specimens.

Out of the 448 species recorded in the present volume only 32 are not represented in the National Collection.

One new genus is founded in the present volume, *Urococcyx*, for *Phœnicophaus erythrognathus*. The following new species are introduced by Capt. Shelley:—*Xantholæma intermedia*, *Capito granadensis*, *C. salvini*, *Coccyzus dominicæ*, and *Centropus purpureus*. A new Jacamar is named *Brachygalba fulviventris* by his coadjutor.

The following species are figured in the present volume:—*Melanobucco æquatorialis*; *Tricholæma stigmatothorax* and *T. affine*; *Barbatula chrysopyga* and *B. bilineata*; heads of *Cyanops davisoni*, *C. ramsayi*, and *C. incognita*, *Capito versicolor*, *C. steeri*, *C. richardsoni*, *C. salvini*, *C. granadensis*, and *C. bourcieri*; *Pteroglossus didymus*; *Aulacorhamphus erythrognathus*, *A. calorhynchus*, *A. whitelyanus*, and *A. cyanolæmus*; *Coccystes caroli* and *C. hypopinarius*; heads of *Coccyzus dominicæ*, *C. minor*, and *C. maynardi*; and *Centropus purpureus*.

92. *Stone on the Species of* Psilorhinus.

[On the Genus *Psilorhinus*, Rüppell. By Witmer Stone. Proc. Acad. Nat. Sci. Philad. 1891, p. 94.]

After examining the specimens in the Museum of the Academy of Natural Sciences of Philadelphia (which comprehend the type of *Corvus vociferus*, Cabot), and those in the National Museum, Mr. Stone can recognize but two species of *Psilorhinus*. These are *P. morio*, extending from Tehuantepec north to the Rio Grande valley, and *P. mexicanus*, ranging from Southern Mexico to Costa Rica, with the *possibility* of a third distinct form (*P. vociferus*) in Yucatan. The so-called *P. cyanogenys* of Sharpe is not distinct from *P. mexicanus*.

Messrs. Salvin and Godman have come to nearly the same conclusions (Biol. C.-A., Aves, i. p. 506).

93. *Von den Steinen on the Birds of South Georgia.*

[Die internationale Polarforschung 1882-1883. Die Deutschen Expeditionem und ihre Ergebnisse. Band II. Beschreibende Naturwissenschaften in einzelnen Abhandlungen, herausgegeben in Auftrage der Deutschen Polar-Commission von deren Vorsitzendem Dr. G. Neumayer. Berlin: 1890.]

The second volume of the memoirs of the German Section of the International Polar Commission of 1882–83 contains an excellent chapter on the Seals and Birds of South Georgia, which is well worthy of attention. The German Expedition passed a year in that remote island, from August 1882 to September 1883, and had full opportunities of studying its animal life. A general account of the birds collected by the Expedition was published by the late Dr. Pagenstecher in 1885 (see Ibis, 1885, p. 319). We have now a mass of instructive details upon the ways and habits of the 22 species met with, illustrated by very characteristic sketches. We may remark that the so-called *Querquedula eatoni* of South Georgia has been determined by Dr. Cabanis to be different from the true *Q. eatoni* of Kerguelen Island, and named *Querquedula antarctica* (see J. f. O. 1888, p. 118).

XL.—*Letters, Extracts, Notices, &c.*

We have received the following letters, addressed to the Editor of 'The Ibis':—

Munich, 23rd April, 1891.

Sir,—You refer in 'The Ibis' (1891, p. 278) to a paper of Mr. Hartert, in which he relates that *Surnia ulula* has been apparently confounded in some cases with *Asio accipitrinus*. This remark (*cf.* J. f. O. 1890, p. 100) affects some well-known German ornithologists, such as Baron v. Droste-Hülshoff, whose son is the author of the 'Avifauna of the Isle of Borkum,' the late E. F. v. Homeyer, and Prof. Dr. Altum of Neustadt-Eberswalde. The last-named replied in the last issue of the J. f. O. (1891, pp. 104–106) to Mr. Hartert, and rejected his suppositions earnestly. I did not think it worth while to do the same, as Mr. Hartert with his notes attacks *primo loco* the Baron E. F. v. Homeyer, who has already dealt with my opinion (J. f. O. 1888, nec 1880, pp. 358–359). I wish, however, now to repeat that the bird in question met with on the sea-shore near Kiel *was not* an *Asio accipitrinus*, a species which I have observed and killed there many times. I maintain what I first wrote, and what is now confirmed by the authority of E. F. v. Homeyer and that of Professor Altum.

I am, yours &c.,
Paul Leverkühn.

Mogador, Morocco,
13th May, 1891.

Sir,—As I observe that Mr. Howard Saunders, in his 'Manual of British Birds,' speaks of the White-winged Black Tern (*Hydrochelidon leucoptera*) as "hardly known in Western Morocco," while Lieut.-Col. Howard Irby, in his 'Ornithology of the Straits of Gibraltar,' speaks of a single specimen having been shot in 1869 near Tangier, and says that he has not himself observed it on either side of the Straits, it may possibly interest some of your readers to learn that I have seen several of these birds during the begin-

ning of this month (May) in the vicinity of Mogador, and shot an undoubted specimen yesterday. It was hovering and dipping over a marshy pond in company with a number of Whiskered Terns (*Hydrochelidon hybrida*) and Black Terns (*H. nigra*), from which latter I distinguished it when on the wing by the conspicuous white on the shoulder, and in the hand by its dark red bill and bright red legs.

Whiskered and Black Terns have been very numerous here the last week or so; I have also seen the Sandwich Tern (*Sterna cantiaca*), which has been with us on and off since winter, and a good many Little Terns (*Sterna minuta*).

Most of these birds should, I imagine, soon be getting away to their breeding-grounds.

Large spring arrivals of Redshank occurred at the end of April and beginning of May; plenty of Grey Plover (*Squatarola helvetica*) are now here in breeding-plumage, and a good many Whimbrel are paying us their usual May visit.

Yours &c.,

Chas. A. Payton.

Basingstoke, May 11th, 1891.

Sir,—It was only towards the end of April that I had an opportunity of perusing the 'Auk' for January 1891, and consequently I have been in ignorance of the notice of my 'Catalogue of the Picidæ in the British Museum,' signed J. A. A. (presumably Mr. J. A. Allen). I am taken to task upon several points, and perhaps I may be permitted, through your Journal, to say a few words in reply.

(1) Upon page 93 Mr. Allen writes:—"In respect to specific names, those not pleasing to the author, through faulty significance or construction, are thrown over regardless of previous currency." My adoption of the name of *Colaptes mexicanus* instead of *C. cafer* is in accordance with previous currency (though not of priority), and the recently unearthed name of *cafer* (although Canon xxxi. of the A.O.U. Code would sanction its use) is specially instanced by our Code, law 10, as one to be avoided.

(2) Upon page 93, after quoting some of my observations upon *Colaptes mexicanus*, Mr. Allen remarks :—"He cites birds from Vancouver and Nevada that resemble others from Mexico. Has it occurred to him that the North-American forms of *Colaptes* are migratory birds, that the particular examples mentioned from Mexico are either winter specimens or without record of capture, and that distribution in the breeding-season is one of the most important elements of the problem?" I cannot well have read the many learned and instructive works by American authors without being aware that the North-American *Colaptæ* do migrate, and I do not regard Mr. Allen's query as a complimentary one. As to the assertion that the examples from Mexico (mentioned by me) are either winter specimens or without record of capture, I reply that nearly all the Mexican examples mentioned in the 'Catalogue' were not only collected throughout almost the entire country by trustworthy men, but are dated January, February, March, April, June, July, August, September, and December. Some of these dates surely do not point to the birds being winter specimens. Does Mr. Allen wish us to understand that these so-called winter specimens are migrants? I mention this, because special attention is drawn to the interesting features of distribution during the breeding-season. Migration could not reduce the measurements of the species.

(3) Mr. Allen states that *Melanerpes "melanopogon* is a pure synonym of *formicivorus*, Swains., as well from the original description and figure as from the locality of the type." The locality is simply "Le Mexique," not very definite, certainly, when both forms are found in that country. The figure is, I admit, not typical; but birds not purely typical must occur where there is intergradation, and Mr. Allen must acknowledge that a difficulty sometimes arises in determining upon which side to place certain intermediate forms.

(4) In objecting to the use of the generic title *Dendrocopus*, Koch, in place of *Dryobates*, Boie, Mr. Allen makes the following remark :—"This point was well considered by the A.O.U. Committee, and *Dendrocopos*, Koch, was found to be

slightly antedated by *Dendrocopus*, Vieill., though both names were published in the same year. In any case *Dryobates* has a clear title, while *Dendrocopus* has not." Although *Dendrocopus* of Vieillot appeared in the same year as *Dendrocopos* of Koch, the former is a pure synonym of *Dendrocolaptes*, having the same type (*certhia*, Bodd.), and has no status whatever. Koch's title has, on the contrary, been almost constantly used, and its general acceptation is strong evidence of its priority. It has yet to be proved that *Dendrocopus* of Vieillot antedates that of Koch, and it is to be regretted that Mr. Allen did not favour us with exact information on this point. Mr. Allen's statement, which is so much opposed to the generally accepted views on this subject, would have carried much greater weight had he given us his authorities.

(5) The two specimens from Tarpon Springs, Florida (*W. E. D. Scott*), placed under *Dendrocopus maynardi* in the Addenda to the Catalogue, were so placed by mistake, and should come under *D. villosus*.

(6) In my footnote to *Dendrocopus gairdneri* (*op. cit.* p. 242) I have certainly said that *D. pubescens orœcus*, Batchelder, is, "in my opinion, barely worthy of subspecific rank," and Mr. Allen observes that "it is not so treated." I could not treat it as a subspecies if I did not think it worthy to rank as such.

(7) The fact of *Picoides dorsalis* being accorded full specific rank is, writes Mr. Allen, "explainable probably on the ground of the smallness of Mr. Hargitt's series, the evidence of which is preferred to the consensus of American opinion, based on adequate material." The series examined by me may be small compared with the number of specimens contained in the American Museums, nevertheless I gave the bird the rank I thought it merited; and, while I entertain the highest respect for the opinions of American ornithologists, I think it scarcely dignified in Mr. Allen to "hold the stick over the naughty boy." If ornithologists of other nationalities are to be "called over the coals" for daring to differ in questions concerning American birds, I presume Mr. Allen will consider my having described *Dendrocopus arizonæ*

as a species distinct from *D. stricklandi* of Malherbe as an act of treason. My views upon that point were *quite opposed to the consensus of American opinion*, which now appears to have changed, and, I am happy to say, fully recognizes the correctness of my views upon that question. The apparent assumption of certain ornithological *rights* which Mr. Allen seems to claim for his countrymen is, I think, unwisely suggested, and leads one to picture Mr. Allen's pen as surmounted by a banner bearing the motto "Noli me tangere," which I venture to suggest might be replaced by the more charitable one, "Live and let live."

(8) Upon page 95 Mr. Allen favours us with the following:—"Mr. Hargitt's treatment of our Pileated Woodpecker presents a curious and lamentable case. He removes it from the genus *Ceophlœus* (the propriety of which we leave as merely a matter of opinion) and places it under *Dryotomus* of Swainson (1831), of which he considers *Hylatomus* of Baird (1858) as a pure synonym, giving the same species as the type of each, namely *Picus pileatus*, Linn. Although Swainson placed *P. pileatus* under his genus *Dryotomus*, he expressly gives as its 'typical species' *Picus martius* (Fauna Bor.-Am. ii. p. 301), thus making his *Dryotomus* a pure synonym of the genus *Picus* as of late restricted, leaving *Hylatomus*, Baird, available for *Picus pileatus* for those who wish to separate it from *Ceophlœus*." I may have erred in using Swainson's generic title *Dryotomus* for the Pileated Woodpecker, and Mr. Allen is unquestionably right in saying that Swainson gives *P. martius* as the type; but I was no doubt led into this *grievous* mistake by finding that the only species of the genus in Swainson's work above quoted was (as a matter of course) *pileatus*, and, secondly, that Swainson, in his 'Classification of Birds,' ii. p. 308 (1837), under *Dryotomus*, omits *P. martius*, and gives the first of the typical species as *pileatus*. Granting that I am in error, I fail to see anything *lamentable* in the case. How comes it that *Hylatomus* of Baird has been (according to Mr. Allen's own showing) almost universally recognized as the generic title for *pileatus* from 1858 to 1886, and then supplanted in the

'Check-list of N. Am. Bds.,' 1886, by Cabanis's *Ceophlœus*? The answer is not far to seek, and those who have used Baird's title for nearly thirty years without having discovered that it was preoccupied, cannot consistently view *my case* as a specially lamentable one. It seems to me that the saddle fits equally well the other horse, and I think it rather hard that a vessel hailing from a foreign port should be liable to a penalty, and that one's own ship, which itself cannot show a clean "bill of health," should be exempt.

I am, yours &c.,

EDWARD HARGITT.

Natural History Museum, S.W.

SIR,—I wish to correct two mistakes which, since the publication of my "Notes on some Birds obtained at Madeira, Deserta Grande, and Porto Santo" (Ibis, 1890, pp. 438–445), have come to my notice.

In the first place, by an unfortunate accident, the name *Crithagra butyracea* is given in both the lists of Madeira and Deserta Grande birds to the Common Canary. This is, of course, quite a mistake, as this name refers to the Cape Canary, and I should have written *Crithagra canaria*, or, as Dr. Sharpe calls it, *Serinus canaria*. The error arose through my following the nomenclature given in Mr. Harcourt's 'List,' which was all that I had to go by during my stay on the island.

Secondly, my attention has recently been called by Mr. Salvin to the probability that the small Shearwaters I got at Deserta Grande and the Lime Island, Porto Santo, and called *Puffinus obscurus*, are really of two species. On examining my specimens more carefully a second time, I find this is a fact, and an exceedingly interesting one; the Porto Santo birds only are *P. obscurus*, while those from Deserta Grande are *P. assimilis*, Gould, originally described (P. Z. S. 1837, p. 156) from New South Wales.

In the Gould Collection there is an old specimen of *P. assimilis* said to have come from Madeira, but no one seems to have trusted the locality. No doubt this discovery accounts

for the fact which I noted in my above-mentioned paper, but was unable to explain, viz. that at Porto Santo the birds had already bred, and that in May there were young in every stage, from those covered with down to birds in nearly adult plumage, while at the Desertas there were no signs of any of these birds breeding, though Mr. Harcourt, and subsequently Mr. Hurrell, obtained birds and eggs there. The two specimens I have from Deserta Grande are a female adult and a male of the year, which has still the pale edgings to the wing-coverts and feathers of the back.

The above remarks suggest several questions which require to be answered :—

1. Does *Puffinus assimilis* only come north after breeding in the southern islands of the Atlantic?
2. Were the birds found breeding on the Desertas *P. assimilis* or *P. obscurus*?
3. If *P. assimilis* does breed on the Desertas, had it finished in the month of May, when *P. obscurus* was still busy at Porto Santo?
4. To which species do the two specimens which have occurred in the British Isles belong?

Yours &c.,

W. R. Ogilvie Grant.

Nikko, Interior of Japan,
24th April, 1891.

Sir,—I have had a perfect voyage out to Japan and splendid weather, but have not much to say about bird-life. *Larus ichthyaetus* was very abundant near Ismailia. Five species of Shearwater and Petrel were common in the Red Sea. One large one with white rump and whitish bar across the end of its tail puzzled me much. Of course we could not catch any. We crossed the path of many returning migrants near Aden, and Hoopoes, Common Swallows, a Goatsucker, and various Warblers and Buntings, among them *Emberiza cæsia*, came on board to rest. I had three delightful days in Ceylon, and especially enjoyed the Peradenia Gardens; but unfortunately Trimen was away in Java for a few weeks.

Kandy and the country round is magnificent. I made the acquaintance of scores of birds in life, for the first time; among them the green Ceylonese *Cissa*, and Bulbuls innumerable. Arrived at Hongkong, I did not remain long, but went straight up to Shanghai, as the ship had to stay 23 days at Hongkong. I forgot to say I had a pleasant three days at Singapore, and saw a good deal of Mr. Davison, who was just preparing for a great exploring expedition to some mountains in the interior of Malacca, 14,000 feet high, which have never yet been visited by Europeans. The expedition, a small, but complete one, is a Government affair, consisting of an officer of Engineers, a geologist, botanist, and Davison. Davison had great hopes of many discoveries in the upper ranges of these hitherto untrodden mountains.

From Shanghai I proceeded in a Chinese steamer to Ningpo, where I had a friend. Under his guidance I went up in a canal-boat to the foot of the mountains, 150 miles, travelling in our little boat towed by men night and day. I saw many birds in the district where Swinhoe made his discoveries, and recognized many of his species, but had no gun, and could not collect. But my three weeks in China were thoroughly well spent.

Returning to my steamer, we had a day at Nagasaki, far more tropical in appearance than Shanghai, though north of it. I should say that near Shanghai is the great Jesuit establishment of Sikawei. Here I found Père Heude in charge of their museum, which is exclusively local, but had a few rare specimens. He has also a small menagerie. In it were two splendid adult specimens of *Haliaetus pelagicus*, one of them without any white—all pure black, which he proposed to describe as new. The *Haliaeti* were both from Kamtschatka. He had also a wild goat from Mongolia, which he considers new. The Zoological Gardens of Tokio are in their infancy — tigers, leopards, bears, elephants, but the most popular curiosity is two sheep from England. The Tokio University is a splendid outline, only partially filled in, but the Museum, under Dr. Ijima, is most creditable and starting on

the right plan. The day before my first visit arrived a box of skins from Tsu Shima, the island whence my *Picus richardsi* came. They sent a collector there for it, as the Corean species is distinct. He has brought back 2 ♀ and 1 ♂, which latter has the head and crest rich crimsom. The *Hypsipetes* is distinct from *H. amaurotis*, and an *Emberiza* is between *E. ciopus* and *E. cioides*. Ijima is going to send you a paper on the birds of Tsu Shima. In the forests on the mountains here I have had the pleasure of watching *Erithacus akahige* and *Accentor rubidus*. The Robin is a mountain bird and keeps to the skirts of the forest. The *Accentor* too keeps to the high ground, not below 3000 feet; the other I found only 4000 feet up, and the people at Nikko, 2000 feet, do not know it. Altogether I am having a good time, though I cannot collect myself. The forest is an Imperial preserve, and no shooting is allowed.

Yours &c.,
H. B. Tristram.

Calcutta, 15th May, 1891.

Sir,—I received the other day, from a correspondent of mine, Mr. Harold S. Ferguson of Trevandrum, in Travancore, a bird for identification. We have no specimen like it in the Museum here, but I take it to be a young bird of the year of *Merula bourdilloni*, the Travancore Blackbird.

As the young plumage of this species appears to be unknown I have drawn up a short description of it, which may be useful.

Above slaty black, the feathers of the head, anterior part of the back, and scapulars with pale yellow shaft-lines; primary and secondary coverts and upper tail-coverts with slight ochreous tips; rest of the wings and tail black like the back. *Beneath* ochreous yellow, each feather with a dusky tip, so that below the bird has a mottled appearance, the dusky tips are larger on the upper breast and lower abdomen; under wing-coverts, axillaries, and under tail-coverts black, with yellow tips to the feathers. Bill (in skin) horny, with yellow tips, legs (in skin) light horny. A female. Length

9 inches, wing 4·75, tail 3·5, tarsus 1·4, bill ·75 (measured in the flesh).

Locality. Chimunji, in the hills above Trevandrum, about 4000 feet elevation. "Shot feeding on the path with others at daylight."

Yours &c.,
W. E. Sclater,
Deputy Superintendent, Indian Museum.

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74 Jermyn Street, St. James's.
June 8th, 1891.

Sir,—"On revient toujours à ses premières amours" says the proverb, and in accordance with that principle I, wishing to escape from the rigours of an Italian winter, left Naples for Alexandria, on my sixth visit to Egypt, the 29th of last January by the Italian line of steamboats. The first sign of our nearing the Egyptian coast was on April 2nd, when about midday I saw, following our boat, several of the peculiar Egyptian race of *Larus fuscus*, which differs from the more northern form in having the mantle much darker in colour, and in not usually assuming a winter phase of plumage. About 2 o'clock we sighted the lighthouse of Alexandria, and entered the harbour before sunset. The sea was rough outside, and the harbour was full of flocks of *Larus minutus*, a species of Gull I had never before met with in Egypt. The adults are conspicuous by the dark underside of the wings; the immature birds have the underside of the wing white, and the back marked with black like a young Kittiwake. For the next three days the sea continued rough, and the *Larus minutus* remained in the harbour in great numbers, after which the weather improved and the Gulls disappeared.

I stayed a week at Alexandria, and visited the bird-market daily. Among the less common Egyptian species I saw several examples of *Tadorna cornuta*, and on one day no less than ten *Rhynchæa capensis*, among which were some adult females. I need hardly mention that in this species the female is larger than the male and differently

coloured, and that the immature bird resembles the male. The greatest rarity I saw in the market was a Blackbird (*Turdus merula*), a bird very rarely met with in Egypt. A few days later I saw a fine adult male Blackbird in one of the beautiful gardens on the Mahmoudieh canal, which is the only time I ever saw this species alive in Egypt. Alexandria presents a great contrast to Cairo in the absence of *Milvus ægyptius* and *Corvus cornix*, both which species swarm in the latter city. Indeed the only land-bird larger than a sparrow which is often seen in Alexandria is *Turtur senegalensis*, which abounds, and is more numerous there than it was a few years ago.

I went on to Cairo on February 10th, and stayed there five weeks. On February 15th I took in the Ezbekiyeh Gardens, close to the hotel where I was staying, two nests of *Milvus ægyptius*, one with three eggs, the other with two. I am glad to say that in neither case did the birds desert their nest; and when I departed from Cairo I left both pairs sitting, and only hope that they were more successful in their second attempt to rear a family than in their first. The usual number of eggs of *Milvus ægyptius* is two, and I have never taken a nest with more than three eggs.

The most noteworthy birds that I saw in the Cairo market were numerous specimens of *Pterocles exustus*, and two of *Cursorius gallicus*, which is by no means a common bird in Egypt. During my stay in Cairo I visited an Ostrich-farm, recently established in the desert, about half a mile from Matariyeh, a village five miles N.E. of Cairo. I saw there Ostriches in every stage of their existence, from the newly hatched chick to the oldest Ostrich in the farm, which I was told was 15 years old. The enclosure of the farm was divided into pens, in each of which was a male and three or four females, which laid their eggs all together in a heap. I do not remember seeing either male or female sitting on the eggs, many of which I was told were hatched in an incubator. From Cairo I went and stayed five days at Mena House, a large hotel recently built on the edge of the desert, at the foot of the Pyramids of Gizeh. Almost as soon as I

got there I noticed a pair of Lanner Falcons (*Falco lanarius*) soaring round the summit of one of the Pyramids. The following evening I returned at sunset, and traced the Falcons to a hole near the top of the Pyramid. The next morning, March 19th, I sent an Arab up to the hole, who brought down five beautiful, very richly coloured eggs, which proved to be slightly incubated. On March 24, 1870 (see Ibis, 1878, p. 370), I took, on the third Pyramid of Gizeh, a clutch of five eggs of *Falco lanarius*, very pale in colour and much incubated, so that five seems to be the usual complement of eggs of the Lanner, at least in Egypt. I afterwards, at sunset, traced a pair of *Corvus umbrinus* to another hole in the same Pyramid, and on March 21 I sent up my Arab, who brought down three eggs of the Raven, and also a pair of Owls (*Strix flammea*) alive. In securing the Owls, the Arab unfortunately broke one of the eggs. The Owls I at once set at liberty, and off they flew back to the Pyramid. The Raven's eggs were slightly incubated, and remarkably bright in colour, like very blue Jackdaw's eggs. I have altogether taken three nests of *Corvus umbrinus* in Egypt, containing five, four, and three eggs respectively, all less in size and brighter in colour than those of the Common Raven.

From Mena House I made an expedition to Sakkara, and on my way there, just on the edge of the desert, I came across a considerable number of Coursers (*Cursorius gallicus*) in small flocks, which allowed a near approach. On my previous visits to Egypt I had but very rarely met with this species.

Yours &c.,

E. Cavendish Taylor.

The Pilcomayo Expedition.—We are much pleased to be able to announce the safe return to his native land of Mr. J. Graham Kerr, Naturalist to the Pilcomayo Expedition*. Mr. Kerr was obliged to desert his vessel after all, as the river obstinately refused to rise enough to float her down, but

* See his letters, above, pp. 13, 260.

managed to bring a portion of his collections away with him overland to Asuncion, which he reached on March 20th. He arrived at Southampton on May 20th, and is now at home, engaged in examining and arranging his specimens.

The Penguinary at the Jardin d'Acclimatation, Paris.—No ornithologist who goes to Paris should fail to visit the Penguin-rookery, or, as it may be more correctly named, the *Penguinary*, in the Jardin d'Acclimatation. Here is an enclosure in a shady spot with from 20 to 30 examples of the Black-footed Penguin of the Cape (*Spheniscus demersus*), in which they seem to live and thrive, though provided only with some small basins to wash in. They pair readily, and are then devoted couples. Each pair occupies a wooden dog-kennel, in which the female lays her two eggs. Of five individuals bred in this enclosure last year only one was lost.

News of Emin Pasha.—A long letter, addressed to Dr. Hartlaub by Emin Pasha, is dated from one of the larger islands on Victoria Nyanza on the 11th of November last. Emin was then evidently, we regret to say, not in the best of health, and complained much of failing eyesight. He was on the point of leaving the Victoria Lake to travel southwards towards the north end of Lake Tanganyika, and must be now somewhere in that almost unknown district. Dr. Stuhlmann, a young naturalist from Hamburg, was with him. His letter contains much ornithological matter, and amongst other things speaks of a curious three-toed Gralline bird met with on the Victoria Nyanza, which Dr. Hartlaub thinks will probably be new to science.

The Pahang Expedition.—From 'Nature' (vol. xliv. p. 112) we learn that the long-talked of expedition into the interior of the Malay Peninsula, sent out by the Government of the Straits Settlements, is now actually to come off (*cf.* Ibis, 1888, p. 379, and 1890, p. 131; also above, p. 471). Messrs. Ridley and Davison will proceed from Singapore to Pekan

by steamer, and ascend the Pahang river into the interior of that State. Gunong Tahan, at its culminating ridge, is about 8000 feet high, and another peak (Gunong Siam) has been stated to attain an elevation of 14,000, so that there is every prospect of the discovery of some interesting Arctic forms. Mr. Davison takes with him three Tamil collectors belonging to the staff of the Raffles Museum, Singapore.

Further Particulars of the Collared Petrel.—Since Mr. Salvin's article (above, p. 411) was printed off, the Editor has received a letter from Colonel Frank T. Feilden, of Borth, in which it is stated that the specimen of the Collared Petrel above described was killed by one J. Jones on Dec. 2nd, 1889. last As said that the bird flew just like a Swallow, turning Meetinquickly and circling round. It passed twice round The Prer man who was with Jones, and who fired at it, both anthes without effect, owing to its irregular flight. It then made a swoop like a Hawk round Jones, when he shot at it and killed it.

Anniversary Meeting of the British Ornithologists' Union, 1891.—The Annual General Meeting of the British Ornithologists' Union was held at the rooms of the Zoological Society of London, 3 Hanover Square, on Monday, the 4th of May, at 6 P.M., Mr. OSBERT SALVIN, M.A., F.R.S., in the Chair. The Minutes of the last Annual Meeting having been read and confirmed, the Report of the Committee was read. It stated that one Member of the Union had died during the past year (Mr. Cecil Smith) and that another Member had resigned. The number of Members of the Union at the close of 1890 was stated to have been 239—consisting of 208 Ordinary, 1 Extraordinary, 10 Honorary, and 20 Foreign Members. There were 19 Candidates for the Membership this year, a greater number than usual.

The following Ordinary Members were then balloted for and declared elected :—

F. E. Blaauw, s'Graveland, Hildersum, Holland.

Colonel John Campbell, Perth.

Alfred Hast Everett, 41 York Terrace, Regent's Park, London, N.W.
Leopold Field, St. Stephen's Club, S.W.
George Henry Caton Haigh, Grainsby Hall, Great Grimsby, Lincolnshire.
Arthur H. Holland, of Buenos Ayres.
Henry Hamilton Johnston, C.B., Queen Anne's Gate, London, S.W.
J. Graham Kerr, Bellevue, Eskbank, Dalkeith, N.B.
Digby S. W. Nicholl, The Ham, Cowbridge, Glamorganshire.
Robert Patterson, 57 High Street, Belfast.
Henry J. Pearson, Bramcote, Beeston, Notts.
Frank Penrose, Colebyfield, Wimbledon.
William Lutley Sclater, M.A., F.Z.S., Deputy Superintendent, Indian Museum, Calcutta.
William Blundell Thornhill, 14 Redcliff Street, S.W.
C. W. de Vis, Queensland Museum, Brisbane.
Joseph S. Whitaker, Malfitano, Palermo, Sicily.
Benjamin Ingham Whitaker, Hesley Hall, Tickhill, Rotherham.
Frank Withington, Kingsfold, Horsham.
Thomas Wright, M.D., Castle Place, Nottingham.

The outgoing President and Secretary were then re-elected, and Mr. Henry Seebohm was chosen into the Committee in the place of Mr. Osbert Salvin, who had retired therefrom. The Officers for the year 1891–92 will therefore be as follows:—

President.

THE RIGHT HON. LORD LILFORD.

Secretary.

F. D. GODMAN, ESQ., F.R.S.

Editor.

P. L. SCLATER, ESQ., M.A., Ph.D., F.R.S.

Committee.

HOWARD SAUNDERS, ESQ.
DR. R. BOWDLER SHARPE.
HENRY SEEBOHM, ESQ.

After a vote of thanks to the Chairman the Meeting adjourned.

The Annual Dinner, subsequently held at the Café Royal, was attended by twenty-seven Members and guests.

The International Ornithological Congress.—The International Ornithological Congress of 1891, held at Budapest on the 17th of May last, was attended, we regret to say, by only two Englishmen—Dr. R. Bowdler Sharpe and Mr. C. G. Danford. Two other Members of the B. O. U. who had intended to go to the Meeting were unexpectedly detained at the last moment. From the report given in 'Nature' (June 18th, 1891), and from what Dr. Sharpe told us at the last Meeting of the Zoological Society, we learn that the Meeting was well attended and proved to be a great success. The Presidents selected were Prof. Victor Fatio, of Geneva, and Dr. Otto Herman, M.P. Amongst the Vice-Presidents were Dr. R. Blasius, Prof. Brusina, Prof. Collett, Dr. Finsch, Major Alex. v. Homeyer, Dr. A. B. Meyer, Dr. E. v. Middendorff, Dr. E. Oustalet, Victor, Ritter Tschusi zu Schmidhoffen, and other well-known ornithologists. The Congress was divided into four sections:—(1) *Systematic*, under the Presidency of Dr. Bowdler Sharpe and Prof. Claus; (2) *Biology* and *Oology*, President Dr. R. Blasius; (3) *Avigeographia*, President Dr. Palacky; and (4) *Economic Ornithology*, President Major A. v. Homeyer. On the 18th papers were read, in the Systematic Section, by Prof. Klug on some points in the anatomy of the stomach of birds, and by Dr. Bowdler Sharpe on the general classification of birds. Of this last important memoir we hope to give an account in out next number. The remainder of the time of the Systematic Section appears to have been mainly devoted to the consideration of the rules of nomenclature put forward by a Committee consisting of Prof. Möbius, Dr. Reichenow, Graf v. Berlepsch, Dr. A. B. Meyer, and Dr. W. Blasius. The recommendations of this Committee, which were adopted almost in their entirety, we are told, after a two days' discussion, involve, amongst other points, the recognition of

the 10th instead of the 12th edition of the 'Systema Naturæ,' the adoption of trinomial names in certain cases, and the extension of the law of priority to faulty and misspelt names, according to the American usage. In the afternoon of May 18th the Congress assembled in the Museum and received an account from Dr. Herman of the distribution of birds in Hungary and an explanation of the collections which had been made specially for the Congress. These, we are informed, consisted of beautifully mounted cases of birds with their nests and natural surroundings, and included examples of some very rare species. They were the work of four ornithologists—Dr. Herman, Dr. J. von Madarász, Mr. Chernel, and Prof. Szikla, who had each occupied for the purpose a different station in Hungary. After adjourning to the building of the Academy of Sciences, Prof. Collett read a paper on "Arctic Bird-Life." The concluding General Meeting was held on Wednesday, the 20th, when the reports of the different Sections and Committees were received, and the Congress came to a conclusion.

Obituary. Dr. O. F. Kutter and Col. Sir Oliver B. C. St. John.—We regret to learn of the sudden death in March last of the German Oologist, Dr. Otto Friedrich Kutter, at the early age of 56 years. Dr. Kutter was an army physician, of late years resident at Cassel, and possessor of an extensive and scientifically arranged collection of birds' eggs. Though not very well known in England, he was much and worthily esteemed by numerous good friends in his native land, and author of several oological papers in the 'Journal für Ornithologie.' He also bore the reputation of an excellent field-naturalist.

We have also to record with much sorrow the untimely death at Quetta, on June 4th, of Col. Sir Oliver Beauchamp Coventry St. John, Member of the B. O. U. We hope to be able to give a biographical notice of our much esteemed associate in the next number of 'The Ibis.'

THE IBIS.

SIXTH SERIES.

No. XII. OCTOBER 1891.

XLI.—*On the Birds of the Lower Yangtse Basin.*—Part II.

By F. W. Styan, F.Z.S.

[Concluded from p. 359.]

Order MACROCHIRES.

Fam. Cypselidæ.

159. Chætura caudacuta (Lath.).

(114.) One in the Shanghai Museum was killed at Shanghai in October. I have a specimen killed there in the same month and another taken at Wuhu in May.

Fam. Caprimulgidæ.

160. Caprimulgus jotaka, T. & S.

(107.) The spring migration begins at the end of March and continues into May; they return in September, October, and November.

Order PICI.

Fam. Picidæ.

161. Iynx torquilla, L.

(88.) *Yunx japonica*, Bp.; Swinhoe, P. Z. S. 1871, p. 393. Not common. Obtained at Kiukiang in May, and again in September and December.

162. Picus cabanisi, Malh.

(73.) *Picus mandarinus*, Gould ; Swinhoe, P. Z. S. 1871, p. 391.

A common species all along the Yangtse Valley, especially on the lower wooded slopes of the mountain-ranges. They are also found on the cultivated plains, and among the mulberry-trees round Kahing are very abundant. In common with other Woodpeckers, they are fond of tallow-trees, in the rough bark of which insects most abound. A pair nested in a willow in my garden at Kiukiang one year, in a hole about 20 feet from the ground ; the young left the nest on 29th May. The old birds were very fearless, and would allow one to approach within a few feet. They picked up a good deal of their food on the grass lawn.

This species has a marked inclination to assume a white rump. In addition to the Foochow specimen, already noted (Ibis, 1887, p. 229), I have seen one shot at Shanghai with a considerable amount of white edging to the rump-feathers, and another with a slight trace of the same.

163. Iyngipicus scintilliceps (Swinhoe).

(79.) Fairly plentiful; mostly found in hilly country. In my series of this species the barring of the outer rectrices varies much : in some it is hardly visible ; in others it is very distinct and dark. The crown of the head also is variable ; in two specimens it is almost black, with only a faint tinge of grey towards the forehead.

164. Gecinus guerini (Malh.).

(83.) Common all along the Yangtse Valley.

165. Picumnus chinensis (Hargitt).

(87.) Not common; but I have obtained two at Kiukiang and one near Kahing.

Order COCCYGES.

Fam. Upupidæ.

166. Upupa epops, L.

(126.) Scattered thinly over the country, and met with throughout the year.

211. (27

Fam. Meropidæ.

p 67. Merops bicolor, Bodd.

(118.) Père Heude has specimens obtained on the sand-hills at the mouth of the Poyang Lake below Kiukiang, where he tells me they were breeding; he assures me he has also met with them on the Lushan range.

Fam. Coraciidæ.

168. Eurystomus orientalis (L.).

(119.) *Eurystomus orientalis*, Swinhoe, P. Z. S. 1871, p. 347.

Comes to breed in the Lushan Hills in May. The autumn migration takes place in October, when young birds may sometimes be found in the Shanghai market.

Fam. Alcedinidæ.

169. Alcedo bengalensis, Briss.

(120.) Very abundant.

170. Ceryle rudis (L.).

(124.) Comes to breed in the Yangtse Valley.

171. Ceryle guttata, Vigors.

(125.) *Ceryle lugubris*, Temm.; Swinhoe, P. Z. S. 1871, p. 348.

A scarce bird, found among mountain-streams. I have seen two shot at Maychee, but have only met with it myself among the Chekiang Hills.

172. Halcyon pileatus (Bodd.).

(121.) Comes annually to breed in the Yangtse Valley. Young birds leave the nest in July; they resemble the parents, but have a shorter bill, yellow-brown in colour.

173. Halcyon smyrnensis (L.).

(122.) David says this species ranges as far north as Shanghai, and Swinhoe says "Shanghai to Hainan"; but it must be a rare straggler here, and I have never met with it the district.

174. Halcyon coromandus (Lath.).

(123.) A specimen was caught on Shaweishan, S. 1871, mouth of the Yangtse, and is now in the Shanghai Museum.

Fam. Cuculidæ.

175. Cuculus canorus, L.

(104.) Arrives in April. Some remain as late as the middle of October. The common Cuckoos at Kiukiang are nearly all of a small pale race, with very narrow bars on the underparts.

176. Cuculus micropterus, Gould.

(103.) Not uncommon at Kiukiang in May. I frequently hear a quadrisyllabic note which I believe belongs to this species.

177. Cuculus striatus, Drap.

(105.) According to David this species is found in summer throughout China.

178. Hierococcyx fugax (Horsf.).

(102.) *Cuculus sparverioides* et *Cuculus hyperythrus*, Swinhoe, P. Z. S. 1871, p. 394.

I examined a pair shot near Shanghai on 21st September, and another pair on 5th October; the male of one and the female of the other are now in the Shanghai Museum. I have also seen another shot near Shanghai. It appears to pass through Hankow in spring, for its note has been accurately described to me as being heard in a certain district there every April.

179. Coccystes coromandus (L.).

(97.) Two were obtained in the Lushan Hills in June, and one in a garden at Kiukiang on 14th September; another specimen was killed near Hankow.

Order STRIGES.

Fam. Bubonidæ.

180. Ketupa flavipes (Hodgs.).

(60.) *Ketupa magnifica*, Swinhoe, Ibis, 1873, p. 127.

I met with a pair in March, among some fine old decay

211. the Chien San range behind Ngankin. The male (2 ot, but his mate escaped, after a long chase. A friend p Shanghai has a live one—locality unknown—which he eeds entirely on meat; it perches with the outer toe reversed.

181. Bubo ignavus (Forster).

(58.) *Bubo maximus*, Swinhoe, P. Z. S. 1871, p. 343.

Not uncommon among the hills that border the Yangtse. In the summer young birds are brought down alive by the woodcutters, and every winter one or two are shot by sportsmen.

182. Bubo coromandus (Lath.).

(59.) A single immature specimen was obtained near Shanghai by Père Heude.

183. Scops glabripes, Swinhoe.

(64.) I have obtained examples of this species at Kiukiang and Chinteh, lower down the river, and have heard it (or a species with an exactly similar note) calling at Kahing. At Kiukiang I obtained young fully fledged, but still in down, from the Lushan Hills on 6th July.

184. Scops semitorques, T. & S.

(65.) I have examined specimens of this Japanese Owl from Hankow, Chiukiang, and Ningpo.

185. Scops stictonotus, Sharpe.

(63.) *Scops sunia*, Hodgs.; Swinhoe, P. Z. S. 1871, p. 343.

Obtained at Kiukiang in April, Shanghai in October, and on Gutzlaff Island, at the mouth of the Yangtse, in November (migrating).

186. Glaucidium whitelyi (Blyth).

(55.) A very common bird throughout the Yangtse Valley, both on the hills and plains. Young birds fully fledged are about by the middle of May.

In habits they are more or less diurnal. Their long gurgling call can often be heard during the daytime, and I have shot one in the act of devouring a young chicken just killed; another had the whole leg of a chicken in its

gizzard. When disturbed they seldom fly far, but g
one tree to another with a long sweep, without any a[illegible]S. 1871,
motion of the wings.

187. Glaucidium brodiei (Burt).

(56.) David mentions one killed at Nankin.

188. Ninox scutulata (Raffl.).

(53.) *Ninox japonica*, T. & S.; Swinhoe, P. Z. S. 1871, p. 343.

Obtained at Kiukiang i April and May, but not common; also once near Shanghai in May.

189. Asio otus (L.).

(61.) *O. vulgaris*, Flem.; Swinhoe, P. Z. S. 1871, p. 344.

Common in places near Shanghai in April and November on migration. Probably a few remain here all winter, as I have seen one shot in January.

190. Asio accipitrinus (Pall.).

(62.) *O. brachyotus* (L.); Swinhoe, P. Z. S. 1871, p. 344.

Fairly common all winter, its numbers being largely increased in spring and autumn. On a certain grassy slope of the Feng Wan Hills near Shanghai, or among the adjacent bamboos, one or two can be found any time in winter, while in the migratory season twenty or thirty can be flushed there.

Order ACCIPITRES.

Fam. Falconidæ.

191. Pandion haliaëtus (L.).

(19.) Occasionally killed near Shanghai, but scarce.

192. Circus æruginosus (L.).

(44.) Obtained at Kiukiang, 30th November. Scarce.

193. Circus spilonotus, Kaup.

(43.) Found in the district all winter, but is much more plentiful when migrating in spring and autumn. Frequents the marshes, feeding on frogs and small snakes.

194. Circus melanoleucus (Forster).

(42.) Arrives in April in large numbers, frequenting the low cultivated lands and marshes. When shot they ar

211. Fald with frogs. As a rule, they pass straight on
(27.) ying; a marsh may be full of them one day; two
Ibis 1870 none are to be seen, until new arrivals come in. The autumn migration I have not witnessed.

195. Circus cyaneus (L.).

(39.) Common throughout the winter until May.

196. Circus macrurus (Gm.).

(40.) *Circus pallidus*, Sykes; Swinhoe, P. Z. S. 1871, p. 342.

A female was obtained on the Yangtse by Captain Blakiston. I have shot immature birds at Kiukiang in spring.

197. Circus pygargus (L.).

(41.) Said by David to occur in Central China; reported doubtfully from the Yangtse by Swinhoe.

198. Buteo plumipes (Hodgs.).

(26.) *Buteo asiaticus* (Lath.); Swinhoe, P. Z. S. 1871, p. 339.

Common in winter; most of those killed are young, very pale birds.

199. Buteo hemilasius, T. & S.

(27.) Common in winter; mostly pale immature birds.

200. Archibuteo strophiatus (Hodgs.).

(38.) *Archibuteo aquilinus*, Hodgs.; Swinhoe, P. Z. S. 1871, p. 339.

Not uncommon in the winter, especially in the marsh-lands of the Yangtse.

201. Aquila clanga, Pall.

(12.) Spotted Eagles are not uncommon on the Yangtse, both on the hills and among the reed-beds where wildfowl swarm all winter. I refer them to this species, but some may belong to the smaller race, *A. maculata*.

249. Dendrocygna heliaca, Savigny.

The only *Aquila bifasciata*, J. E. Gray; Swinhoe, P. Z. S. summer in
(Ibis, 188 at Foochow and frequently met with in the

central provinces by David; so there can be but f
that some of the large Eagles seen on the hig any a-s. 1871,
the Yangtse are of this species.

203. Nisaëtus fasciatus (Vieillot).

One in the Shanghai Museum was shot near Kahing in winter, and I obtained one myself in the same district. Further up the Yangtse I have seen birds which appeared to be of this species.

204. Haliaëtus albicilla (L.).

Common on the Yangtse in winter. They breed, I am told, on Bonham Island, and probably on other rocky islets off the coast.

205. Spizaëtus nipalensis, Hodgs.

(14.) David mentions one obtained near Nankin by Père Heude.

206. Astur cuculoides (Temm.).

(35.) Found nesting in Kiangsi and Chekiang by David. I obtained a fine adult male in the Lushan Hills on 26th May.

207. Astur soloensis (Lath.).

(36.) Ranges from Pekin to South China, but I have never come across it.

208. Accipiter nisus (L.).

(38.) Common all winter, its numbers being increased in spring and autumn. Few, if any, remain to breed.

209. Accipiter virgatus (Temm.).

(37.) I have one taken at Shanghai 28th May, and another at Kiukiang 10th October. In the Shanghai Museum are a pair which were taken at sea, between Shanghai and Nagasaki, on 6th May.

210. Butastur indicus (Gm.).

es.
(25.) Passes through on migration in Marc
A good number travel together, and remain a
among the hills on their way; they seem to equenting the
plains. hot they are

211. Falco communis (Gm.).

(27.) *Falco peregrinus*, L.; Swinhoe, P. Z. S. 1871, p. 340.

A common resident species, breeding during March and April on the rocky cliffs of the river, among the mountains, and frequently in pagodas. A partial migration takes place in autumn. During the first week in November I found them very abundant on the rocky islands off the coast, notably on Gutzlaff Island and Shaweishan; on the latter there must have been hundreds. The attraction was the crowd of small migrants, which they had probably followed from the north.

212. Falco melanogenys, Gould.

The pair of this species—or race—mentioned by Mr. Seebohm (Ibis, 1884, p. 260) were nesting in a pagoda on the Hai-San (Shoe Rock), also known as "Great Orphan," in the Poyang Lake. Père Heude has a very fine male, also killed on the Yangtse.

213. Falco subbuteo, L.

(48.) Common between May and October.

214. Falco regulus, Pall.

(49.) *Hypotriorchis æsalon* (L.); Swinhoe, P. Z. S. 1871, p. 340.

A common winter visitor.

215. Cerchneis tinnunculus (L.).

(52.) *Tinnunculus alaudarius*, var. *japonicus*, Swinhoe, P. Z. S. 1871, p. 340.

Most plentiful during the autumn migration, when, from August to November, half a dozen may frequently be seen travelling together. A few remain all the winter, and perhaps a few breed in the district, as I have seen one as late as 6th

249. Den
Cerchneis amurensis (Radde).

The only ies may pass through on migration, and perhaps summer in (Ibis, 1889e Kestrels seen in autumn belong to it or to

C. pekinensis, but I have never been able to obtain a specimen in the district.]

216. Milvus melanotis, T. & S.

(21.) Very abundant. I am inclined to think an annual migration takes place, and they certainly shift their quarters. At Shanghai few or none are to be seen in summer, but numbers arrive in September or October and remain all winter. In 1883 the first one I saw return was on October 11th; on the following day a party of twelve appeared, circled over the river for a few minutes, and then disappeared to the S.W. At Chefoo one year throughout August only one or two solitary Kites were about, but on the 29th a large number appeared on the cliffs and shore. At Kiukiang they remain throughout the year.

These birds have certain favourite roosting-places, where they collect for the night. Out of a group of fine old trees at Kiukiang I have put up fully thirty individuals. At Hankow one night, when passing in a sanpan over the flooded plain among the willows that border the river, I disturbed a score out of two or three adjacent trees, and a few nights later ten of them rose from the same place; the trees had nothing to distinguish them from hundreds of others growing around. These Kites also congregate on the ledges of the river-cliffs, which they share with Peregrines and Cormorants.

217. Haliastur indus (Bodd.).

Comes to breed in small numbers at Kiukiang. David found it plentiful in the south of the province. I have also seen it at Hankow.

Fam. Vulturidæ.

218. Vultur monachus, L.

(7.) One in the Shanghai Museum was killed on Shaweishan, at the mouth of the Yangtse; another at Ningpo. It is said that during the Taiping rebellion, when of dead bodies were lying about the fields, Vu plentiful in the Yangtse Valley, where now t quenting the appear. There would be no food there for them not they are

Order STEGANOPODES.

Fam. PELECANIDÆ.

219. PELECANUS PHILIPPENSIS (Briss.).

(769.) Common on the sand-banks of the river in winter. Where they breed I do not know; but I have not observed them in summer, perhaps from lack of opportunity.

Fam. PHALACROCORACIDÆ.

220. PHALACROCORAX CARBO (L.).

(770.) Common on the river, wherever there are suitable cliffs or rocks, several hundreds often collecting together.

They assume the handsome breeding-plumage in March. On the 9th of that month, when travelling on a raft down the Chien San River towards the Yangtse, we passed under scores of them, all sitting in pairs on overhanging boughs (some of them very slender) only 15 or 20 feet overhead.

They are largely used for fishing purposes on the clear creeks which cross the delta country in all directions; also on the streams issuing from the mountains and on the inland lakes. They are generally kept in flocks of from 30 to 100, and are taken about the country as required. Some flocks are steadily driven hundreds of miles down the river to reach a new fishing-ground.

Order HERODIONES.

Fam. ARDEIDÆ.

221. ARDEA CINEREA, L.

(626.) Very common. They breed early in March.

222. ARDEA PURPUREA, L.

(627.) I have only met with this species in the month of April, when it is not uncommon.

223. HERODIAS ALBA (L.).

(628.) *Egretta modesta*, Swinhoe, P. Z. S. 1871, p. 412.

249. DEN main on the river all winter. In April others The only for about a month they are plentiful. They summer in e scarce, though a few may be seen on the wing, (Ibis, 1889, bird or two on the border of the lake, from which

I infer that they breed not far off. By the middle of ... a specinumbers of young birds appear, fully grown, but with y bills and no dorsal plumes. On one half-flooded island have seen hundreds. A bird shot on 21st April had a yellow bill and plumes only just developing. As noted by Mr. Oates (B. of Brit. Burm. ii. p. 247), individuals of very large size occur occasionally. The following measurements are taken from one shot at Kiukiang, 6th December:—

Length 46 inches; wing 18; bill to gape $6\frac{1}{2}$ (yellow); culmen $5\frac{1}{4}$; tarsus 9.

224. Herodias intermedia, Wagl.

(629.) "Hankow" (*Swinhoe*). A specimen in the Shanghai Museum dated April has plumes fully grown. Not a common bird, I fancy, but no doubt often mistaken in the field for the following species.

225. Herodias garzetta (L.).

(630.) A common bird, some remaining throughout the winter. I have seen them even when deep snow was on the ground, when they were almost invisible. Being clothed in white myself, the birds could make nothing of me, and refused to do more than just move out of my way.

226. Bubulcus coromandus (Bodd.).

(632.) Arrives in April in fine russet plumage, but is most plentiful on autumn migration in September and October.

227. Ardeola prasinosceles, Swinhoe.

(635.) Breeds plentifully in the district. Most of them leave by October, but I met with two near Kahing on Christmas Day, and one on the following day.

228. Ardetta flavicollis (Lath.).

(639.) Very common in summer, nesting in June and July in the copses on low hills among the lakes and paddy-fields.

229. Ardetta sinensis (Gm.).

(642.) Abundant between April and the e... quenting the tember. ... not they are

230. Ardetta cinnamomea (Gm.).

(640.) Met with in spring, and common in autumn. No doubt they breed in the district.

231. Ardetta eurythma, Swinhoe.

(641.) Not common, but appears in May, and perhaps breeds in the Yangtse Valley.

232. Butorides javanicus (Horsf.).

(633.) Appears in May, and again in August and September, but I am doubtful about its breeding.

233. Nycticorax griseus (L.).

(636.) *Nyctiardea nycticorax*, Swinhoe, P. Z. S. 1871, p. 413.

A common species and resident, but in March and April a good many travelling parties may be seen.

234. Botaurus stellaris (L.).

(638.) A common winter bird in the marshes and reed-beds, remaining till the middle of April.

Fam. Ciconiidæ.

235. Ciconia nigra (L.).

(645.) Found all along the Yangtse in winter among the reed districts. More often than not they are seen singly, sometimes two or three together; they also mingle with the flocks of Common Herons.

236. Leptoptilus javanicus (Horsf.).

(643.) Found in July in Kiangsi province by David, but whether in the extreme south or in the Yangtse Valley I know not.

237. Tantalus leucocephalus, Gm.

(647.) In the Shanghai Museum is one labelled "Changchow," between Shanghai and the Yangtse. I believe I have seen it on the river in winter, but too far off to recognize for

249. Dend

The only Fam. Plataleidæ.

summer in S nippon, Temm.

(Ibis, 1889, 0.) Uncommon, but found on the river in

winter, and no doubt breeds, for it nests at Ningpo. It is evidently a local rather than a scarce bird.

239. Platalea major, T. & S.

(646.) Met with at Kiukiang on migration in October and April, Shanghai in November. A few probably remain through the winter.

240. Platalea minor, T. & S.

A specimen in the Shanghai Museum was killed in November.

Order ANSERES.

Fam. Anatidæ.

241. Cygnus musicus, Bechst.

(707.) "Shanghai market in winter" (*Swinhoe*).

There is a specimen in the Museum.

242. Cygnus minor, Pall.

(708.) All the Swans which I have examined in the flesh are of this species. Large flocks frequent the low islands and mud-flats at the mouth of the Yangtse. On the upper reaches of the river they are not so plentiful, but may be seen from time to time passing overhead. At the head of the Poyang Lake I have seen a flock of at least a thousand, among myriads of other wildfowl.

243. Anser albifrons (Gm.).

(704.) Not common.

244. Anser erythropus (L.).

(705.) This is the most numerous species on the upper reaches of the river at least, and is the most easily approached and shot. On sand-banks and mud-flats it is quite useless attempting to stalk them or any other Geese; but when feeding on stubbles and ploughs they will occasionally allow one to walk right up to them, though the country is flat and open, without a vestige of cover. I have also, [illegible] circled round a flock sitting on the water until I [illegible] to get a shot.

These Geese arrive here early in October, and so frequenting the [illegible]ot they are

birds, ...e middle of April, but the northward movement begins Wall... in March.

245. Anser cinereus, Meyer & Wolff.

(703.) This is by no means one of the common Geese with us. A good many are killed on Bush Island at the mouth of the Yangtse, and I have seen specimens from Chinkiang; but on the upper reaches I have not identified it for certain.

The beak, legs, and feet are pale pink.

246. Anser segetum (Gm.).

(702.) *Anser segetum*, var. *serrirostris*, Swinhoe, P. Z. S. 1871, p. 417.

The commonest Goose at the mouth of the Yangtse, and (except *A. erythropus*) on the upper reaches too. The size and shape of the beak vary much, and I do not think species can be founded on it.

247. Anser cygnoides (L.).

(706.) Found at the mouth of the Yangtse, but not common.

(Note.—I am under the impression that a Snow Goose—probably *A. hyperboreus*, Pall.—visits the mouth of the Yangtse, but I have been unable to obtain a specimen.)

248. Nettapus coromandelianus (Gm.).

(718.) Appears in considerable numbers in May; early in June the young are flying about. They then frequent the roofs of houses in the settlement, and particularly the chimneys, where the parents and a brood of young may often be seen together. They are said to nest in the chimneys; they also nest in hollow trees, and I have some young in down taken on 10th August, which must have been a second brood. When not resting on the housetops, they may be found among the rushes on the lakes.

249. Dendrocygna javanica (Horsf.).

The only specimen I have met with was obtained in summer in Soochow, and is now in the Shanghai Museum (Ibis, 1889, p. 446).

250. Tadorna vulpanser, Flem. It is
(712.) *T. cornuta* (Gm.), Swinhoe, P. Z. S. 1871, p. 4
A coast bird, found near Shanghai in winter, but not n. with higher up the Yangtse.

251. Casarca rutila (L.).
(713.) An inland bird, common in winter on the river and adjacent waters. Almost always found in pairs, though a dozen or more pairs may be together.

252. Aix galericulata (L.).
(719.) A local bird. Fairly common round Kahing. Scarce at Kiukiang, where I have only obtained a single specimen.

253. Mareca penelope (L.).
(715.) Abundant.

254. Dafila acuta (L.).
(714.) Abundant.

255. Anas boschas, L.
(710.) Abundant. Appears at the end of September, and remains till early in April.

256. Anas zonorhyncha, Swinhoe.
(711.) Our only resident Duck. I have taken eggs in May, and also in July, probably a second brood. The breeding-plumage is more rufous than winter dress, especially on the crown of the head.

257. Chaulelasmus streperus (L.).
(716.) Not common.

258. Querquedula crecca (L.).
(721.) Very abundant. The earliest arrival noted is 12th September, and some flocks still remain in the first week in May.

259. Querquedula circia (L.).
(720.) This is evidently a more southern bird. In winter I have never seen it, but in April it is rather abundant, mingling with flocks of Common Teal.

birds, Eunetta formosa (Georgi).

Walk. (722.) Abundant in winter. Generally found in vast flocks in wild open marshes and lakes, and not, like the Common Teal, on ponds, creeks, and paddy-fields. Comparatively few, therefore, are shot.

261. Eunetta falcata (Pall.).

(723.) One of the commonest species on the Yangtse, but not found much in the delta round Shanghai. Higher up large flocks collect on the river, and are amongst the last wildfowl to leave in the spring.

262. Spatula clypeata (L.).

(717.) Found sparingly in winter.

263. Fuligula cristata (L.).

(731.) Found sparingly in winter.

264. Fuligula baeri, Radde.

(732.) I cannot understand why this species should have been looked upon as a hybrid. It is scarce and irregular in its appearance, but when met with seems to be numerous, and all the specimens I have noted are similar in plumage. I have seen a native hawker with fully twenty specimens, but unfortunately all but one were too stale to skin; it is evident that so many hybrid Ducks could never have been met with at once.

265. Fuligula ferina (L.).

(727.) Found sparingly in winter.

266. Fuligula marila.

(729.) Found sparingly in winter.

267. Fuligula mariloides (Richardson).

(730.) Shanghai market in winter (*D. & O.*).

268. Clangula glaucion (L.).

(725.) *Bucephala clangula*, Swinhoe, P. Z. S. 1871, p. 418. Shanghai in winter.

269. Œdemia fusca (L.).

(724.) Shanghai in winter. I have seen a large flock, which seemed to consist of this species, near Nankin.

270. Œdemia velvetina, Cassin. It is
Œ. americana, Swinhoe, P. Z. S. 1871, p. 419.
"Shot on the Yangtse by Blakiston."
The American form of *Œ. fusca*.

271. Mergus merganser, L.
(734.) *M. castor*, Swinhoe, P. Z. S. 1871, p. 416.
Very abundant. In the thick water of the Yangtse they dive under to hunt for food; but in clear mountain streams they paddle on the surface with only the beak and eyes immersed, and then when they see their prey down they go. I have taken a fish exactly a foot in length from the gullet of one.

272. Mergus serrator, L.
(736.) A coast-bird, rare at Shanghai, and not found inland.

273. Mergus albellus (L.).
(733.) Common, especially in March, when they arrive from the south.

Order COLUMBÆ.

Fam. Columbidæ.

274. Turtur rupicola (Pall.).
(558.) A hill species frequenting fir-woods to a considerable elevation; in winter often gregarious. From its large size, bluish appearance on the wing, deep note, and wild nature it much resembles a Pigeon. Although essentially a hill-bird, it is not rare on the plains, and in our garden at Kiukiang they breed annually, and remain throughout the year. One year the nest was in a pomegranate-tree overhanging a path along which people passed all day, and so low that it could almost be reached by the hand. Two young birds were safely reared and flew the first week in June. This year it was in a plum-tree about ten feet from the ground.

275. Turtur chinensis (Scop.).
(559.) A thoroughly familiar bird, frequenting villages, gardens, and copses. Sometimes found at a considerable

birds, is but only in sheltered corners close to human Wallaœst.

276. TURTUR HUMILIS, Temm.

(361.) A summer visitant, breeding plentifully in the Yangtse Valley, and remaining till the middle of October.

Order GALLINÆ.

Fam. PHASIANIDÆ.

277. PUCRASIA DARWINI, Swinhoe.

(589.) Found in the Chekiang hills, and I have seen a specimen from the hills behind Ngankin, in Anhwei.

278. PHASIANUS TORQUATUS (Gm.).

(590.) Our Pheasants vary a good deal in size and brilliancy of plumage. The finest, as a rule, come from the hilly district bordering the river; they frequently have the white ring complete, or nearly so, as in birds from the north: the delta birds are rarely so fine, and nearly always have the white ring interrupted in front. The food on the hills is perhaps more varied and nourishing, though it cannot be so abundant as on the plains, where beans, rice, and other grains are unlimited.

279. PHASIANUS REEVESI (Gray).

(595.) Though common from Ichang westwards, this bird is only found at one or two places on the Lower Yangtse. The birds offered for sale at Hankow all come from the west; but at Kiukiang I have bought some alive, which I have every reason to believe came from the hill-ranges about twenty miles north of the river. On the Wan Shan range behind Ngankin they are found, and all the natives knew them well; but during four days' hard work I met with nothing but a cast tail-feather.

Fam. TETRAONIDÆ.

280. BAMBUSICOLA THORACICA (Temm.).

(569.) Fairly plentiful in the Kahing district, especially towards the south, where the Chekiang hills extend into the plains. Found on many parts of the Yangtse, but seldom abundantly. The coveys sometimes number as many as

fifteen. They frequent thick bamboo-cover at the foot of the hills by preference, but are also found up to an elevation of 2000 feet. They lie very close and are difficult to flush; when beaten up they rise rapidly and scatter in all directions, flying low. They roost in trees or bamboos, and when flushed will sometimes perch in them. The call-note of the male in spring is a loud piercing challenge, which the natives take advantage of to catch them. A countryman once showed me how it was done. He had two birds in separate cages, one of which he hid under a pile of brushwood. The other was released, and his challenge being answered by the hidden bird, the latter was soon discovered, and a fight ensued through the bars of the cage. I have myself attracted them by imitating the call.

281. Coturnix communis, Bonn.

(573.) Common all winter and up to the middle of May; they may be shot again early in September, and it is almost certain a few breed in the district. At Kiukiang in summer I see a few Quails, but I have shot none, and cannot say for certain whether they are Hemipodes or true Quails.

Fam. Turnicidæ.

282. Turnix blanfordi, Blyth.

(576.) *Hemipodius viciarius*, Swinhoe, P. Z. S. 1871, p. 402.

Arrives at the beginning of May and remains till the middle of October. They are difficult birds to flush, and therefore seem much scarcer than they really are.

Order GERANOMORPHÆ.

Fam. Rallidæ.

283. Rallus indicus, Blyth.

(699.) A few may be found in winter among the reed-beds of the river. In spring and autumn it is more common, and some of them doubtless breed.

284. Rallus jouyi, Stejneger.

(698.) *Hypotænidia striata* (L.); Swinhoe, P. Z. S. 1871, p. 415.

birds, is ecimens of a Rail obtained at Shanghai in May Wallatrst are described as new under the above name by m' axau' Dr. Stejneger (Proc. U. S. Nat. Mus. 1886, p. 362).

A specimen in the Shanghai Museum, shot in May, and another from Chinkiang in a private collection, probably are of this species, but I have been unable to compare them.

285. Porzana erythrothorax, T. & S.

(695.) A specimen in the Shanghai Museum was obtained in the neighbourhood.

286. Porzana exquisita, Swinhoe.

Arrives in March and April, when I have found it on several of the snipe-marshes in the Shanghai district. It seems to be one of our earliest migrants to put in an appearance, the first noted being on 7th March.

287. Porzana pygmæa (Naumann).

(696.) Very abundant on the snipe-marshes in April and May, and again in autumn until the end of November. There can be little doubt that some remain to breed.

288. Gallinula phœnicura (Penn.).

(694.) Arrives at the beginning of April, and breeds abundantly, remaining until October.

289. Gallinula chloropus (L.).

(693.) Not nearly so common as the last named, but comes to breed in summer.

290. Gallinula coccineipes, Slater, Ibis, 1891, p. 44.

A specimen killed near Shanghai is in the Shanghai Museum, and is the "Crake, sp. incert." of my List of Birds, Shanghai Museum, Journ. C. B. As. Soc. 1883, p. 16.

291. Gallicrex cinereus (Lath.).

(692.) Arrives in April in large numbers, and remains till November.

292. Fulica atra, L.

(700.) A few breed in the district, and in winter thousands may be seen on the shallow lakes bordering the Yangtse.

Fam. Gruidæ. It is

293. Grus cinerea, Bechst.

(620.) Found in winter, but seems to be uncommon.

294. Grus vipio.

(622.) A handsome specimen was shot near Shanghai in January 1889. It stood about 4 feet high; wing 23 inches, tarsus 11, bill 5½.

295. Grus viridirostris, Vieill.

(623.) Found on some of the wildest marsh-lands of the Yangtse and Poyang Lake in winter.

296. Grus leucogeranus, Pall.

(624.) White Cranes of small size, which I take to be of this species, are common on the Yangtse in winter. In January 1889 I saw a number a few miles from Shanghai, but owing to four misfires was unable to obtain one after a long stalk.

297. Grus monachus, Temm.

(621.) The commonest Crane on the Yangtse. Found all along the river in winter.

Fam. Otidæ.

298. Otis dybowskii.

(603.) *Otis tarda*, L.; Swinhoe, P. Z. S. 1871, p. 402. Common all along the Yangtse in winter.

Order LIMICOLÆ.

Fam. Parridæ.

299. Hydrophasianus chirurgus (Scop.).

(690.) Large flocks arrive early in June; they are then in winter plumage, but begin to moult immediately, and as soon as this is completed breed. I have shot one in full moult as late as 6th July, and yet I have taken hard-set eggs at the end of June, and it seems they must commence nesting whilst still in moult. They build floating nests among the sprays of water-calthrop and lotus beds: the number of eggs is usually four.

Fam. GLAREOLIDÆ.

GLAREOLA ORIENTALIS, Leach.

(613.) Very large flocks pass through in April and May, and return again in August and September. A few stray birds may be met with in winter.

Fam. CHARADRIIDÆ.

301. CHARADRIUS FULVUS, Gm.

(608.) Passes through in April and May; the autumn migration I have not noticed.

302. CHARADRIUS HELVETICUS.

(607.) Scarce. I have met with it at Shanghai in February and May in winter plumage.

303. CHARADRIUS MINOR, Wolf & Meyer.

(614.) *Ægialitis dubius* (Scop.); Swinhoe, P. Z. S. 1871, p. 404.

Common during migration in March, April, and May, and again in September and October.

304. CHARADRIUS PLACIDUS (Gray).

(612.) *Ægialitis hartingi*, Swinhoe, P. Z. S. 1871, p. 404.

Arrives from the north in September, and remains throughout the winter. Not uncommon on the muddy banks of creeks and shallow lakes.

305. CHARADRIUS GEOFFROYI, Wagl.

(610.) Met with in Shanghai market in May.

306. CHARADRIUS VEREDUS, Gould.

(609.) Passes through in March and April.

307. CHARADRIUS MONGOLICUS, Pall.

(611.) "China coast in winter" (*Swinhoe*).
"Shanghai market in spring" (*D. & O.*).

308. CHARADRIUS CANTIANUS, Latham.

(615.) "China coast in winter" (*Swinhoe*).

309. LOBIVANELLUS CINEREUS, Blyth.

(605.) Flocks begin to arrive in February, frequenting

the wet ploughs and marsh lands. They mostly l[illegible] It is the end of April, but a few remain to breed.

On 26th May I saw a pair on a small island in [illegible] Kiukiang, and in June one was shot and given to me.

310. Vanellus cristatus, Wolf & Meyer.

(604.) Common all winter.

311. Strepsilas interpres (L.).

(619.) Met with in Shanghai market in May.

312. Hæmatopus osculans, Swinhoe.

(618.) A winter species, not very abundant.

Fam. Scolopacidæ.

313. Recurvirostra avocetta, L.

(660.) Found in small parties in winter.

314. Himantopus melanopterus, Temm.

(661.) *H. candidus*, Bonn.; Swinhoe, P. Z. S. 1871, p. 405.

Occasionally shot near Shanghai, but rare. Specimens in the Museum are dated April and May.

315. Scolopax rusticula, L.

(681.) Woodcocks arrive about the end of October and early in November, and are scattered thinly over the country all winter. I have heard of one among the hills in September, and have frequently seen them there in April, from which I think it probable that a few remain to breed. They occasionally perch on trees. I have driven one out of a holly and on another occasion two out of a bamboo.

316. Gallinago solitaria (Hodgs.).

(682.) Very scarce. I have only seen one in the flesh, killed on 28th October in the district. In the north and in Corea it is more plentiful, and its scarcity on the Yangtse is probably accounted for by its being a mountain species (*cf.* D. & O., "Ois. de la Chine," p. 476).

Found by Swinhoe in Shanghai market in February.

317. Gallinago stenura (Bp.).

(684.) *G. horsfieldi* (Gray); Swinhoe, P. Z. S. 1871, p. 407.

The Pin-tailed Snipes begin to arrive about the middle of

birds, is w may come earlier—and for about a month they Wallafrst ne marshes, and among the bean- and barley-crops. m[illegible] at Shanghai on February 2nd, but, though in good condition, it must have been unable to travel for some reason. In the autumn they begin to return about the middle of August, and I have shot them as late as 30th September; their numbers are very uncertain, and usually less than in the spring.

318. GALLINAGO MEGALA, Swinhoe.

(683.) These large Snipes, which, when in fine condition, sometimes weigh 8 oz., begin to arrive during the first week in April, but are seldom plentiful till the end of the month. In 1888 I shot several on the 29th and 30th March, and one was killed at Kiukiang on 21st March, but these were exceptional dates. In the autumn a few birds either of this or the preceding species are in the market during the last few days of July. When plentiful they are found almost anywhere, but on the whole rather prefer dry grassy slopes and fields to wet ground.

319. GALLINAGO CŒLESTIS, Frenzel.

(685.) *G. scolopacina*, Bp.; Swinhoe, P.Z.S. 1871, p. 407. Scattered through the district all winter, its numbers being largely increased in spring and autumn.

320. RHYNCHÆA CAPENSIS, L.

(687.) Not common, but found occasionally in spring and autumn. In Shanghai I have noted it in February and April. At Kiukiang a male was shot off the nest on 20th May, and brought to me along with the eggs, of which there were four. Also met with at Kiukiang in September and October.

321. TRINGA CANUTUS, L.

(672.) Shanghai market in spring: specimens obtained in May in full breeding-plumage.

322. TRINGA CRASSIROSTRIS, Temm. & Schleg.

(671.) Shanghai market in spring: May specimens have only partially assumed breeding-plumage.

323. Tringa subarquata, L.

(677.) Shanghai market in spring: one in t[illegible] It is dated 8th May is in beautiful breeding-plumage.

324. Tringa cinclus, L.

(675.) To be found in small numbers all the winter. On migration they pass in April and May, and again in October and November.

325. Tringa subminuta, Midd.

T. damacensis, Swinhoe, P. Z. S. 1871, p. 409.

Shanghai market in May.

326. Tringa platyrhyncha, Temm.

(674.) "Shanghai market in April and May" (*D. & O.*).

327. Tringa acuminata (Horsf.).

(673.) Passes through Shanghai in fair numbers in April and May.

328. Tringa temminckii, Leisl.

(678.) Kiukiang, 22nd October.

329. Tringa ruficollis, Pall.

(676.) *T. salina*, Swinhoe, P. Z. S. 1871, p. 409.

Passes in May and again in September.

330. Calidris arenaria (L.).

(670.) "General in winter" (*Swinhoe*, P. Z. S. 1871, p. 408).

I have not met with it.

331. Tringoides hypoleucus (L.).

(669.) A common resident on our lakes and streams.

332. Eurynorhynchus pygmæus (L.).

(679.) Occasionally found in the Shanghai market in spring.

333. Totanus ochropus (L.).

(667.) Common all winter. Usually found singly or in pairs, but during the autumn migration I have seen as many as a dozen together.

birds, is u[illegible]

Wallarst m[illegible] examin[illegible]

TANUS GLAREOLA (L.).

A common spring and autumn migrant, very rarely found in winter. I was surprised one day to see one alight on a pond in deep water, swim to the shallows, and quietly begin to feed.

335. TOTANUS CALIDRIS (L.).

(665.) A spring and autumn migrant, not very common.

336. TOTANUS FUSCUS (L.).

(664.) More plentiful than the last, a few remaining all winter. In May I have obtained them in full breeding-plumage. On 31st March, out of a dozen birds, several were in nearly full plumage, others in winter dress, and others intermediate.

337. TOTANUS GLOTTIS, L.

(662.) Common in winter until the end of April; re-appears in October.

338. TOTANUS INCANUS, Vieill.

(668.) Killed in summer plumage in May near Shanghai by Père David. A specimen in the Museum is dated April.

339. TEREKIA CINEREA (Gm.).

(659.) Shanghai market in May; scarce.

340. LIMOSA UROPYGIALIS, Gould.

(657.) Shanghai market in spring.

341. LIMOSA MELANUROIDES, Gould.

(658.) *L. brevipes*, G. R. Gray; Swinhoe, P. Z. S. 1871, p. 406.

Shanghai market in spring.

342. EREUNETES TACZANOWSKII (Verr.).

(680.) *Pseudoscolopax semipalmatus*, Jerd.; Swinhoe, P. Z. S. 1871, p. 407.

Passes through Shanghai in March and April. Two shot on 28th March were in winter plumage; the stomachs contained shells, crabs, and young shoots of the reeds which were just beginning to show above the mud of the river-banks. One killed on 11th April was in nearly full breeding-plumage. Obtained in Hankow by Swinhoe.

343. Numenius variegatus. It is
(653.) *N. phæopus* (L.); Swinhoe, P. Z. S. 187
Passes Shanghai in May and September.

344. Numenius minutus, Gould.
(656.) Passes Shanghai in April. I shot a single one at Kiukiang 30th September.

345. Numenius lineatus, Cuv.
(654.) May be found all up the Yangtse in winter, but is more plentiful during the spring and autumn migrations.

Order GAVIÆ.

Fam. Laridæ.

346. Larus cachinnans, Pall.
(750.) *L. cachinnans*, Pall.; Swinhoe, P. Z. S. 1871, p. 421.
(751.) *L. occidentalis*, Aud.; Swinhoe, P. Z. S. 1871, p. 421.
Common on the Yangtse in winter, inland as well as near the coast.

347. Larus melanurus, T. & S.
(749). *L. crassirostris*, Vieill.; Swinhoe, P. Z. S. 1871, p. 421.
Common in winter on the coast. Père David met with it on the Poyang Lake and on other inland waters.

348. Larus canus, L.
(747.) Common in winter. The colours of the soft parts are much brighter than in most English specimens. Iris very pale straw; bill, legs, and feet bright orange-yellow; skin round the eye, rictus, and inside of mouth bright scarlet-orange.

349. Larus ridibundus, L.
(752.) Very common throughout the Yangtse from November till April. As late as 9th April they had not assumed the dark head.

350. Larus saundersi (Swinhoe).
(754.) I cannot agree with David that this species "is perhaps the commonest of all the Gulls which frequent the

birds, is r of the interior." That it must pass through the Wallarst sin on its way north is certain, but I believe none winter so far north, and though I have kept a careful look out, and have several times shot doubtful-looking *L. ridibundus* in mistake for it, not a single specimen has come under my notice.

351. Sylochelidon caspia (Pall.).

(755.) Large flights passed through Kiukiang in September, October, and November one year, but, as in the case of most Terns, their visits are irregular.

352. Hydrochelidon hybrida (Pall.).

(757.) Abundant at Kiukiang one year in July and August.

353. Hydrochelidon leucoptera (Schinz).

(758.) Passes Kiukiang every May, sometimes in very large flights.

354. Sterna sinensis (Gm.).

(762.) Passes through Kiukiang and Shanghai every April and May, returning again in July and August with young birds.

355. Sterna fluviatilis.

(759.) *S. hirundo*, L.; Swinhoe, P. Z. S. 1871, p. 422.

Passes and returns at the same dates as the last two, but is less abundant.

Order PYGOPODES.

Fam. Colymbidæ.

356. Colymbus septentrionalis, L.

(737.) I have seen two shot at Shanghai in February, and a third is in the Museum.

Fam. Podicipidæ.

357. Podiceps cristatus (L.).

(741.) Found on the river in winter, but scarce.

358. Podiceps minor (Briss.). It is
(738.) *P. philippensis* (Bonn.), Swinhoe, P. Z
p. 415.

A very common resident; breeds at the end of June.

359. Podiceps auritus (L.).
(739.) Not uncommon in winter.

XLII.—*Ornithological Notes.* By Frank E. Beddard, M.A., Prosector to the Zoological Society of London.

I. *On the Tongue of* Zosterops.

The tongue of *Zosterops* has been figured by Dr. Gadow and described in the following words* :—"The simplest form [in the Tenuirostres] is represented by *Zosterops*. The tongue ends in two short filaments, whilst the greater portion of the tongue proper is not divided; dorsal and ventral aspect smooth, hinder portion of horny sheath projecting backwards with a few (about 3–4) horny spines."

Dr. Gadow has mentioned the species to which his observations refer as being *Zosterops lateralis*. I find some little differences in the tongues of *Zosterops simplex* (of which a specimen has lately died in the Zoological Society's Gardens) and of two individuals of a species which I found among the Prosector's stores labelled "*Zosterops* from Japan." In the tongue of *Zosterops simplex* the upper surface is not perfectly smooth and flat, but the lateral margins are bent upwards and slightly folded inwards. As shown in the woodcut (fig. 1, p. 511), the upper surface of the tongue is thus converted into a deepish trough, which extends backwards on to the hinder wider section of the tongue for about half its extent. The posterior margin of the tongue is merely concave, not deeply notched, as in *Zosterops lateralis*; instead of being

* "On the Suctorial Apparatus of the Tenuirostres," P. Z. S. 1883, p. 62 *et seq.* pl. xvi. fig. 2. Dr. Bowdler Sharpe ('A Review of Recent Attempts to Classify Birds,' Budapest, 1891, p. 86, footnote) says that "the tongue of *Zosterops* . . . . has no similarity to the 'brush' tongue of the Honey-sucker," but does not mention the species to which his observations refer.

birds, is not only three or four spines, it is covered with Wallarst very short pointed processes. But the most important difference concerns the free extremity of the tongue; this is split in two, as in *Zosterops lateralis,* but in addition to this each half is frayed out into two or three bristle-like processes.

Fig. 1.



Upper surface of tongue of *Zosterops simplex*, magnified.

In the two specimens from Japan the tongue was a little different; in one of them the upper surface was nearly flat, but the bifid extremity was frayed out into a number of processes.

In the other specimen the edges of the tongue were decidedly more rolled over towards the middle line than in *Zosterops simplex.* As long as the specimens were kept wet, the two edges of the tongue did not actually meet in the middle line, although forming by their close approximation a deep trough with an almost circular section; when the tongue was allowed to become dry, its margins actually joined in the middle line, and temporarily converted the trough into a tube for the greater part of the length of the anterior portion of the organ. The extremity of the tongue was frayed out, as in both the other specimens of *Zosterops* that I have examined. Unfortunately I was quite unable to

make out whether the difference in the tongue. It is Japanese birds were correlated with differences o[f] birds had been in spirit for a good many years, and t[he] viscera were too much softened to permit of a determination of the sex.

It is evident, therefore, that the simple structure of the tongue described by Dr. Gadow in *Zosterops lateralis* does not characterize the genus; we have in *Zosterops simplex* and in *Zosterops japonica** a transition towards the more complicated form of tongue of the Meliphaginæ, both in the frayed-out extremity and in the folded margins. Dr. Gadow states that *Zosterops* is not a Honey-sucker; nevertheless the form of the tongue is such as to suggest that *Zosterops simplex* and *Z. japonica* may belong to that group.

II. *On the Convoluted Trachea of* Manucodia comrii.

Some time ago Mr. Sclater kindly put into my hands a body of *Manucodia comrii*, showing the convoluted trachea in position.

That the trachea of this genus has a subcutaneous convolution lying upon the pectoral muscles has been known for a long time; but up to the present the trachea of this particular species (*Manucodia comrii*) has not, so far as I am aware, been described or figured. I am therefore greatly indebted to Mr. Sclater for enabling me to examine the structure of the windpipe in this species.

In the 'Proceedings' of the Zoological Society of London for 1882†, my predecessor, the late Mr. W. A. Forbes, has given a very useful summary of what was then known with regard to the convoluted trachea of birds, devoting some space to a consideration of *Manucodia* and of the allied genus *Phonygama*.

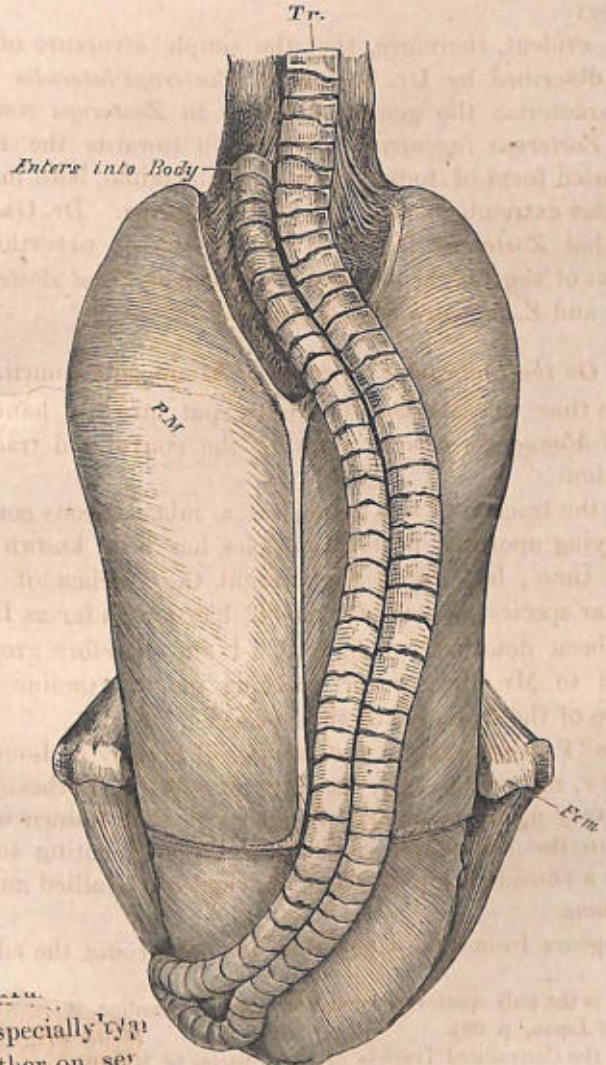
It appears from this paper that in *Manucodia* the adult

* This is the only species occurring in Japan, according to Seebohm ('Birds of Japan,' p. 68).

† "On the Convoluted Trachea of two Species of Manucode (*Manucodia atra* and *Phonygama gouldi*), with Remarks on similar Structures in other Birds," P. Z. S. 1882, p. 347.

birds, is no[t] a convoluted trachea, which varies in the Wallarst development in the three species in which it has m[a]y examined.

Fig. 2.



fu specially [illegible]
pe[c]ther on, se[e]
[illegible]
[illegible]is, *Tetrao*, [illegible] body of *Manucodia comrii*, showing the trachea.
bu[c]) are coma[t]; *P.M.* Pectoralis Muscle; *Fem.* Femur.
are not fou[n]d.

In *Manucodia atra* the trachea forms only one loop. It is lying on the interclavicular air-cell, between the furcula, much as in many specimens of the genus *Crau*." *Manucodia chalybeata* and *M. jobiensis* the loop extends about two thirds down the surface of the pectoral muscles.

Manucodia comrii (fig. 2, p. 513) has a much more extensive loop than any other species: in the specimen before me the two sections of the trachea which form the loop run closely adherent to each other in a slightly sinuous course to the left of the sternal keel; they are directed beyond the pectoral muscles somewhat obliquely, and finally end on the right side of the body in the immediate neighbourhood of the cloaca, slightly overlapping the posterior border of the thigh-muscles. The accompanying figure, which is of natural size, will give a correct idea of the course of the loop.

The bird proved on dissection to be a male.

The species *Manucodia comrii* was described some ds a rs ago* by Mr. Sclater as "the finest and largest" of the gen. ea the bill is longer and the curling of the feathers of the hea is carried to a greater extent. It is interesting to find the tracheal loop also showing a more pronounced character than in other species.

XLIII.—*On Recent Advances in our Knowledge of the Geographical Distribution of Birds.* By the Editor†.

It is now nearly thirty-four years ago since I read before the Linnean Society of London a memoir on the geographical distribution of the Class of Birds (1)‡, in which, after a preliminary discussion upon the subject, I pointed out what I considered to be a most natural way of dividing the earth's surface, looking only to the distribution of the families,

* "On the Birds collected by Dr. Comrie on the South-east Coast of New Guinea during the Survey of H.M.S. 'Basilisk,'" P. Z. S. 1876, p. 459.

† Slightly modified from an Address to the Se Seebohm Ornithological Congress at Budapest in May 1891. ucode (*Manu-*

‡ The numbers in brackets refer to the titles of w iar Structures Appendix, pp. 548–557.

birds, is no species of the Class of Birds as our guide. In Wallarst place I showed that, as regards their bird-life, mEurope and Northern Asia are quite inseparable, the same or nearly the same avifauna extending all across the temperate portion of the Old World from England to Japan. Again I pointed out that Africa north of the Atlas, along the southern shores of the Mediterranean, also belonged to Europe zoologically, and not to the continent to which it is physically joined. I therefore maintained that we must consider Africa north of the Atlas, Europe, and Northern Asia to form one primary division of the earth's surface, to which the name "PALÆARCTIC REGION" would be best applicable.

The great continent of Africa, after cutting off the portion north of the Atlas, would form, as I showed, a second well-marked division of the earth's surface. This would include Madagascar, which, however, had manifestly a peculiar development of its own, as also Western Arabia as far as the Persian Gulf; for in this part of Asia African types seemed to predominate over Indian. This second division of the earth's surface I proposed to call the "ETHIOPIAN REGION."

A third primary region appeared to be constituted by Southern Asia and the adjacent islands of the Indian Archipelago down to (what is now called) Wallace's line. This region would certainly embrace Sumatra, Java, Borneo, and the Philippines; but its southern boundary was at that period a little uncertain. This region I proposed in 1857 to call the "Indian" Region. Mr. Wallace subsequently proposed to alter its name to the "ORIENTAL" REGION, and I have had great pleasure in following his suggestion.

A fourth principal division of the Old World, taking birds as our guide, I proposed to denominate the "AUSTRALIAN REGION." This would embrace New Guinea and the adjoining islands, in which the facies of bird-life was manifestly of an Australian type, Australia itself, and New Zealand and [illegible] specially Tasmania. According to this plan we should have [illegible]ether on, seve[illegible]d one great Temperate Region (Palæarctic) [illegible]is, *Tetrao*, *Bo*[illegible]r less Tropical (Palæotropical) Regions, the bu[illegible]E) are comm[illegible] of these (the Australian) extending rather are not foun[illegible]

farther to the south than the others, whilst the middle Palæotropical Region is rather the most no[rthern] of the three. It is

As regards the New World, I showed that it might be most simply divided into a northern and southern portion by a line drawn across the continent somewhere towards the south of Mexico. The northern of these two divisions, the avifauna of which presented many undoubted points of resemblance to that of the Palæarctic Region, I proposed to call the "Nearctic Region." For the southern division, which embraced the whole of South America, the West-India Islands, and Central America up to Southern Mexico I suggested the term "Neotropical Region" and [pointed] out that, with the exception possibly of Australia in size, will give a possessed by far the richest and most [varied] any part of the earth's surface [known] to be a male.

To recapitulate, therefore, I proposed to divide the earth's surface, so far as its bird-life is concerned, into the six following regions:—

I. *The Palæarctic Region*, including Europe, Northern Asia, and Northern Africa down to the Atlas.

II. *The Ethiopian Region*, including Africa south of the Atlas, Madagascar, and Arabia.

III. *The Oriental Region*, including Asia south of the Himalayas and the Indian Archipelago down to Wallace's line.

IV. *The Australian Region*, including the Moluccas, New Guinea and the adjacent islands south of Wallace's line, Australia, New Zealand, and the South Pacific Islands.

V. *The Nearctic Region*, including North America down to Southern Mexico.

VI. *The Neotropical Region*, including Central America, the West-India Islands, and South America.

During the thirty-four years which have elapsed since this plan of the division of the earth's surface for Ornithological purposes was put forward, I need hardly say that to Seebohm-schemes of a similar nature have been propo[sed] these have been modifications, more or less w[ide] original arrangement; others, such as that aucode (*Manu-*nilar Structures

e started on altogether different principles, and birds, is r[illegible]d up the earth's surface in an entirely different Wallace h[illegible]ay. I trust, however, that on the present occasion I may be excused from discussing these different schemes. But I may be allowed to point out with pride that the great naturalist Alfred Russel Wallace, who has written the best and most complete book that has yet been issued on the geographical distribution of animals (3), has entirely adopted the divisions which I originally proposed and the nomenclature consequent thereon *, and has based the whole of his work upon the principles which I put forward in 1858.

Mr. Wallace has well pointed out that, so long as we do not violate any clear affinities or produce any glaring irregularities, it is a positive and by no means unimportant advantage to "have our principal regions nearly approximate in size, and with easily de[illegible]ver, and therefore easily remembered, boundaries." As he W[illegible]y states, the most obvious zoological division of the earth would be made by separating the Australian Region from the rest of the world, there being no doubt that the Australian fauna is by itself of quite as great peculiarity as that of the whole of the rest of the world taken together. But when this has been done we have not advanced the subject very far, being only able to say that a certain group of animals is "Australian" or "non-Australian." A second great natural division may readily be made by cutting off the Neotropical Region from the rest of the world. After deducting the Australian Region, it could easily be shown that the Neotropical Region has more special groups of animals peculiar to itself than the four remaining divisions of the world put together. Upon doing this we should have three primary divisions of the earth's surface, which I agree with Prof. Huxley (4) and other writers in recognizing as of tolerably equivalent zoological importance. But it would be [illegible]amilies Syl[illegible]cal inconvenience to unite the whole of the fu specially typ[illegible]n of the world under one designation, even if pe[illegible]ther on, sever[illegible]ption of the alteration of the "Indian" Region into
ris, *Tetrao*, *Bo*[illegible]ly mentioned.
bus) are commo
are not found

there were good grounds for adopting this co[illegible]st no[illegible] It is Wallace, in his excellent chapter on zoological re[illegible] gone fully into the arguments upon this subject, a[illegible] I will not repeat them here. I admit with him that my six regions are not of precisely equal rank, and that some of them are far more isolated and better characterized than the others. But I also maintain with him "that, looked at from every point of view, they are more equal in rank than any others that can be formed; while in geographical equality, compactness of area, and facility of definition, they are beyond all comparison better than any others that have yet been proposed for the purpose of facilitating the study of geographical distribution."

After more than thirty-five years' close attention to the subject and a constant study of all that has been written upon it by my brother workers, I am still convinced that, for the study of vertebrate animals at least, this six-fold division of the earth's surface will be found to be more natural and more convenient than any other arrangement that has yet been suggested. On the present occasion, however, we are engaged only with the Class of Birds, on the study of which I originally based the six regions, and for which I maintain they are eminently suitable. I will proceed now to take these six regions one after the other, to point out some of the principal characters which pertain to each of them, and to mention the leading recent authorities to be referred to by those who wish to gain an idea of the peculiarities of their respective avifaunas.

I.—The Palæarctic Region (*Regio Palæarctica*).

(a) *Extent.*—Africa north of the Atlas, Europe, Asia Minor, Persia and Asia generally north of the Himalayan range, upper part of the Himalayan range, Northern China, Japan, and the Aleutian Islands.

(b) *Characteristic Forms.*—As I pointed out [illegible] essay, before referred to, the Palæarctic or gre[illegible]nucode (*Manu-* Region of the Old World is not so well supplie[illegible]milar Structures types as the remaining regions, and therefor[illegible]

birds, is not so easily differentiated. Although, as Mr. Wallace has shown, our knowledge of this subject has been much improved since my essay was written, in consequence of the great advances made during recent years in the investigation of the birds of Central Asia, I think that this statement still holds good, but not to so great an extent as at the time when I made it. In the Palæarctic Ornis generally the SYLVIIDÆ or Warblers probably play the most important part amongst Passerine birds. According to Mr. Wallace's tables, no less than 14 genera of this family are either essentially or characteristically Palæarctic. Of these, *Locustella*, *Daulias*, and *Erithacus* are good examples. Others are *Sylvia*, *Ruticilla*, *Regulus*, and *Accentor*, though these are not quite so exclusively Palæarctic.

A second Passerine group highly characteristic of the Palæarctic Region, though by no means exclusively confined to it, is the FRINGILLIDÆ, containing the Finches and Buntings. At least 12 genera of this family are nearly or quite restricted to the Palæarctic Region. Of these, *Fringilla*, *Pyrrhula*, and *Emberiza* are good illustrative forms. The CORVIDÆ or Crow family is a third Passerine group very characteristic of the Palæarctic Region, though some of the genera are found in nearly every other part of the world. *Fregilus*, *Podoces*, *Cyanopica*, and *Garrulus* are four well-known forms of Palæarctic CORVIDÆ.

But the most magnificent group of the Palæarctic Ornis is certainly the PHASIANIDÆ, which is highly developed all through its central portion. Many of the more splendid Game-birds belong, it is true, to the Oriental Region; but at least five or six of the most remarkable genera are exclusively Palæarctic. Such, for example, are *Crossoptilon*, *Lophophorus*, *Pucrasia*, *Phasianus*, *Thaumalea*, and *Ithaginis*. Thus, I think, on the whole, we may put down the four families SYLVIIDÆ, FRINGILLIDÆ, CORVIDÆ, and PHASIANIDÆ as specially typical of the Palæarctic Ornis. As I shall show further on, several other forms (such as *Loxia*, *Sitta*, *Ampelis*, *Tetrao*, *Bonasa*, *Lagopus*, and several genera of ANATIDÆ) are common to the Palæarctic and Nearctic Regions, but are not found elsewhere.

(c) *Subregions.*—Mr. Wallace has divided the Palæarctic Region into four subregions—the European, Mediterranean, Siberian, and Mantchurian. The subject is a difficult one to handle satisfactorily; but it seems to me that the seven subregions which I proposed in my address to the Biological Section of the British Association at Bristol in 1875 (5) are more convenient, though it is of course quite impossible to separate such land-districts by definite lines, except in cases where a marine area intervenes. These seven subregions are:—

1. *The European Subregion,* containing Europe and Iceland.

2. *The Cisatlantean Subregion,* embracing all that part of the Palæarctic Region lying south of the Mediterranean Sea, together with the Atlantic Islands.

3. *The Siberian Subregion,* embracing the whole of Northern Asia.

4. *The Mantchurian Subregion,* containing Northern China, the adjoining part of Mongolia, and the northern islands of Japan.

5. *The Japanese Subregion,* embracing the southern Japanese Islands.

6. *The Tartarian Subregion,* containing the great central plateau of Central Asia.

7. *The Persian Subregion,* embracing Persia, Asia Minor, and Syria.

I will now say a few words upon the principal characteristics of each of these subregions, and upon some of the leading recent authorities upon their birds. These authorities will be mostly those subsequent in point of date to the delivery of my address on Geographical Zoology of 1875, in which most of the principal works of reference upon the subject issued up to that date were specially referred to.

1. *The European Subregion.*

As regards authorities on the birds of the European Subregion, there can be no question, I think, that Mr. Dresser's 'History of the Birds of Europe' (6), completed in 1881, and contained in eight large quarto volumes, holds the first

place, and is likely to do so for a considerable period. It would be easy to criticize it from many points of view; but the long series of life-like and artistic figures which it gives us will not be easily matched, and the letterpress is a veritable mine of information, upon the basis of which a new handbook of Western Palæarctic Ornithology might well be built. I commend this subject to some of the younger members of the present Congress, who may find leisure to undertake such a task.

Prof. Newton's valuable edition of Yarrell's 'British Birds' (7), which I spoke of as in progress in my British Association Address, has been finished by Mr. Howard Saunders, who has also, more recently, issued a most useful manual of the birds of the British Islands (8). A large number of local avifaunas of various parts of Great Britain have also been published of late years, so that each county bids fair before long to have a separate history of its birds. I cannot specify these individually, but I may mention by name, as one of the most valuable, Stevenson's 'Birds of Norfolk' (9), the third and last volume of which has been prepared and issued by Mr. Southwell since the original author's lamented decease *.

On the Continent during the past 15 years no single publication has been issued on the birds of Europe generally which can be placed in the same category as Mr. Dresser's. But an enormous amount of local work has been done, especially in Germany, Italy, Russia, and Scandinavia. We can hardly say the same of France, where of late years the progress of native Ornithology seems to have been almost in abeyance, except for the occasional appearance of a number of M. Olphe-Galliard's "Contributions à la Faune Ornithologique de l'Europe occidentale" (11). In Germany great

* As regards British Ornithology, I may also venture to call attention to the 'List of British Birds' (10) published by the British Ornithologists' Union in 1883, and prepared principally with the laudable object of inducing the usage of a uniform nomenclature. This was, I believe, the precursor of a series of corresponding publications subsequently issued in other countries, and had certainly the merit of setting a good example.

influence has been brought to bear upon the local Ornithology of the whole of Central Europe by the institution of the International Ornithological Committee established in 1884, and the publication of its organ 'Ornis' (12), commenced in 1885 and carried on with unfailing regularity.

In Italy two well-known Ornithologists have devoted themselves to the task of summarizing the present state of our knowledge of Italian Ornithology. Count Salvadori, inspired by the 'List of British Birds' of the British Ornithologists' Union, published in 1886 his 'Elenco degli Uccelli Italiani' (13). More recently Prof. Giglioli has issued his 'Avifauna Italica' (14), which contains a large amount of varied information upon the same subject.

In Russia, as may be naturally expected, matters have not yet advanced quite so far. We have as yet no available manual of the Ornithology of European Russia. But we have had several valuable works recently published on the avifauna of various parts of it, amongst which I may specially mention Dr. Gustav Radde's 'Ornis Caucasica' (15) and Herr Th. Pleske's excellent memoir on the birds of the Kola Peninsula (16). I may also call attention to the same author's 'Ornithographia Rossica' (16*a*), of which three numbers have already appeared. The somewhat ambitious programme of this work is to give an account of the birds of the whole Russian Empire, so that when finished it will form a most valuable addition to our knowledge of Palæarctic Ornithology.

In Scandinavia there has been no very recent general work upon the birds published, although many papers and memoirs have been written upon various portions of the subject. But it is understood that the well-known zoologist of Christiania, Prof. Collett, has for many years been working hard upon the birds of Norway, and we may trust that before long he will bring his labours to a conclusion.

In concluding our review of recent progress in European Ornithology, we may remark that South-western and South-eastern Europe (by which we mean Spain, Portugal, Bulgaria, Greece, and Turkey) have been lately of much use as happy

3. *South* districts. As to the Ornithologists of Central Europe. e exception of the 'Aves de España' of Don é Arévalo y Baca (17) and Brusina's papers on the Birds of Croatia (18), we have ... if any, recent native works on the Ornithology of these countries to speak of.

2. *The Cisatlantean Subregion.*

The birds of the Cisatlantean Subregion were mostly included by Mr. Dresser in his great work, and are therefore tolerably well known and correctly figured. The peculiarity of the Cisatlantean Ornis consists in the representation of many familiar species of European birds by more or less modified specific forms. As regards the continental portion of this subregion no general work has appeared of late years, although memoirs in various journals, amongst which we may specify Dr. A. Koenig's excellent article on the Ornithology of Tunis (19), have materially increased our knowledge of this subject. There is also ample room for a work on the insular portion of this subregion: that is, the island groups of the Canaries, Madeira, and the Azores. On the birds of the Canaries we have lately acquired much valuable information from the researches of Mr. Meade-Waldo, Canon Tristram, and Dr. Koenig (20–23), and I trust we may look to one of these naturalists for the preparation of a complete volume on the Canarian Avifauna.

3. *The Siberian Subregion.*

Since the issue of Radde's 'Reisen im Süden von Ost-Sibirien,' some twenty years ago, the Russian naturalists have given us no general work upon Siberian Ornithology, although much has been done in the way of exploration and investigation. The Museum of the Academy of Natural Sciences of St. Petersburg is believed to contain an unrivalled series of Siberian birds, of which, no doubt, we shall have a good account in Herr Pleske's 'Ornithographia Rossica,' above mentioned.

4. *The Mantchurian Subregion.*

It is a very difficult question to decide where to draw the

line between the Mantchurian Subregion and cal Ornitho-
northern part of the Oriental Region, to whiation of the
China should probably be referred. But as the greater pa,
of the Chinese Empire must be referred to the Mantchurian
Subregion, we must mention under this head David and
Oustalet's 'Oiseaux de la Chine' (24), which furnishes us
with a complete *résumé* of Chinese Ornithology. It embraces
descriptions of nearly 800 species, and the atlas of plates
which accompanies it, if not of first-rate artistic merit, is
most useful to the student. Since the lamented death of
Swinhoe, the pioneer of Chinese Ornithology in its modern
sense, and the publication of the above-named work, there
has been a slight lull in the progress of our knowledge of
Chinese Ornithology. But several English Ornithologists,
amongst whom we may mention Messrs. Seebohm, Slater,
and Styan (25–27), have recently taken up the subject, in
which, indeed, there is ample room for a large number of
investigators.

5. *The Japanese Subregion.*

As regards Japan I shall content myself on the present
occasion by calling attention to Mr. Seebohm's 'Birds of the
Japanese Empire' (28), issued last year, which gives a capital
summary of this subject in a compact and handy form. It
is hard to please everybody, and a rival Ornithologist on the
other side of the Atlantic has found much fault with Mr. See-
bohm's unpretending volume. I venture, however, to give my
opinion that its defects are far overbalanced by its obvious
merits, although no doubt more complete descriptions of the
species and a more ample synonymy would have added much
to the value of the work. Mr. Seebohm is now extending
his researches to the little-known island-groups of the
Japanese Empire, where there remain many discoveries to
be made (29).

6. *The Tartarian Subregion.*

Of this district, which embraces the great interior high
plateau of Central Asia, the illustrious travellers Prjevalsky

3. *South Afri*[illegible]have been the principal explorers of modern districts. [illegible]alsky was an ardent ornithologist and made
4. *South* [illegible]collections of birds, which are now at St. Peters-burg. We have as yet had but fragmentary notices of them. But, by the aid of a subsidy fro n a member of the Imperial family, a complete account of the valuable zoological results of Prjevalsky's various expeditions has now been planned and commenced. The portion relating to the birds (30) is being prepared by Herr Th. Pleske, who is in charge of the bird-collection belonging to the Imperial Academy of Sciences, and whom I have already mentioned as the author of 'Ornithographia Rossica.'

Another great Russian traveller and ornithologist, Severtzoff [illegible]ewise died in the middle of his work. In his case of Liberia (38), [illegible]been found to commence the publication of published since [illegible]esults of his many journeys in Central Asia. In S[illegible] Dr. Menzbier's 'Ornithologie du Turkestan' (31) is based mainly upon Severtzoff's collections, and when completed will vastly increase our knowledge of the avifauna of the Tartarian Subregion.

7. *The Persian Subregion.*

In my address to the British Association I mentioned the approaching issue of Mr. Blanford's 'Zoology of Eastern Persia' (32). This work, which forms the second volume of the account of the journeys of the Persian Boundary Commission of 1870–72, was issued in 1876, and contains an excellent treatise upon Persian Ornithology, with good illustrations of the more remarkable species. Since that period no great additions have been made to our knowledge of the birds of Central Persia. But an excellent observer on the Persian coast, Mr. W. D. Cumming, has recently forwarded a valuable series to the British Museum, of which Dr. Sharpe has given us an account (33–35). Dr. Radde's excursion along the northern frontiers of Persia (36, 37) has likewise materially added to our knowledge of the birds of the Persian Subregion.

II.—The Ethiopian Region (*Regio Æthiopica*).

(a) *Extent.*—Africa south of the Atlas, Madagascar and the Mascarene Islands, and Arabia up to the Persian Gulf.

(b) *Characteristic Forms.*—As regards its birds, the Ethiopian Region is much more strongly marked off from the contiguous lands than the Palæarctic. It has at least five distinct families of birds, absolutely confined to it, besides a large series of peculiar genera. The *Musophagidæ*, the *Coliidæ*, the *Irrisoridæ*, the *Serpentariidæ*, and the *Struthionidæ* are characteristic families of Ethiopian birds which are not met with at all outside the limits of this region. Besides these, two others, the *Leptosomidæ* and *Mesitidæ*, are, now-a-days at least, restricted to Madagascar.

The genera confined to the Ethiopian [illegible] belonging to the families above mentioned [illegible] numerous. Amongst the Passeres they will be found principally among the *Muscicapidæ*, the *Laniidæ*, the *Sturnidæ*, and the *Ploceidæ*. Africa has also many genera of Barbets (*Megalæmidæ*), Hornbills (*Bucerotidæ*), and Goatsuckers (*Caprimulgidæ*) restricted to it. The Guinea-fowls (*Numida* and its allies) constitute the characteristic gallinaceous form of the Ethiopian Region, but Francolins (*Francolinus* and *Pternestes*) are likewise very abundant throughout its area. Two well-marked forms of Herodiones (*Balæniceps* and *Scopus*) are likewise absolutely confined within Ethiopian limits.

(c) *Subregions.*—Madagascar and the Mascarene Islands are so very different from the rest of the Ethiopian Region, in its present stage, that it is almost a question whether they ought not to constitute, as regards birds, a region by themselves. In my British Association Address I have spoken of them as the "Lemurian Subregion," however, and I will follow the same plan on the present occasion. The rest of the Ethiopian Region may be divided, for convenience' sake, into the following six subdivisions:—

1. *Western Africa*, from the Senegal to the Congo.
2. *South-western Africa*, or Angola and Benguela.

3. *South Africa*, i.e., the Cape Colony and adjoining districts.

4. *South-eastern Africa*, from the Zambezi up to the Somali coast.

5. *North-eastern Africa*, including Abyssinia, Nubia, and Egypt.

6. *Arabia*.

I will take these districts in order and say a few words upon the recent advance that has been effected in each of them as regards our knowledge of its birds.

In Western Africa, commonly so-called, although great progress has been made and many contributions have appeared of late years, amongst which especial mention should be made of Heer Büttikofer's excellent account of the Birds of Liberia (38), no general work on its ornithology has been published since Hartlaub's 'System' in 1857.

In South-western Africa we are more fortunate. Prof. J. V. Barboza du Bocage has completed the volume on the Ornithology of Angola (39), which I spoke of as in preparation in my "Address," and it was published at Lisbon in 1881. It gives us an account of 673 species, to which, however, further additions have since been made by the author himself and his fellow-workers in the Lisbon Museum. We have also several excellent papers by Mr. Büttikofer upon the collections made by Mr. van der Kellen in this district (39*a*–39*c*), and Dr. Reichenow's account of the collections made by Dr. Falkenstein on the Loango coast (39*d*).

As regards the Cape Colony and the adjoining territories, which embrace nearly the whole of what we call "South Africa," a more complete work on the birds is also now available. This is Dr. Bowdler Sharpe's new edition of Layard's 'Birds of South Africa' (40), which, though commenced in 1875, was not finally completed till 1884. Dr. Sharpe has wisely included in his work all species known to him to occur south of the Zambezi on the east, and of the Quanza on the west. This has largely increased the number of South-African birds given in Layard's original work and raised it to no less than 771 species.

Passing on to the north of the Zambezi to the division proposed to be called "South-eastern Africa," we shall find that great progress has been made as regards our knowledge of its birds during the past fifteen years. Peters's long-promised volume on the birds of Mozambique was, it is true, never published, but several more recent German explorers in South-eastern Africa (Böhm, Hildebrandt, Fischer, Stuhlmann, Emin Pasha) have stored the rich bird-collection of their Fatherland with series of specimens from the interior of this district, and many valuable papers have been based upon them (41–47).

Several English collectors (Lort Phillips, Johnston, Hunter) have also been busily engaged in the same country and on the adjoining coast of Somaliland (48–50), and, judging by the fine series which has only recently reached England from Mr. Jackson (51), the riches of this avifauna are by no means yet exhausted.

In North-eastern Africa, commonly so-called—that is, Abyssinia, Nubia, and Egypt—comparatively little has been done since the issue of the works mentioned in my British Association "Address." We must not, however, forget to mention Count Salvadori's excellent memoirs on the birds of Shoa (52, 53), based upon the collections made by the Italian expeditions to this part of Abyssinia.

Little also has been done as regards the avifauna of Arabia, where there seems to be still room for ornithological discoveries to be made. But the adjacent island of Socotra, which belongs to this subdivision, was zoologically explored by Prof. I. B. Balfour in 1880, and as regards its birds the results are given in Dr. Hartlaub's paper published in the Zoological Society's 'Proceedings' for 1881 (54).

7. *Lemurian Subregion.*

As I have already said above, it is somewhat doubtful whether, except for convenience' sake, the Lemurian Subregion can be properly annexed to the Ethiopian Region. There can be no doubt of the highly specialized character of its birds, and some modern authorities consider that, as

regards the general facies of its avifauna, it has more to do with the Oriental Region than with the Ethiopian. But, as Mr. Wallace has argued in his 'Island Life,' the presence of certain eastern genera in Madagascar does not outweigh the greater number of African types also met with in this island. In Madagascar, in fact, we have probably a relic of the ancient fauna of the Ethiopian Region, before it was invaded by hosts of intruding strangers from the north.

I think it unnecessary on the present occasion to go further into the question of Madagascar Ornithology and its peculiarities. The excellent volumes of MM. Milne-Edwards and Grandidier, which form a part of the latter gentleman's great work upon Madagascar (55), give us full particulars as to the birds of this country and a series of splendid illustrations. It appears that about 238 species of birds are now known to occur in Madagascar, and that not less than 35 of the genera and 129 of the species are peculiar to it. This is an amount of individuality which is certainly not attained by any other known avifauna of a similar extent.

III.—The Oriental Region (*Regio Orientalis*).

(a) *Extent.*—Southern Persia, India south of the Himalayas, Burmah, Siam, Southern China, and the East-Indian Islands down to Celebes and Wallace's line.

(b) *Characteristic Forms.*—The ornithic forms characteristic of the Oriental Region are not so isolated as those of the Ethiopian Region, but they are very numerous and very varied. Amongst the Passeres the *Eurylæmidæ* form a distinct family entirely confined to the Oriental Region; the *Pittidæ* are likewise most highly developed within its limits, but have a few scattered representatives in the Ethiopian and Australian Regions. Other Passerine families which are likewise characteristic of the Oriental Region, although not absolutely confined to it, are the *Timeliidæ*, *Pycnonotidæ*, *Dicruridæ*, and *Nectariniidæ*. The genera *Acridotheres*, *Gracula*, *Phyllornis*, and *Pericrocotus* are also restricted to the Oriental Region. Passing to the

Picarian birds, we find the Trogons of the genus *Harpactes*, the Bee-eaters of the genus *Nyctiornis*, and several genera of Cuckoos (*Phœnicophaus*, *Dasylophus*, &c.) restricted to the Oriental Region, and among the Parrots the genera *Palæornis* and *Loriculus*. Some of the most highly developed forms of the *Gallinæ* are likewise only met with within the limits of the Oriental Region: amongst these we may mention *Pavo*, *Ceriornis*, *Polyplectron*, *Argus*, *Euplocamus*, and *Rollulus*.

(c) *Subregions*.—There is no part of the world where more attention has been paid to ornithology and greater progress made in advancing it during the past fifteen years than in the various parts of the Oriental Region. But the question of its division into subregions is still a very difficult one, and I am not prepared to enter into it on the present occasion. In commencing, however, upon some of the principal recent authorities for our knowledge of its birds, I will speak of the Oriental Region under the subjoined heads:—

1. *The Indian Peninsula and Ceylon.*
2. *The Burmese Countries and Malay Peninsula.*
3. *The Sunda Islands and adjoining islands down to Wallace's line.*
4. *Celebes.*
5. *The Philippine Archipelago.*

1. *The Indian Peninsula and Ceylon.*

In 1875, at the time I read the "British Association Address," Jerdon's 'Birds of India,' published in 1864, was the only book of reference for the Indian Ornithologist, and I insisted loudly on the absolute necessity of a new one. Although since that period students of birds have been numerous in every part of the Peninsula, mainly under the impetus given to the good work by Mr. Allan Hume, C.B., and his periodical 'Stray Feathers' (56), it is only quite recently that the grand necessity of a new Handbook has been supplied, and even now this much desired work is not complete.

Buxton (64), solicitation and pressure the Secretary of State (67 *a*), and was induced to authorize the publication of a series of Handbooks on the Fauna of British India, under the very efficient editorship of Mr. W. T. Blanford, F.R.S. To Mr. E. W. Oates, than whom no more competent person could have been selected, was assigned the task of preparing the Handbook of Birds, and the first two volumes of it have been duly issued (57). But I regret to have to say that instead of being allowed to complete this most valuable piece of work, Mr. Oates has been hurried back to his ordinary duties in Burmah by the Indian authorities. It is, however, some consolation to be able to add that Mr. Blanford has himself undertaken to prepare the remaining volume upon the Indian Birds.

Mr. Oates's revision of the Indian Ornis has been mainly based upon the enormous mass of specimens accumulated by Mr. Allan Hume, C.B., who in 1888 presented the whole of his magnificent bird-collections to the British Museum, where, when joined to the previous collections of Hodgson, Sykes, Tweeddale, and other well-known authorities, they form an unrivalled series. Simultaneously with the Handbook, Mr. Oates has prepared and issued a new edition of Mr. Hume's valuable 'Notes on the Nests and Eggs of Indian Birds' (58), which, I am happy to say, he has found time to finish before his departure to India. Furnished with these two works, and by means of the references given in them, the student of the Indian Ornis will find himself better off for information than, perhaps, in any other part of the world, except Europe and the United States.

2. *The Burmese Countries and Malay Peninsula.*

In this division of the Oriental Region we have also a recent and valuable guide to the Ornis, likewise from the pen of Mr. Oates, published in 1883 (59). Since this date British Burmah has received a huge extension by the annexation of what was at that period Independent Burmah, and when this is fully explored many additions to the avifauna of Burmah may be expected. An enterprising Italian naturalist,

Signor Fea, has recently made fine collection... genus *Harpactes*, Burmah for the Museo Civico, Genoa. Of ... eral genera Salvadori has given us an excellent account (60). ... d to extremity of the Malay Peninsula an active ornithologist, Mr. Davison, has lately been established at Singapore as Curator of the Raffles Museum, and is understood to be working hard upon the ornithology of the British and Protected States of the Peninsula. In Siam, Annam, and Tonquin, not so much has been done of late years. The French National Museum has received many collections from those countries, and the discovery of some fine new forms (such as *Rheinardius ocellatus*) has been the result, but we have as yet no connected account of the ornithology of these States, and we must look to M. Oustalet to supply this want.

3. *The Sunda Islands.*

Great advance has been made in our knowledge of the birds of the East-Indian Archipelago during the last fifteen years, and nearly all the larger of its component islands have been frequently visited and explored. Of the birds of the great Island of Borneo, Count Salvadori published an excellent systematic catalogue in 1874 (61), based mainly upon the collections of Doria and Beccari. Considerable additions, however, have been made to the Bornean Ornis since that period, amongst which we must call special attention to the splendid series obtained on Mount Kina Balu and in the adjacent districts by Mr. J. Whitehead in 1885–87. This series, which has been fully described by Dr. Bowdler Sharpe in 'The Ibis' for 1889 and 1890 (62), embraces examples of no less than 228 species. Dr. W. Blasius has also described (63) the collection made by Herr Grabowsky in South-eastern Borneo, and has given us a *résumé* of recent papers on this subject.

In the adjacent islands of Sumatra and Java no such superlatively good work has lately been effected. But Sumatra has been recently visited by ornithologists of several different nations, amongst whom we may specially mention

Buxton (64), Beccari (65), Bock (66), Forbes (67), and Klaesi (67 *a*), and we have been furnished with excellent accounts of the collections made by these explorers. To the Ornithology of Java, which requires special attention on account of the somewhat peculiar phasis of its Bird-life, Heer A. G. Vorderman, of Batavia, has lately devoted himself (68). He enumerates 404 species of Javan birds, and promises a complete work on the subject.

4. *Celebes.*

The Avifauna of Celebes, a debatable land between the Oriental and Australian Regions, but more properly attributable to the former, was at one time the special subject of study of Arthur, Lord Tweeddale, formerly President of the Zoological Society of London. Since his lamented death the subject has been taken up by Dr. A. B. Meyer (69), Count Salvadori (70), Brüggemann (71), and Dr. W. Blasius (72), and we have become well acquainted with the birds of this island.

5. *The Philippine Archipelago.*

As in Celebes so in the Philippines, Lord Tweeddale's 'Memoir on the Birds of the Philippine Archipelago' (73), published in 1875, has been the base of all modern researches upon this subject. This specially attractive avifauna has of late years received great attention. In 1874 Dr. J. B. Steere made a successful expedition to the Philippines, and added more than sixty species to their avifauna, besides discovering some remarkable new forms (74). Since that period Major Wardlaw Ramsay (75, 76) has published several contributions to the same subject, and within the last few years Dr. Steere has made a second expedition to the group, and formed extensive collections in most of the islands. Of the results of this last expedition we have as yet but an imperfect account (77), but we may trust that the deficiency will be made good so soon as Dr. Steere has recovered his health and strength.

IV.—The Australian Region (*Regio Australiana*).

(a) *Extent.*—New Guinea and the Moluccas, and adjacent islands up to Wallace's line, Australia, Tasmania, New Zealand, and the Pacific Islands.

(b) *Characteristic Forms.*—The Australian Region is, as is universally allowed, better characterized by distinct forms of animal life than any other region of the earth's surface. As regards Mammals this is certainly the case, but in the Class of Birds perhaps it is a question whether the Neotropical Region is not even more distinct. Be this as it may, it is easy to point out the principal types of bird-life that characterize the Australian Region, and I will proceed to do so in a few words.

In the first place, the *Paradiseidæ*, the *Menuridæ*, the *Atrichiidæ*, and the *Casuariidæ* are four families absolutely confined to the Australian Region. Besides these, two well-marked groups of Parrots—the *Trichoglossidæ* and the *Cacatuidæ*—are essentially Australian, and only occur exceptionally outside the limits of that region. The same may be said of the *Meliphagidæ* and the *Megapodiidæ*, of both of which families only slightly intruding representatives are found within the Oriental Region.

As Mr. Wallace has well pointed out, of all these families the Honey-suckers (*Meliphagidæ*) are peculiarly characteristic of the Australian Ornis. The family abounds in genera and species, and extends over the whole region, including the Pacific Islands. Only one single species of it has yet been met with outside of the limits of the Australian Region.

(c) *Subregions.*—Compared with Australia the mainland of New Guinea and the adjacent islands form a distinct and well-marked subregion, which has many peculiar types of its own. As examples of these we may mention *Amblyornis*, *Melanopyrrhus*, *Peltops*, *Rectes*, *Manucodia*, *Paradisea*, *Astrapia*, *Gymnocorvus*, *Nasiterna*, and others. New Zealand has also many distinct ornithic types, such as *Neomorpha*, *Prosthemadera*, *Anthornis*, *Acanthisitta*, *Mohoa*, *Certhiparus*, *Turnagra*, *Creadion*, *Nestor*, *Strigops*, and *Apteryx*, and

must be kept separate; while the Pacific Islands, after excluding the Solomon group, which are outliers of the Papuan Subregion, constitute a fourth division; and the Sandwich Islands, which seem to be quite different from the South Pacific group, a fifth.

I will therefore speak of the Australian Region, and the work that has recently been done in it, under five heads. These will be:—

1. *The Papuan Subregion.*
2. *The Australian Subregion.*
3. *The Maorian Subregion.*
4. *The Pacific Subregion.*
5. *The Hawaiian Subregion.*

1. *The Papuan Subregion.*

An enormous advance has been made in our knowledge of the avifauna of this subregion since the date of my "British Association Address." Not only have active and enterprising naturalists and collectors ransacked many parts of it, but the whole information amassed by them has been brought together and put into uniform shape in Count Salvadori's excellent 'Ornitologia della Papuasia e delle Molucche' (78). This accurate and comprehensive treatise, which was published at Turin in three volumes in 1880–82, is certainly one of the best executed and most meritorious ornithological works of the present period, and has raised its author to the rank of one of the most prominent writers upon modern ornithology. Reckoning the addenda appended to the third volume, it gives us an account of no less than 1028 species, and shows us that the Papuan Avifauna is not only remarkable in its character, but also numerically one of the most extensive on the earth's surface. Moreover, Count Salvadori has not closed his labours upon this subject, but has already issued two parts of a supplement (79), in which are recorded the additions made to the ornithology of the Papuan Subregion since the original work was concluded.

The only remaining work on this subject to which I think it necessary to call attention on the present occasion is Gould's 'Birds of New Guinea' (80). Left incomplete by its author at the time of his death, this splendid series of illustrations was brought to a conclusion in 1888 by Dr. R. Bowdler Sharpe. It is, of course, of enormous value as furnishing us with a series of accurate figures of about 300 species of Papuan birds, but in point of scientific merit must yield the palm to Salvadori's more complete publication.

2. *The Australian Subregion.*

Gould's 'Birds of Australia' (81) and the Supplement thereto, published in 1869 (82), are still our principal authority on the birds of this subregion, and are likely to long remain so. Slight additions are continually being made to the Australian list, principally by Mr. E. P. Ramsay, of the Australian Museum, Sydney, and other local workers on the Australian Ornis. Mr. Ramsay's 'Tabular List of Australian Birds' (83), published in 1888, enumerates 760 species, showing in all 88 additions to those recognized by Gould in his 'Handbook.'

3. *The Maorian Subregion.*

Of the peculiar ornis of New Zealand we are fortunate in having an excellent account in the second edition of Sir W. L. Buller's 'History of the Birds of New Zealand' (84), recently completed in two volumes. In this elaborate work we have not only full particulars of every species of New-Zealand bird, but also life-like illustrations of them prepared by one of our leading ornithological artists. I do not say that the subject is absolutely exhausted, but it will be difficult indeed just at present to make any considerable additions to it.

4. *The Pacific Subregion.*

Many stray papers have been published on the birds of the Pacific Islands during the past fifteen years, but except

Mr. Layard's excellent essay on the birds of New Caledonia (85), little has been done to reduce our knowledge of this subject into order. Mr. Seebohm, however, has recently turned his attention to this subject, and having acquired the whole of the Messrs. Layard's extensive collection, has a good basis to work upon, which will no doubt result in a valuable work upon the Pacific Avifauna.

5. *The Hawaiian Subregion.*

As I have shown in an essay upon the birds of the Sandwich Islands, published in 'The Ibis' for 1871 (86), the Hawaiian Avifauna is so peculiar in its character that it must necessarily be referred to a division separate from the rest of the Pacific Islands. During the past twenty years our knowledge of this subject has made great advances, and Mr. Scott Wilson's recent expedition to the Sandwich Islands has vastly increased it. Mr. Wilson's first number of the 'Aves Hawaiienses' (87) has already been issued, and the work when completed bids fair to give us an excellent and accurate account of all that is yet known of the birds of the Hawaiian Subregion.

V.—The Nearctic Region (*Regio Nearctica*).

(a) *Extent.*—America down to Southern Mexico, and Greenland.

(b) *Characteristic Forms.*—Many writers on zoo-geography have treated the Nearctic Region as merely a piece of the Palæarctic, and there are, no doubt, grounds upon which this view may be supported. But as I have always maintained, and as has been fully shown by Mr. Wallace, the Nearctic Region, "although somewhat deficient in the total number of its families, possesses a full proportion of peculiar and characteristic family and generic forms," and may therefore justly as well as conveniently be allowed full rank as a Region. In this Region the Palæarctic element is certainly strong, but its avifauna has been greatly modified by the

incursion of numerous forms from the Neotropical Region, and it has moreover many well-marked independent forms (such as *Chamæa*, *Gymnocitta*, and nearly all the Mniotiltidæ) present in it, of which the origin is slightly obscure. Mr. Wallace, in the second volume of his 'Geographical Distribution,' has given us a list of no less than 47 typical Nearctic genera of land-birds, while the number of genera which may be regarded as common to the Nearctic and Palæarctic Regions is only 22. These and other facts urged by Mr. Wallace fully establish the claim of temperate North America to be regarded as a Region apart, distinct alike from the Palæarctic on the one side and the Neotropical on the other.

(c) *Subregions*.—There is still much uncertainty as to the best mode of dividing up the Nearctic Region into smaller areas. American naturalists have hitherto usually accepted three provinces as belonging to this region—an Eastern, Central, and Western. Dr. Merriam, however, who has recently studied the subject (88), claims to be able to show that there are but two primary life-areas in the Nearctic Region—a northern (Boreal) and a southern (Subtropical), and that the former views must consequently be abandoned. It remains still to see whether Dr. Merriam's proposed reform will be accepted by his brother workers in the United States.

The standard work upon Nearctic Ornithology is that of Baird, Brewer, and Ridgway (89), of which the three volumes containing the land-birds were published in 1874. The two volumes containing the water-birds (90) were not issued until ten years later. But as regards nomenclature and for ordinary purposes of reference the American ornithologists now employ the 'Check-list of North-American Birds,' published by the American Ornithologists' Union in 1886 (91), together with a supplement of 1889 (92). It is hardly necessary upon the present occasion to criticize the principles of nomenclature upon which the well-known 'Check-list' has been based, and which have led to results rather distasteful to many European ornithologists. I may, however, I hope without offence, say that in my opinion the

revolutionary change made by commencing the catalogue with the lowest birds instead of the highest, and thus reversing the ordinary plan of arrangement, was both unnecessary and inconvenient. I may further add that, though I am of opinion that subspecies undoubtedly exist in nature, and though I agree that the best way of designating them is by the use of trinomials, I cannot but think that our American fellow-workers are moving on a little too fast in this matter. Hardly a month now elapses without the receipt in Europe of "advance sheets" and "authors' editions" of papers containing descriptions of new subspecies of North-American birds, and it appears to be very questionable whether these are always based upon sufficient characters. Even subspecies ought to be made practically recognizable. Nearly all species spread over an extensive area vary at their extreme limits from the central form; but these variations may be so slight as not to necessitate separation even as subspecies.

The total number of species of birds recognized in the last edition of the 'Check-list,' that of 1889, is 768. We may therefore reckon about 800 species as the limit of the number of those met with in the Nearctic Region, which thus probably has the poorest avifauna, numerically, of all the six primary Regions.

VI.—The Neotropical Region (*Regio Neotropica*).

(a) *Extent.*—South America, Central America up to Southern Mexico, and the Antilles.

(b) *Characteristic Forms.*—As regards its bird-life, the Neotropical Region is pre-eminently well marked, and has, in fact, a greater number of well-defined families of birds peculiar to it than any of the other five regions. It has also probably a greater number of species met with within its area than any other part of the world's surface. The following 23 families of birds are entirely restricted to the Neotropical Region, and are highly characteristic of its ornis:—

Cœrebidæ.	Bucconidæ.
Oxyrhamphidæ.	Rhamphastidæ.
Pipridæ.	Palamedeidæ.
Cotingidæ.	Cracidæ.
Phytotomidæ.	Opisthocomidæ.
Dendrocolaptidæ.	Eurypygidæ.
Formicariidæ.	Cariamidæ.
Pteroptochidæ.	Psophiidæ.
Steatornithidæ.	Thinocoridæ.
Momotidæ.	Tinamidæ.
Todidæ.	Rheidæ.
Galbulidæ.	

Besides these, there are at least four other groups, of full family value, which, though they extend more or less abundantly into the Nearctic Region, are specially characteristic of the Neotropical, in which they probably originated; these are, the *Tanagridæ*, *Icteridæ*, *Trochilidæ*, and *Cathartidæ*. But beyond all other forms of bird-life the *Trochilidæ* are pre-eminently suggestive of the Neotropical Ornis. Of more than 400 known species, about 20 only have yet been registered as occurring within Nearctic limits, and most of these only in the extreme southern portion of that region. In many other families also, and, in the case of the Passeres, in nearly all the families, the Neotropical genera are restricted to the region, so that there can, in short, be no doubt that the Neotropical Avifauna is the most peculiar and the most highly developed of any part of the world's surface.

In the 'Nomenclator Avium Neotropicalium'(93) compiled by Mr. Salvin and myself in 1873 we attributed 3565 species to the Neotropical Ornis. If to these we add the discoveries of the past twenty years it is probable that at least 4000 species of Neotropical birds have already been described, and there is no doubt that many remain in the unexplored recesses of South America to be added to the list. It is probable, in fact, that more than one third of the whole number of species of existing birds are to be met with within the limits of the Neotropical Region.

(c) *Subregions.*—In his great work on Geographical Distri-

bution Mr. Wallace has divided the Neotropical Region into four subregions only. I think, however, that the most natural subdivisions in this region are six in number, which, beginning from the north, should stand as follows :—

1. *The Antillean Subregion*, containing the Antilles or West-India Islands.

2. *The Transpanamanic Subregion*, containing Central America from Southern Mexico to Panama.

3. *The Andean Subregion*, extending from Trinidad and Venezuela along the chain of the Andes, through Colombia, Ecuador, and Peru down to Bolivia.

4. *The Amazonian Subregion*, embracing the whole watershed of the Orinoco and Amazons up to a moderate elevation in the Andes, and including also the high plateau of Guiana.

5. *The South-Brazilian Subregion*, containing the great wood region of South-east Brazil and Paraguay and the adjoining districts.

6. *The Patagonian Subregion*, containing Chili, La Plata, Patagonia, and the Falklands.

It is of course impossible, as in other cases, to assign precise limits to these subregions, but I think it may be shown that each of them has a considerable amount of individuality and a certain number of peculiar types. I will say a few words about recent ornithological progress in the Neotropical Region under each of these heads.

1. *The Antillean Subregion.*

In my "British Association Address" I separated the Antilles into numerous subdivisions, and stated at length what was known of the animals of each of them. As regards the birds at least great progress has been made during the past fifteen years, chiefly through the exertions of Ornithologists of the U.S.A., amongst whom we may particularly mention Mr. G. N. Lawrence, of New York, and Mr. Charles B. Cory, of Boston. Mr. Lawrence carefully worked out the birds collected by Mr. F. A. Ober in Barbuda, Antigua, Guadeloupe, Dominica, Martinique, St. Vincent, and Grenada, and has given excellent accounts of them in the Proceedings of

the U.S. National Museum (94–98). Mr. Cory has published two illustrated volumes on the Birds of Haiti (99) and the Bahamas (100), and has besides prepared a complete catalogue of the Birds of the West Indies (101, 102), of which the last edition was issued in 1889. We may thus assume to have already a pretty good general knowledge of the avifauna of the Antillean Subregion, although it is still necessary that each of the numerous islands should be carefully explored (which is by no means yet the case) before our knowledge of the subregion can be deemed to be anything like perfect.

With a view of contributing towards this desirable result I may add that a joint committee of members of the British Association for the Advancement of Science and of the Royal Society has been formed in London for the purpose of investigating the Zoology and Botany of the West-India Islands, and that several energetic collectors have already been despatched to the scene of action (103, 104).

2. *The Transpanamanic Subregion.*

Enormous progress has been made in our knowledge of the birds of Central America during the past twenty years, and this avifauna has now become one of the best known of the whole Neotropical Region. This result has been mainly obtained by the exertions and enterprise of my friends Mr. O. Salvin and Mr. F. D. Godman, whose names will ever be associated together as the planners and executors of the 'Biologia Centrali-Americana' (105), one of the best-executed and most important natural history works of the present epoch. Of the portion relating to the birds, the first volume (containing the Oscinine Passeres) is already complete, and the second is making rapid progress. The collections made in every part of Central America by experienced collectors for the use of this work have been deposited in the British Museum, so that they will always remain accessible to the scientific student. A supplement, no doubt, will be necessary before the bird-portion of the 'Biologia' is finally concluded, as even now novelties are continually turning up; but we may look forward to the

"Aves" of the 'Biologia,' when completed, as likely to give us an almost perfect account of the Transpanamanic Avifauna.

It may not be necessary to mention numerous smaller contributions to our knowledge of the birds of Central America, but I may say that Mr. G. N. Lawrence, Mr. Ridgway, and other ornithologists of the United States have by no means neglected the subject. Señor J. C. Zeledón has devoted special attention to the birds of his native country, Costa Rica, and by his latest list (106) has shown us that no less than 708 species are already known to him as occurring within the limits of this Republic. Mr. C. C. Nutting has also given us a valuable contribution to our knowledge of the Birds of Nicaragua (107).

3. *The Andean Subregion.*

To trace out the limits of the Andean Subregion with any degree of exactitude would, I fear, be a very difficult task. But it appears to me, nevertheless, that the avifauna of the higher Andean Ranges extending from Trinidad through Venezuela and Colombia into Ecuador, Peru, and Bolivia cannot well be associated with the Amazonian Subregion on the one side or the Transpanamanic on the other. It must, however, be confessed that in some parts of its long extent it assimilates rather to the Transpanamanic district, and in others to the Amazonian.

Of the birds of Venezuela we still lack a connected account, and although many smaller contributions have been made to this subject, much still remains to be done. I can think of no more attractive ground for an enterprising ornithological collector than the mountain-range of the Northern Andes, commencing from above La Guayra and passing through the Andes of Merida and Colombia. Although enormous collections of native-made skins have been received from Bogotá during the last half-century, little information has been acquired about the exact localities and habits of the numerous birds of Colombia, and there is still much to be learnt on this subject. There have been, of course, numerous

memoirs written on various portions of the Colombian Avifauna, amongst which I may mention the excellent series amassed by the late Mr. T. K. Salmon in Antioquia (108), but no such work as a Manual of Colombian Birds has yet been attempted, nor, judging from appearances, is it likely to be under present circumstances. In the adjoining Republic of Ecuador pretty nearly the same state of facts prevails. Matters remain much as they were when I spoke of this district in my "British Association Address," though I must not forget to mention the valuable contribution that has been made of late years to the ornithology of Ecuador by Messrs. Berlepsch and Taczanowski (109).

Passing southwards from Ecuador into Peru, I find myself able to chronicle an advance of extreme interest to the student of the Neotropical Ornis. Taczanowski's 'Ornithology of Peru' (110), commenced in 1884 and finished in 1886, gives us a complete account of the extensive avifauna of that Republic, and registers not less than 1342 species as already met with within its limits. Nor can we doubt that when the numerous valleys of the higher Andes are more thoroughly explored considerable additions will have to be made to this list, although we must recollect that a large portion of Peru belongs more strictly to the Amazonian than to the Andean Subregion. As regards Bolivia, where the Andean fauna may be held to terminate, the principal contribution to its ornithology recently effected is the memoir based by Mr. Salvin and myself on the birds collected in the Bolivian Andes by Buckley (111), in which upwards of 500 species are recorded. I should also not omit to mention Mr. Allen's list of the birds collected in Bolivia by Dr. H. H. Rusby (112), which has added some 130 new species to the Bolivian list.

4. *The Amazonian Subregion.*

The Amazonian Subregion, as I propose to call it, embraces the whole of the enormous basins of the Amazons and the Orinoco, as well as those of the Tocantins and other streams flowing out on the Brazilian coast immediately

to the east of the latter river. It includes within its limits the highlands of Guiana, from which it is probable that a great part of the animal-life of the adjacent lowlands was originally derived. This is shown by the well-known fact that, in the case of different representative species being found in Guiana and South-east Brazil, the Amazonian form is invariably more nearly allied to the Guianan than to the South-east Brazilian representative.

As regards the Amazonian basin generally we have no general work to record as issued during the past fifteen years, except Taczanowski's 'Ornithology of Peru,' already spoken of, which embraces an account of all the species that occur on the Peruvian Amazons. But numerous individual collections are made almost every year in different parts of this extended area, and I may specially mention the names of Mr. Ridgway (113) and Graf v. Berlepsch (114) as having recently made excellent contributions towards our knowledge of this subject.

The highlands of Guiana, on the other hand, have of late years found an efficient explorer in the person of Mr. Henry Whitely, C.M.Z.S., whose large collections have fortunately passed through the hands of Messrs. Salvin and Godman. On these collections Mr. Salvin has based an excellent modern list of the birds of British Guiana, which he has published in 'The Ibis' for 1885 and 1886 (115). In his summary Mr. Salvin has shown that 625 species may be placed in the Guianan list, of which about 60 per cent. are common to the Amazonian Valley. Mr. Salvin further points out that the following fifteen genera of birds, which are found both in Guiana and in Amazonia, do not extend outside the limits of the Amazonian Subregion :—

Xenopipo.
Neopipo.
Phœnicocercus.
Xipholena.
Hæmatoderus.
Gymnocephalus.
Gymnoderus.
Rhopoterpe.
Topaza.
Urogalba.
Deroptyus.
Nothocrax.
Mitua.
Opisthocomus.
Psophia.

5. *The South-Brazilian Subregion.*

The South-Brazilian Subregion contains the whole of the vast forest-area which occupies the coast-land and adjacent interior of Southern Brazil from the watershed of the Rio San Francisco down to the open prairies of the Rio Grande do Sul, whence Dr. H. von Jhering has recently sent us a very interesting account of the avifauna of its southern limits (116). How far the limits of this subregion should be properly extended into the interior it is not possible to settle accurately until we have a better knowledge of the avifauna of Inner Brazil.

In the South-Brazilian Subregion we have frequent cases of the replacement of Amazonian species by allied but distinct forms. But besides that we also find certain generic types entirely restricted to this subregion. Amongst these I may specify *Cypsnagra* and *Pyrrhocoma* among the Tanagers, *Tijuca, Phibalura,* and *Calyptura* among the Cotingas, and *Jamaralcyon* among the Jacamars as evidences of this fact.

The standard works of Prince Max. of Neu-Wied, Burmeister, and Reinhardt, and others referred to in my "British Association Address," still remain our leading authorities on the birds of the South-Brazilian Subregion, and a more modern handbook on the subject is now much required. I could well wish that my excellent friend Count von Berlepsch would undertake this piece of work, for which he is specially qualified by excellent contributions already made to it (117–119) and by his possession of an extensive series of Brazilian birdskins. As regards the Brazilians themselves, it seems that there is little hope of any native talent being attracted to this subject.

6. *The Patagonian Subregion.*

Mr. W. H. Hudson, C.M.Z.S., when resident in Buenos Ayres, made large collections of birds, which he forwarded to England and the United States, and accumulated a series of valuable notes, some of which were published from time to time in the 'Proceedings' of the Zoological Society of London. After Mr. Hudson had settled in this country I

was able to persuade him to revise these notes, and with his assistance to republish them in the work which we called 'Argentine Ornithology' (120). These two volumes contain, I believe, a tolerably complete account of 434 species which we referred to the Argentine Ornis. I can claim little credit to myself for this undertaking, except that of having rescued from oblivion and reduced into systematic form my fellow-worker's excellent field-notes.

As regards the southern portion of the Patagonian Region no great progress has been made of late years, though several publications have appeared which bear more or less upon the subject (121, 122). The same is nearly the case with the Trans-Andean portion of the Patagonian Subregion, which lies mainly within the confines of the Republic of Chili. Here, however, we have a modern list of the birds of Chili, compiled by Mr. H. B. James, F.Z.S. (123). The same gentleman has further shown his interest in Chilian ornithology by employing several collectors, the results of whose work I have had the pleasure of examining. I have thus been enabled to make some contributions towards our knowledge of the previously almost unknown ornis of the Province of Tarapacá (124, 125), which has of late years become a portion of the Chilian Republic.

Conclusion.

Having now reviewed the principal additions that have been made to the literature of Geographical Ornithology since I performed the same task in my Address to the British Association at Bristol in 1875, I hope that my fellow-workers in ornithology will allow me to offer a few remarks upon what I consider to be the special requirements in this branch of our science most pressing at the present moment. Where so much remains to be done it is of course difficult to make a satisfactory selection, but I venture to point out the following seven pieces of work as specially calling for attention :—

1. A new handbook of the birds of Europe or the Western

Palæarctic Region, brought up to the latest date, and not too bulky in size.

2. A complete list of the birds of the Continent of Africa, south of the Sahara, with indications of their loca Rio something after the fashion of the 'Nomenclator Avide Neotropicalium.' a

This would assist us to obtain a better idea of the exter of the Ethiopian Avifauna than we at present possess, and perhaps enable us to mark out the different subregions more correctly.

3. A synopsis of the birds of the Sunda Islands and other islands of the Malay Archipelago down to Wallace's line.

This would make a good supplement to our knowledge of the Oriental Ornis, which has been so far advanced by recent works on the birds of India and Burmah.

4. A list of the birds of Siam and Cochin, which is much wanted to extend our knowledge of the continental portion of the Oriental Region, and might, I suppose, be easily compiled from the specimens in the Paris Museum.

5. A modern work on the birds of the South Pacific Islands, or what I have called the Pacific Subregion.

This, however, if I understand rightly, is a task which Mr. Seebohm has already taken in hand.

6. A revised list of the birds of the United States of Colombia, where one of the richest avifaunas of the world's surface still remains un-catalogued.

7. A volume on the birds of Chili and Patagonia, which, taken in conjunction with 'Argentine Ornithology,' would tend to perfect our knowledge of the avifauna of the Patagonian Subregion.

APPENDIX.

Titles of the principal Publications referred to.

(1) On the general Geographical Distribution of the Members of the Class "Aves." By Philip Lutley Sclater, Esq., M.A., F.L.S. Journ. Linn. Soc. Lond., Zool. vol. ii. pp. 130–145 (1858).

(2) Die Begrenzung zoo-geographischer Regionen vom ornithologischen Standpunkt. Von Dr. A. Reichenow. Zool. Jahrb. (*Syst.*) iii. p. 671.

(3) The Geographical Distribution of Animals. By Alfred Russel Wallace. 2 vols. 8vo. London, 1876.

(4) On the Classification and Distribution of the *Alectoromorphæ* and *Heteromorphæ*. By T. H. Huxley, F.R.S., V.P.Z.S., &c. P. Z. S. 1868, p. 294.

(5) On the present State of our Knowledge of Geographical Zoology. Address delivered to the Biological Section of the British Association. Bristol, August 25, 1875. By P. L. Sclater, M.A., Ph.D., F.R.S., F.L.S., President of the Section.

(6) A History of the Birds of Europe, including all the species inhabiting the Western Palæarctic Region. By H. E. Dresser, F.L.S., F.Z.S., &c. 8 vols. 4to. London, 1871–81.

(7) A History of British Birds. By William Yarrell, V.P.L.S., F.Z.S. Fourth edition. 4 vols. Revised and enlarged. Vols. 1, 2, by Alfred Newton, M.A., F.R.S. Vols. 3, 4, by Howard Saunders, F.L.S., F.Z.S., &c. 8vo. London, 1871–85.

(8) An Illustrated Manual of British Birds. By Howard Saunders, F.L.S., F.Z.S. 8vo. London, 1889.

(9) The Birds of Norfolk, with remarks on their habits, migration, and local distribution. By Henry Stevenson, F.L.S., M.B.O.U. Continued by Thomas Southwell, F.Z.S., M.B.O.U. 3 vols. 8vo. London and Norwich, 1866–90.

(10) A List of British Birds, compiled by a Committee of the British Ornithologists' Union. 8vo. London, 1883.

(11) Contributions à la Faune Ornithologique de l'Europe Occidentale. Par Léon Olphe-Galliard. 8vo. Lyon, Berlin, and Bayonne, 1884–90. [In progress.]

(12) Ornis. Internationale Zeitschrift für die gesammte Ornithologie. Herausgegeben von Dr. R. Blasius und Dr. G. v. Hayek. Vols. i.–vi. 8vo. Wien, 1885–90.

(13) Elenco degli Uccelli Italiani, compilato da Tommaso Salvadori. Ann. Mus. Civ. Stor. Nat. Genova, ser. 2, vol. iii. pp. 5–331 (1886).

(14) Avifauna Italica. Elenco delle Specie di Uccelli stazionarie o di passaggio in Italia, compilato dal Dottore Enrico Hillyer Giglioli. 8vo. Firenze, 1886–90.

(15) Ornis Caucasica. Die Vogelwelt des Kaukasus systematisch und biologisch-geographisch beschrieben von Dr. Gustav Radde. 4to. Kassel, 1884.

(16) Uebersicht der Säugethiere und Vögel der Kola-halbinsel. Von Theodor Pleske. St. Petersburg, 1886.

(16*a*) Ornithographia Rossica. Die Vogelfauna des Russischen Reichs, von Th. Pleske. Band ii. Lief. 1–3. Small folio. St. Petersbourg, 1889–90. [In Russian and German.]

(17) Aves de España. Por D. José Arévalo y Baca. Madrid, 1887.

(18) List of the Birds of Croatia. (In Sclavonic.) By S. Brusina. Agram, 1890.

(19) Avifauna von Tunis. Von Dr. A. Koenig. J. f. O. 1888, pp. 121–298.

(20) Notes on some Birds from the Canary Islands. By E. G. [illegible] Waldo. Ibis, 1889, pp. 1–13.

(21) Further Notes on the Birds of the Canary Islands. By E[illegible] Meade-Waldo. Ibis, 1889, pp. 503–520, and 1890, pp. [illegible] 438.

(22) Ornithological Notes on the Island of Gran Canaria. By H[illegible] Tristram, D.D., F.R.S. Ibis, 1889, pp. 13–32.

(23) Ornithologische Forschungsergebnisse einer Reise nach Madeira und den Canarischen Inseln. Von Dr. A. Koenig. J. f. O. 1890, p. 257.

(24) Les Oiseaux de la Chine. Par M. l'Abbé Armand David, M.C., et M. E. Oustalet. 2 vols. Royal 8vo. Paris, 1877.

(25) On new or little-known Birds from South-eastern China. By Henry Seebohm, F.Z.S. P. Z. S. 1890, pp. 341–345.

(26) On some Birds from South-eastern China. By Henry H. Slater. Ibis, 1891, p. 41.

(27) On the Birds of the Lower Yang-tze Basin. By F. W. Styan. Ibis, 1891.

(28) The Birds of the Japanese Empire. By Henry Seebohm. Royal 8vo. London, 1890.

(29) On the Birds of the Bonin Islands. By Henry Seebohm. Ibis, 1890, p. 95.

(30) Wissenschaftliche Resultate der von N. M. Przewalski nach Central-Asien unternommenen Reisen. Herausgegeben von der Kaiserlichen Akademie der Wissenschaften, Zoologischer Theil. Band ii. Vögel. Bearbeitet von Th. Pleske. Lief. i. Folio. St. Petersburg, 1889. [Russian and German.] (In progress.)

(31) Dr. N. A. Sewertzow. Ornithologie du Turkestan et des Pays adjacents. Par M. le Docteur M. A. Menzbier. Livr. 1, 2. Folio. Moscou, 1888–89.

(32) Eastern Persia: an account of the Journeys of the Persian Boundary Commission, 1870–72. Vol. ii. The Zoology and Geology, by W. T. Blanford, A.R.S.M., F.R.S. 8vo. London, 1876.

(33) On a Collection of Birds from Fao, in the Persian Gulf. By R. Bowdler Sharpe, F.L.S. With Notes by the Collector, W. D. Cumming. Ibis, 1886, pp. 475–493.

(34) On a Collection of Birds from Bushire, in the Persian Gulf. By R. Bowdler Sharpe, F.L.S., F.Z.S. Ibis, 1886, pp. 493–499.

(35) Notes on a second Collection of Birds made by Mr. W. D. Cumming at Fao, in the Persian Gulf. By R. Bowdler Sharpe, F.L.S., &c. Ibis, 1891, pp. 103–117.

(36) Die Fauna und Flora des südwestlichen Caspi-Gebietes: wissenschaftliche Beiträge zu den Reisen an der Persisch-Russischen Grenze. Von Dr. Gustav Radde. 8vo. Leipzig, 1886.

(36*a*) Die Vögel Transcaspiens. Von Dr. G. Radde und Dr. A. Walter. Ornis, 1889, pp. 1–128 and 165–279.

(37) Zoological Researches in Liberia. By J. Büttikofer. Notes Leyd. Mus. vii. p. 129.

(38) Ornithologie d'Angola. Par J. V. Barboza du Bocage. 4to. Lisbonne, 1881.

(39*a*) On Birds from the Congo and South-western Africa. By J. Büttikofer. Notes Leyd. Mus. x. p. 209.

(39*b*) On a new Collection of Birds from South-western Africa. By J. Büttikofer. Notes Leyd. Mus. xi. p. 65.

(39*c*) Third List of Birds from South-western Africa. By J. Büttikofer. Notes Leyd. Mus. xi. p. 193.

(39*d*) Die ornithologischen Sammlungen der Deutschen Expedition nach der Loango-Küste. Bearbeitet von Dr. Ant. Reichenow. J. f. O. 1877, p. 1.

(40) The Birds of South Africa, by Edgar Leopold Layard. New edition, thoroughly revised and augmented by R. Bowdler Sharpe. Royal 8vo. London, 1875–84.

(41) Der ornithologische Nachlass Dr. Richard Böhm's. Gesichtet und herausgegeben von Herman Schalow. J. f. O. 1886, pp. 409–436; 1887, pp. 135–159 and 225–248.

(41*a*) Uebersicht der von G. A. Fischer auf einer Zweiten Reise durch das Africanische Küstenland von Mombasa bis Wito und am Tanafluss gesammelten Vögel. Von Dr. G. A. Fischer und Dr. Ant. Reichenow. J. f. O. 1879, p. 337.

(41*b*) Dr. Fischer's Ornithologische Sammlungen während der letzten Reise zum Victoria Nyansa. Von Dr. Ant. Reichenow. J. f. O. 1887, p. 38.

(42) Uebersicht der von Dr. G. A. Fischer auf seiner im Auftrage der Hamburger Geographischen Gesellschaft unternommenen Reise in das Masailand gesammelten und beobachteten Vogelarten. Bearbeitet von Dr. G. A. Fischer. Zeitschr. f. d. g. Orn. 1884, p. 297.

(43) Uebersicht der in Ostafrika gesammelten Vogelarten, mit Angabe der verschiedenen Fundorten. Von Dr. G. A. Fischer. J. f. O. 1885, pp. 113–142.

(44) Ornithologische Notizen aus Central-Africa. Von Dr. R. Böhm. J. f. O. 1883, pp. 162–208; 1885, pp. 35–73.

(44*a*) Die ornithologische Nachlass Dr. Richard Bohm's. I., II. u. III. J. f. O. 1886–87.

(45) Dritter Beitrag zur Ornithologie der östlichäquatorialen Gebiete Afrikas. Von Dr. G. Hartlaub. Zool. Jahrb. Jena, ii. pp. 303–348.

(46) Uebersicht der Vögel Ost-Afrikas, welche von den Herren J. M. Hildebrandt und v. Kalckreuth gesammelt sind. Bearbeitet von J. Cabanis. J. f. O. 1878, pp. 213–246.

(46*a*) Uebersicht der von Dr. G. A. Fischer auf Sansibar und w[illegible] einer Reise durch das Küstenland von Mombasa bis Wito ge[illegible]ities, meiten oder sicher beobachteten Vögel. J. f. O. 1878, p. 247. [illegible]ium

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XLIV.—*On the Birds of Madagascar, and their Connection with Native Folk-lore, Proverbs, and Superstitions.* By the Rev. James Sibree, Jr., F.R.G.S.*—Part III.

[Continued from p. 443.]

IV.—The Pigeons.

The Pigeons and some few allied birds form, in Dr. R. B. Sharpe's system of classification, an Order of themselves, and are divided into three families, consisting of (*a*) the now extinct Dodos, of which five species at least lived in the Mascarene Islands until within the last 250 years, but are not as yet known to have inhabited Madagascar; (*b*) the

* Reprinted from the 'Antananarivo Annual,' 1890, with additions and corrections by the Author.

True Pigeons; (*c*) the Crowned Pigeons, the last of which are natives of the Malayan Islands. We have therefore to do with the second only of the three families, which includes four species found in this island.

Of these Madagascar Pigeons (Table IV. p. 564) not much need be said, as they do not differ greatly in habits from their congeners in other parts of the world. One, however, belongs to a genus (*Funingus*) peculiar to the island; it is a handsome bird, slaty blue in colour, with a tail of claret-red, feet coral-red, with the same colour round the eyes. It is sometimes seen in flocks of hundreds together, but is difficult to obtain, as it is extremely wary. Mr. Cory remarks on this statement, made on the authority of M. Pollen, "I have never found the *Fóny* Pigeon wary or difficult to obtain. In fact, it is often with great difficulty that I have been able to make it fly so as to get a shot. It feeds in Imérina very much on the fruit of the *Sèva* (*Buddleia madagascariensis*, Lam.) and the *Vóafótsy* (*Aphloia theæformis*, Benn.)." The Painted Dove is also a handsome bird, of brown and bluish-grey tints; it appears to be a peculiar species. The other two Pigeons are of widely-spread species. The Cape Dove is much smaller than the other three, but with very long tail; it is beautifully coloured in shades of brown and grey, and has a curious mask-like patch of black on the face and neck*. The Southern Pigeon is pale green in colour.

All these Pigeons live in the neighbourhood of the cultivated regions of the island, and commit great ravages in the rice-crops at the time of sowing and again at harvest. Some satisfaction can, however, be taken upon them, since they are all, except the *Funingus*, very excellent eating and get exceedingly fat at harvest-time. The Southern Pigeon is very easily obtained, because, after one of the flock is shot, the others will return again and again to the same tree, so that the whole company may be killed one after the other. This

* Mr. Cory tells me: "I obtained the other day a very small Pigeon of a dun colour, with purplish iridescent spots, but with no black mark on the face. No native had ever seen it before, and perhaps it may be new. Its tail was long, and the size like that of a Sparrow (in bulk)."

bird's note, says M. Pollen, besides its cooing sound, resembles the syllables *hut-hout-hout-hut*. The other Pigeons can be easily kept in confinement, but this one soon dies if deprived of its liberty.

Mr. W. Wilson tells me: "The Fóny is now and then found in Màndridràno in flocks of from six to eight birds. The boys easily catch them at roosting-time by means of a running noose on the end of a bamboo or *Bàraràta* [a very tall bamboo-like grass]. They are very easily reared in captivity, and will eat cooked rice the day they are caught, as if they had been used to it."

The generic name of the *Funingus*, or Madagascar Pigeon, is taken from its native names of *Fóny* and *Fonìngo*, also applied to the Southern Pigeon, and probably words imitative of their cooing notes. The same imitation seems to be also found in the name of *Domóhina*, with many variations, given to the Painted Dove. Other names refer to their colouring, as *Fonìngomaitso*, "Green Pigeon," and *Vórománga*, "Handsome (or Blue) Bird;" *Vòronadábo*, a provincial name of the Southern Pigeon, refers to its eating the fruit of the *Adábo* tree, a species of *Ficus*; while the Cape Dove has the strange name of *Tsiázotonònina* (*i. e.*, "Unspeakable") among the Tanàla or forest tribes, probably because its more common name had become tabooed or sacred through having formed part of the name of one of their chiefs. This seems confirmed by the fact that the other provincial name of this Dove, *Katòto*, is said to belong to "a bird of bad omen" (see 'Malagasy-English Dictionary' under *Katòto*).

(Some time after writing the above, I found the following in Mr. Cowan's 'Bàra Land':—"While waiting not far from the river (the Màmanantànana), I got some eggs of a Bee-eater (*Kirióka*), and saw many Pigeons (*Katòto*) flying about. Neither of these two birds is common in Eastern Bètsilèo. The Katòto is tabooed or sacred here, even to its name, so it is spoken of as the *Tsitonònina* ('not to be mentioned'). It is a remarkable fact that most, if not all, of the birds common to Eastern Africa and Madagascar are sacred, or regarded with a kind of superstitious fear. Of these the

Katòto, the Tufted Umbrette (*Tàkatra*), and the Owl (*Vórondòlo*), are examples.")

V.—The Game-Birds.

The fifth Order of Birds, that of the Gallinæ or Game-Birds (Table IV. p. 565), is divided into eight or nine families, four of which have indigenous representatives in Madagascar, viz., the Guinea-fowls, Partridges, Sand-Grouse, and Bustard-Quails; while another family of the Order, that of the Turkeys, has for long been naturalized in the island. There are, however, only five species in these four families, which we shall notice separately as before.

(1) The Guinea-fowls are represented here by a peculiar species, the Mitred Guinea-fowl, a handsome bird, which is very common in many parts of the island, particularly in the plains bordering the forests. Here it may be seen in companies of from twelve to twenty birds, and often in much larger numbers. It is shy and difficult to approach, unless hunted with dogs, so at least says M. Pollen of the Guinea-fowl in the north-west of the island. In the central provinces it is more easily shot. According to the writer just quoted, the people of the north-western regions catch these birds by forming paths of branches of trees, and at the further end of these they place the traps, towards which they drive the birds. This Guinea-fowl is easily domesticated and becomes very tame, and if not too old its flesh is excellent. Besides the characteristic marking of the feathers with minute white dots on a black ground, this species has a blue caruncle round the eyes. The hen birds are said to be bad mothers, leaving their young ones on the ground.

The native name of *Akánga*, by which this bird is generally known, is said by Mr. Dahle to be one of the few words showing an original African element in the Malagasy language, and is identical with the Swahili name of the bird, an allied species, *Numida vulturina*, being common in some parts of Eastern Africa. A number of proverbs show the way in which this handsomely marked bird has struck the fancy of the Malagasy, two or three of which may be here quoted. Thus,

e of people who are subject to the same sovereign
Akánga tsy ròa vólo," i. e., "Guinea-fowls not of
(or different) plumages," something like our saying, "Birds of a feather flock together." Again, "A Guinea-fowl going into the forest: waiting for the rain to clear off, but caught by a steady downpour." The difficulty of catching the bird is referred to in the saying, "Seeing a beautifully marked Guinea-fowl, and throwing away the fowl at home in one's house," reminding one that "A bird in the hand is worth two in the bush." And again, the maxim that "Union is strength" is enforced by the proverb, "Guinea-fowls going in a flock are not scattered by the dogs" (that hunt them).

Here is a native fable referring to this bird:—"Once upon a time, they say, a Guinea-fowl went to visit his friends beyond the forest; but when he got into the midst of the woods he grew giddy and fell, breaking his wing. Then he lamented and said, 'To go on, to go on, I cannot; if I return I long for my relations.' And from that, they say, the people got their frequent song which says, 'A Guinea-fowl entering the forest: go on, he cannot; return, wing broken; stop where he is, he longs for his relatives.'"

(2) One species each of Partridge and Quail is found in Madagascar, the first of these being of a peculiar genus (*Margaroperdix*). This is a handsome bird, with black, brown, and red plumage, and curved lines with white spots, as its name of "Striped Partridge" denotes. It is smaller than the English Partridge and is tolerably common, often rising with a sudden "whirring" flight from just under one's horse's nose, when riding over the long dry grass of the open country. M. Grandidier says that it lays from fifteen to twenty eggs, and that, according to Sàkalàva belief, any one who, having found the nest of the *Tsipòy* (as it is called), does not break the eggs, causes the death of his mother; but if, on the contrary, he destroys them, he causes the death of his father! This superstition, as he says, probably comes
of finding the nest at all. Mr. Cory re-
h the Tsipòy lays so many eggs, it only
the largest I have seen was twelve, and

that was unusually large. I have been struck [illegible] the Owl (*Vóron-*
preponderance of males over females among t[illegible]
shot. At Imàntasóa I shot three, and two were cocks; in 1888 I shot twenty-one at Ankéramadìnika, and sixteen were cocks; and in 1889 I shot thirty-two, and twenty-six were cocks. This may be owing to the cocks collecting together, as is the habit of some birds."

The *Papélika* or Quail found here seems to be identical with the European species, and presents nothing calling for special remark. It also is tolerably abundant, and some native proverbs recognize some of its habits. It is called *Kìbòmby*, or "Ox-Quail," by the Bètsilèo, and *Kìbodòlo*, "Owl-Quail," or possibly "Spirit-Quail," by the Bàra. About this bird the Bètsilèo have a proverb which says that "The Quail (*Kìbo*) delays its proper work in the autumn, and leaves it until the spring," and that then they know by its note the proper time for planting rice ("*Miara-draha hay, kou kibo asotry*").

(3) One species of Sand-Grouse is met with in the sandy plains of the western and southern parts of Madagascar, where it is found in flocks of from twenty to thirty in number, but little appears to be known of its habits. Its name of *Gàdragàdra* is probably from a word exactly similar which means "harshness or roughness of voice," and thus is descriptive of its cry; and so also is another of its names, *Kàtakatè*.

(4) The fifth and last bird of this Order found in Madagascar, the Black-necked Bustard-Quail, is very common on the plains, especially on and about a shrub called *Fatàka*. M. Pollen says that it is curious from the fact that the hen birds give the name (Black-necked) to the species, and that they are of different plumage and larger than the cock birds. They go in companies of from six to twelve hen birds, always led by a single cock, who is markedly smaller than his wives. Their food consists of seeds and insects, especially the [illegible] larvæ of a species of white ant. These [illegible] show the way in large oval nests fixed to the extremities of [illegible] the fancy of the [illegible]re quoted. Thus,

followed, and ces, from which they are often detached by the are, for inst se nests, falling to the ground, are broken, so that the larvæ become an easy prey to the Bustard-Quails, which eagerly devour them. The flight of these birds is clumsy, resembling that of the Rails; they do not fly far, but return quickly to the ground, hiding in the long grass, in which they run with great speed. They scratch the ground to find food, like the domestic fowl, and often fight furiously together.

The young Malagasy often entrap these Bustard-Quails by surrounding a considerable extent of ground, and gradually driving the birds together towards a cage with snares, imitating at the same time the call of the cock bird. By this contrivance they capture a considerable number of hens. M. Pollen says also that the foot of this bird, hung round the neck, is believed by the Sàkalàva to be an infallible remedy for disorders of the stomach. I think, however, it is more probable that the two words are of independent and different origin, and that the belief in the remedial value of the bird for stomach-complaints has arisen from the identity of the two words, a kind of homœopathic principle, of which Malagasy folk-lore and superstition are full of examples, as may be seen by looking at Mr. Dahle's papers on *Vintana* and *Sikidy* ("Destiny and Divination") in the 'Antananarivo Annual,' Nos. x., xi., and xii., or indeed by carefully examining the 'Malagasy-English Dictionary.'

The various names of this bird are all compounds of the word *kìbo*, as *Kibòbo*, *Kìbotay*, "Dung-Quail," and *Kìbokèly*, "Little Quail." M. Grandidier relates a story about two young Màhafàly women having been saved from death by some of these Quails, in consequence of which it has become a sacred or tabooed bird to their descendants*.

* Mr. Cory tells me: "The nest of the Bustard-Quail is composed of dry grass and is partially domed, which is very curious in a game-bird. The eggs have a yellowish ground, heavily spotted and blotched with
1878, p. 261; ... number from three to five. I was surprised and inter-
‡ Schmeltz, Ver... that I had always taken for the cock was in reality
§ Taviuni, one of ...
Lele, which is again ...

Tabular List of Madagascar Birds.

(TABLE IV.)

English Name.	Scientific Name.	Hova or General Name.	Provincial Malagasy Names.
	Order IV. COLUMBÆ. (PIGEONS.)		
	Family COLUMBIDÆ. (TRUE PIGEONS.)		
Madagascar Pigeon	FUNINGUS MADAGASCARIENSIS *.	Fóny (*Bs.*, *Ba.*, *T.*).	Finíngo (*N.S.*), Foningomaitso (*N.B.*).
Southern Pigeon	*Treron australis.*	.....	Fetiliadàbo (*N.S.*), Vòromànga (*S.Co.*), Finaingo, Bòaka, Vòronadàbo (*Prov.*).
Painted Dove	*Turtur* PICTURATUS.	Domòhina (*Bs.*, *Ba.*, *T.*, *Tm.*).	Domòy (*N.B.*), Lamòka (*N.B.*, *Bm.*), Demóy (*Antk.*), Dèho (*Tand.*), Dèmodémoka.
Cape Dove	*Œna capensis.*	.....	Katòto (*Bs.*, *Ba.*, *Antk.*), Tsiázotonònina (*T.*), Tsitonònina (*Ba.*).
	Order V. GALLINÆ. (GAME-BIRDS.)		
	Family NUMIDIDÆ. (GUINEA-FOWLS.)		
ea-fowl.....	*Numida* MITRATA.	Akánga, and so in all the dialects.	Vitro (*Ba.*, *T.*), To[illegible] (*N.S.*).

...now the way in ...k the fancy of the ...re quoted. Thus,

...the Owl (*Vóron-*

Family TETRAONIDÆ. (GROUSE and PARTRIDGES.)			
Subfamily PERDICINÆ. (PARTRIDGES.)			
...idge.....	MARGAROPERDIX STRIATA.	Tsipòy.	Traotrao (*Bs., Ba., T., Tm.*), Tròtrò (*N.B.*), Timpòy (*S.*).
Quail	*Coturnix communis.*	Papélika.	Kibòmby (*Bs.*), Kibodòlo (*Ba.*).
Family PTEROCLIDÆ. (SAND-GROUSE.)			
Masked Sand-Grouse	*Pterocles* PERSONATUS.	.....	Gàdragàdra (*Prov.*), Kàtakaté (*N.S.*).
Family TURNICIDÆ. (BUSTARD-QUAILS.)			
Black-necked Bustard-Quail ..	*Turnix* NIGRICOLLIS.	Kibòbo.	Kibo (*Bs., N.S., N.B., T.*), Kibotày (*Bs., T.*), Kibokèly (*Ba.*).

* As in the first part of this paper (above, p. 202), the names in small capitals show the genera and species of birds peculiar to Madagascar. The initials and contracted words are substitutes for the names of the different Malagasy tribes: see p. 203.

[To be continued.]

1878, p. 261; *id.*
† Schmeltz, Ver...
§ Taviuni, one of th...
Lèle, which is again ...bot...

followed, and ...
are, for inst...

XLV.—*On the Polynesian Members of the Gen*

By Lionel W. Wiglesworth.

(Plate XI.)

The Pigeons of the genus *Ptilopus*, as distributed among the islands of Polynesia, exemplify on a remarkable scale the formation of new species by geographical separation, which is shown in such a striking manner in the Parrots, Blackbirds, and *Rhipiduræ* of the Fiji Islands, and above all in the well-known Land-shells of the family *Achatinellidæ* of the valleys of Oahu. In these cases, however, a narrow projecting mountain-ridge or a few miles of sea are sufficient to prevent the species from interbreeding and losing their identity—as no doubt they would for the most part, could they pass freely from one locality to another; but with the genus *Ptilopus* a stretch of unbroken ocean 200 or 300 miles wide is required to serve the same end, in consequence of the good powers of flight of these birds. The eighteen known Polynesian species of *Ptilopus* are therefore spread out over an enormous area, in addition to that occupied by the other members of the genus in Australia, Papuasia, and the islands of the Oriental subregion. Ranging more widely than even *Aplonis* and *Tatare*, the genus *Ptilopus* is found throughout the Polynesian subregion, so far as it is known, except, perhaps, in the Marshall, Gilbert, and Fanning groups, and, of course, in the Sandwich Islands, which form really a subregion in themselves.

The distribution of these Pigeons in Polynesia has been well sketched out, in the 'Proceedings' of the Zoological Society of London for 1874, by Dr. Finsch, who, with Dr. Hartlaub, must always be regarded as the pioneer in the ornithology of this subregion, and again, in the same 'Proceedings' for 1878, has been treated of by Mr. Elliot. Unhappily, the views expressed in the elaborate monograph of the latter accord so ill—at least with regard to Central Polynesia—with those of Dr. Finsch, Mr. Layard [illegible] naturalists, that one is puzzled to know which the fancy of the correct authority. As regards localities [illegible]re quoted. Thus, obvious that the collecting naturalist

followed, and consequently Mr. Elliot's statements that there are, for instance, four *green Ptilopi* on the island of Tonga-tabu alone, four in the Samoa Islands, and five in the Fiji Islands*, render it probable that some errors have crept in here, since we have the repeated assertions of Mr. Layard† and of the collectors of the Museum Godeffroy‡ that there is but one species in the Tonga Islands, which is peculiar to the group, only one in Samoa, and one in Fiji. Canon Tristram, indeed, can hardly make the Tongan and Fijian birds distinct (Ibis, 1878, p. 261), and the orange under tail-coverts of the former, when adult, as against the yellow ones of the latter, seem to constitute almost the only difference.

But, apart from the statements of collectors, most naturalists will find a difficulty in believing that several forms so closely resembling one another as these Central-Polynesian Pigeons could possibly exist together on a small island like Tonga-tabu, or on a group like the Fijis, with every island within sight of others§, and yet keep distinct. One may feel pretty sure that, if a bird of one species should stray to an island inhabited by another, it would find a partner, and its racial characters would become lost in its descendants, for it is almost too much to suppose that the barrier of sterility would be very strong between such closely allied forms. It is only through separation and those other reasons which we do not yet know sufficiently that these species have developed the characters which entitle them to rank as species.

There are other reasons for believing that the three island-groups of Central Polynesia have never possessed more than one green *Ptilopus* each, for few species, probably, have been

* I deduct the pale-coloured *P. perousei*, which is common to all three groups, and the three *Chrysænæ* of the Fiji Islands, from the numbers given by Mr. Elliot.

† Layard, P. Z. S. 1876, pp. 495, 502; *id. op. cit.* 1877, p. 464; *id.* Ibis, 1878, p. 261; *id.* P. Z. S. 1879, p. 385.

‡ Schmeltz, Verh. Ver. Hamburg, 1877 (1879), pp. 177–180.

§ Taviuni, one of the most isolated, is only about 30 miles from Vatu Lele, which is again about 15 miles only from Viti Levu.

subjected to a more confused interchange of names. In 1848 Peale described the species found by him in Samoa as *Ptilinopus fasciatus*. Five years later appeared the 'Voyage au Pôle Sud,' when Jacquinot and Pucheran named the Fijian species *Kurukuru clementinæ*, but gave a very trivial description, referring one to the fuller account given in the 'Voyage de la Vénus' of the *Kurukuru de Clémentine* by Des Murs and Prévost. The latter bird, however, is the Samoan species again, for specimens were obtained from Samoa in one of these voyages, and the words about a "tache ou plastron noirâtre," followed by the "rouge marron" of the abdomen, and the orange under tail-coverts and yellow apical band of the tail, readily identify it with the species from those islands. Bonaparte united the two species as *P. clementinæ*. Subsequently Drs. Hartlaub and Finsch, who, when writing the 'Ornithologie Centralpolynesiens,' had only specimens from the Fiji Islands and Uea before them, failed to see their distinctness from Peale's bird, and united the Fijian and Samoan species under the title *P. fasciatus*. Mr. Layard was the first to point out the characters of the three Central-Polynesian Pigeons (P. Z. S. 1876, pp. 495, 502), but unfortunately gave the Samoan bird the name of *P. apicalis*, Bp. (=*P. fasciatus*, jr.), and Peale's name, *P. fasciatus*, to that belonging to Fiji. Finally Mr. Elliot renamed the Samoan species *P. pictiventris*.

Specimens from all the three groups (for at one time Dr. Gräffe included the Tongan species with the other two) have thus been labelled sometimes with the right, but more often with the wrong, name; and when it is remembered that it is almost, if not quite, impossible to distinguish the immature birds one from another, it will be understood in what manner many erroneous localities have come to be assigned to them. After six months' uninterrupted study of the Polynesian Pigeons, I think I am able to give the localities correctly, so far as they have been recorded; but there are doubtless lying in museums many specimens from other localities which are unknown to me. The present

feather efore be found wanting rather on the side of tipper n of too much.

In the cases of *P. taitensis*, Less. (=*P. purpuratus*, Lath., *cf.* Finsch & Hartl.), *P. fasciatus*, auct. mult. (=*P. clementinæ*, Jacq. & Pucher.), *P. apicalis*, Bp. (=*P. fasciatus*, jr., Peale), *P. pictiventris*, Elliot (=*P. fasciatus*), *P. neglectus*, Schleg. (=*P. rarotongensis*, Hartl. & Finsch), and *P. corriei*, Islamsay (=*P. tannensis*, Lath.), some alterations in the bach, ivmy have been made.

doubted ange the eighteen Polynesian species of this genus island of to their geographical distribution, beginning with island poss eastern forms.

differs fro OPUS MERCIERI.

greenish i *ru mercieri*, Des Murs & Prév. Voy. Vénus, Orn. due to lor 855).

Garrett *lopus mercieri*, Bp. C. R. 1855, p. 216; id. Consp. Av. ii. p. 22 (1857); id. Iconogr. Pig. pl. xxii. fig. 2 (1857); Elliot, P. Z. S. 1878, pp. 515, 536; Schmeltz, Verh. Ver. Hamb. 1877 (1879), p. 179; Tristr. Cat. Coll. B. p. 44 (1889).

Ptilonopus mercieri, Gray, B. Trop. Is. p. 36 (1859); Reichb. Tauben, p. 96 (1862).

Ptilinopus mercieri, Finsch & Hartl. Orn. Centralpolyn. p. 128 (1867); Finsch, P. Z. S. 1877, p. 410; Garrett, Ethnogr. Abtheil. Mus. Godef. p. 238 (1881).

"Pati" of the natives (*Garrett*).

Hab. Marquesas Islands: Nukahiva (*Mus. Paris, Garrett*), Hivaoa or Dominica (*Garrett*).

2. PTILOPUS DUPETIT-THOUARSI.

Columba dupetitthouarsii, Neboux, Rev. Zool. 1840, p. 289; id. Voy. Favor. pl. 7.

Columba kurukuru purpuro-leucocephalus, Hombr. & Jacq. Ann. Sc. Nat. xvi. p. 316 (1841).

Ptilinopus emiliæ, Less. Echo du Monde Sav. 1844, p. 873.

Ptilonopus leucocephalus, Gray, List B. Br. Mus., *Gallinæ*, p. 2 (1844).

Ptilonopus dupetit-thouarsi, Gray, Gen. B. names. In id. List B. Br. Mus., *Columbæ*, p. 5 (1856); idn Samoa as p. 36 (1859).

Ptilinopus dupetit-thouarsi, Jacq. & Pucher. Voy. Pôle Sud, iii. p. 114, Atl. pl. 29. fig. 1 (1853); Finsch & Hartl. Orn. Centralpolyn. p. 129 (1867); Finsch, P. Z. S. 1877, p. 410; Garrett, Ethnogr. Abtheil. Mus. Godef. p. 238 (1881).

Thouarsitreron leucocephala, Bp. C. R. xxxix. 1854, p. rom id. op. cit. xl. 1855, p. 216; id. Iconogr. Pig. pl. 17 f tache

Columba dupetit-thouarsi, Des Murs & Prév. Voyron" of Zool. p. 241 (1855). d yellow

Thouarsitreron dupetitthouarsii, Bp. Consp. Av. cies from (1857); Reichb. Tauben, p. 93, Taf. 240. fig. 2587'. *clemen-*

Ptilopus dupetitthouarsii, Schl. Mus. P.-B., *Colum*ho, when (1873). speci-

Ptilopus dupetit-thouarsi, Elliot, P. Z. S. 1878, pp. 512, 515, 539; Schmeltz, Verh. Ver. Hamb. 1877 (1879), p. 179; Tristr. Ibis, 1881, p. 251; id. Cat. Coll. B. p. 44 (1889).

"Koukou" (*Gray*) or "Koku" (*Garrett*) of the natives.

Hab. Marquesas Islands: Christina Island (*Neboux*), Nukahiva (*Brit. Mus. ap. Gray*), Hivaoa (*Garrett*).

3. Ptilopus chrysogaster.

Ptilonopus chrysogaster, Gray, P. Z. S. 1853, p. 48, pl. 54; id. Ann. N. H. xv. 1855, p. 158; id. List B. Br. Mus., *Columbæ*, p. 5 (1856); id. B. Trop. Is. p. 36 (1859); Sclat. P. Z. S. 1864, p. 9.

Kurutreron chrysogaster, Bp. C. R. 1854, p. 876; id. ib. 1855, p. 217; id. Iconogr. Pig. pl. 29. fig. 2 (1857); id. Consp. Av. ii. p. 26 (1857).

Kurutreron chrysogastra, Reichb. Tauben, p. 92, t. 245. figs. 3525, 3526; id. Neuentd. Tauben, p. 176 (1862).

Ptilinopus chrysogaster, Finsch & Hartl. Orn. Centralpolyn. p. 128 (1867); Gräffe, Journ. Mus. Godef. i. p. 48, pl. 1 (1873); Cab. Mus. Godef. v. p. xvi (1874).

Ptilopus coralensis, Schl. (nec Peale) Mus. P.-B., *Columbæ*, p. 14 (1873).

feather tipped *soyaster*, Elliot, P. Z. S. 1878, pp. 515, 541; Orh. Ver. Hamb. 1877 (1879), p. 179; Tristr. Cat. Coll. B. p. 43 (1889).

"Uupa" of the natives (*Wodehouse*).

Hab. Society Islands: Huaheine and Raiatea (*Wodehouse, Garrett*).

Other localities for this species, Tonga-tabu and Marquesas Islands, as given by Gray, and Marianne Islands, by Reichenbach, rest only on the labels of Ed. Verreaux, and are undoubtedly incorrect. The occurrence of this Pigeon on the island of Tahiti would be likely enough, were it not that that island possesses its own peculiar form in the next species, which differs from *P. chrysogaster* in having the breast and belly greenish instead of yellowish, differences which are probably due to long separation on different islands. The collector, Garrett, of the Museum Godeffroy, from which Canon Tristram obtained his supposed Tahiti specimen, mentions that on that island the shooting of birds is forbidden by a law of the French authorities, and that he was unable to obtain examples there. Consequently this locality must be erroneous. The name Tahiti may often have been used in a collective sense for all the Society Islands.

Latham and Forster mention that in Raiatea (Ulietea) and in some other islands the crown of this bird is of a darker purple than in specimens from Tahiti, and Neboux (Rev. Zool. 1840, p. 289) speaks of a "Colombe de Taïti" with a violet cap. This may be a different species.

4. Ptilopus purpuratus.

Purple-crowned Pigeon, Lath. Gen. Syn. ii. p. 626 (1783); Bechst. Lath. Uebers. ii. p. 607 (1794) (ind. ex Otaheite).

Columba purpurata, pt., Gm. S. N. i. p. 784 (1788); Lath. Ind. Orn. p. 598 (pt.); Bechst. Lath. Uebers. iv. p. 379 (pt. 1811).

Columba kurukuru, Bonaterre, Enc. Méth. p. 240 (1790) (ex Otaheite).

Columba kurukuru, var. *taitensis*, Less. Voy. Coquille, p. 297 (1826).

Columba oopa, Wagl. Isis, 1829, p. 742. [illegible] names. In *Columba taitensis*, Less. Tr. d'Orn. p. 472 (fide Samoa as *Columba porphyracra*, pt., Forst. Descr. An. p. 167 (1844).

Ptilinopus furcatus, Peale, U. S. Exp. p. 191, pl. 52 (1848); Hartl. Wiegm. Arch. 1852, p. 114.

Kurukuru purpuratus, Des Murs & Prév. Voy. Vénus, Zool. p. 222 (1855).

Kurukuru dupetitthouarsi, Des Murs & Prév. ib. pl. vii.

Kurukuru nebouxii, Des Murs & Prév. ib. p. 253, pl. vii. (ap. Elliot).

Kurukuru taitensis, Des Murs. & Prév. ib. p. 251.

Kurutreron oopa, Bp. C. R. 1854, p. 878; id. Consp. Av. ii. p. 26 (1857); Reichb. Tauben, p. 92, t. 245. figs. 3527, 3528 (1862).

Ptilonopus purpuratus, Gray, List B. Br. Mus., *Columbæ*, p. 4 (pt. 1856); id. B. Trop. Is. p. 35 (pt. 1859).

Ptilonopus taitensis, Gray, Gen. B. ii. p. 466.

Ptilinopus tahitensis, Hartl. Wiegm. Arch. 1852, p. 134.

Ptilinopus purpuratus, Cass. U. S. Exp. p. 269, pl. xxx. (1858); Finsch & Hartl. Orn. Centralpolyn. p. 122 (1867); Finsch, P. Z. S. 1877, p. 741; id. Voy. Challenger, Birds, p. 57 (1881).

Ptilinopus oopa, Pelz. Novara Reise, p. 104 (1865).

Ptilopus purpuratus, Schl. Mus. P.-B., *Columbæ*, p. 15 (1873).

Ptilopus taitensis, Elliot, P. Z. S. 1878, pp. 541, 515.

"Oopa" of the natives (*Forster*).

Hab. Island of Tahiti.

Under the title "Purple-crowned Pigeon," Latham included the Tongan bird with that from Otaheite, making the remark that the latter possesses a *very pale* purple crown, whereas in specimens from Tonga it is of a remarkably dark and vivid purple. The Tahitian bird was his type, and, unlike Mr. Elliot, I find his description excellent, corresponding in all respects with that given by Dr. Finsch of *P. purpuratus* in the 'Voyage of the Challenger.' It does not, therefore, seem desirable to follow Wagler and bestow the name *purpuratus* on the Tongan species. Forster united the same two

feathers the name *porphyracra*, but, in *his* case, a tipped Tonga-tabu was taken as type. I have therefore referred to follow Drs. Finsch and Hartlaub in retaining his name for the Tongan, and that of Latham for the Tahitian, species.

5. Ptilopus coralensis.

Ptilinopus coralensis, Peale, U. S. Exp. p. 190, pl. 51 (1848); Hartl. Wiegm. Arch. 1852, p. 114; Cass. U. S. Exp. p. 272, pl. 32 (1858); Finsch & Hartl. Orn. Centralpolyn. p. 130 (1867).

Columba purpurata, Temm. & Knip, Pig. i. pl. 35?

Ptilopus viridissima, Bp. Consp. Av. ii. p. 20 (1857).

Kurutreron coralensis, Bp. Consp. Av. ii. p. 26; Reichb. Tauben, p. 93; id. Neuentd. Tauben, p. 177, Novit. t. iii. fig. 33 (1862).

Ptilonopus coralensis, Gray, B. Trop. Is. p. 37 (1859).

Ptilonopus viridissimus, id. ib. p. 38; Reichb. Tauben, p. 95.

Ptilinopus viridissimus, Finsch & Hartl. Orn. Centralpolyn. p. 133 (1867).

Ptilopus coralensis, Schl. Mus. P.-B., *Columbæ*, p. 14, pt. (1873); Elliot, P. Z. S. 1878, pp. 515, 528.

Hab. Paumotu Archipelago: Carlshoff Island and most of the low coral islets (*Peale*).

The type of *P. viridissimus*, which Mr. Elliot identifies with *P. coralensis*, is marked as coming from Timor. This locality, as Mr. Elliot remarks, is evidently erroneous, as are, no doubt, those given by Gray—Society Islands (Ulietea) and Tonga Islands (Tonga-tabu). The species was probably confounded by Gray with *P. purpuratus* and *P. porphyraceus* (jr.). Schlegel identified *P. chrysogaster* and *P. chalcurus*, Gray, with the present species, which accounts for the localities (Marquesas and Cook Islands) given by him.

6. Ptilopus huttoni.

Ptilinopus huttoni, Finsch, P. Z. S. 1874, p. 92; Rowley, Orn. Misc. ii. p. 31 (1876).

Ptilopus huttoni, Elliot, P. Z. S. 1876, pp. [illegible] names. In *Hab.* Island of Rapa or Opara, Austral Group; Samoa as

7. Ptilopus chalcurus.

Ptilonopus chalcurus, Gray, B. Trop. Is. p. 37 (1859).

Ptilinopus chalcurus, Finsch & Hartl. Orn. Centralpolyn. p. 131 (1867); iid. P. Z. S. 1871, p. 31.

Ptilopus coralensis, Schl. Mus. P.-B., *Columbæ*, p. 14 (1873).

Ptilopus chalcurus, Elliot, P. Z. S. 1878, p. 534.

Hab. Hervey or Harvey Island, Cook group (*Gray*).

It is strange that Garrett, who spent six months collecting in the Cook Islands of Rarotonga, Atiu, and Aitutaki, never obtained examples of this species. It lacks the purple abdominal spot of the adult *P. rarotongensis*, H. & F., but may prove to be the young of that bird, with the description of which it corresponds fairly well.

8. Ptilopus rarotongensis.

Ptilinopus rarotongensis, Hartl. & Finsch, P. Z. S. 1871, p. 30; Gräffe, Journ. Mus. Godef. i. p. 49, pl. 7. fig. 1 (1873); Finsch, P. Z. S. 1874, p. 94; Garrett, Ethnogr. Abtheil. Mus. Godef. p. 224 (1881).

Ptilopus neglectus, Schl. Mus. P.-B., *Columbæ*, p. 7 (1873); Elliot, P. Z. S. 1878, p. 524.

Ptilopus rarotongensis, Elliot, P. Z. S. 1878, p. 534; Schmeltz, Verh. Ver. Hamb. 1877 (1879), p. 178.

Hab. Rarotonga Island in the Cook group (*Garrett*); Savage Island (*Elliot*)?

A careful comparison of the original descriptions of *P. neglectus* and *P. rarotongensis* leaves little doubt as to these species being identical. The habitat of *P. neglectus* was hitherto unknown. Schlegel gave it as Oceania only. There can now be little doubt but that it came from one of the islands of the Cook group*.

* Since the above was written, Mr. Büttikofer writes to me from Leyden: "A careful comparison of Schlegel's type of *P. neglectus* with the description of *P. rarotongensis* has convinced me that they are identical, and I have altered the name of our specimen to *P. rarotongensis*."

feathers of three *Ptilopi* on so small an island as tipped, as given by Mr. Elliot, would be highly remarkable, but, when one finds Mr. Ramsay describing a possible fourth (!) and endemic species in his *P. whitmeei*, it becomes pretty evident that some confusion exists here. Niue or Savage Island is an upheaved coral island, lying in a very isolated position about 250 miles west of Tonga, more than 300 miles south of Samoa, and between 600 and 700 miles east of Rarotonga. *P. rarotongensis* may have straggled hither at a recent date, and it is such a well-marked species that it could hardly be confounded with the others, but I think it must be owing to a *lapsus calami* that Mr. Elliot has given two authorities (*Whitmee, Brenchley*) for the single specimen examined by him from the island. The yellow-tipped feathers on the abdomen and thighs of Mr. Ramsay's *P. whitmeei* are probably signs of immaturity, since young birds from the Tonga, Samoa, and Fiji Islands are so marked (Finsch & Hartl. Orn. Centralp. p. 117; J. f. O. 1870, pp. 131, 132; ib. 1872, p. 45), while the dark band (not spot) across the lower breast is peculiar to the Samoan *P. fasciatus*, Peale (*P. pictiventris*, Elliot), with which species it corresponds in other respects. I include it therefore, with a mark of doubt, in the synonymy of that species. As the specimen of *P. rarotongensis* examined by Mr. Elliot does not correspond quite exactly with the description by Drs. Finsch and Hartlaub, and as the under tail-coverts of *P. whitmeei* do not show a trace of orange, the latter *may* prove to be the young of a distinct species. The name of Mr. Whitmee is given as the authority for the occurrence of the Tongan *P. porphyraceus*, Forster, on Savage Island. This is probably a mistake. Mr. Ramsay regarded his *P. whitmeei* as little more than a variety of *P. porphyraceus*, and Mr. Whitmee, from whom he obtained the bird, may have done the same.

9. Ptilopus porphyraceus.

Purple-crowned Pigeon (ex Tonga-tabu), Lath. Gen. Syn. ii. p. 626 (1783); Bechst. Lath. Uebers. ii. p. 607 (1794).

Columba purpurata, Gm. S. N. i. p. 784, pt. (1788); Lath.

Ind. Orn. p. 598, pt.; Bechst. Lath. Ueber. names. In (1811); Shaw, Gen. Zool. xi. p. 66 (1819), pt. id. Samoa as "*Columba porphyracea*, Forster," Temm. Tr. Linn. Soc. xiii. p. 130 (1822).

Columba forsteri, Desm. Dict. Sc. Nat. xl. p. 340 (1826); Less. Compl. Buff. ii. p. 34 (1837).

Columba purpurata, Wagl. Isis, 1829, p. 742.

Columba porphyracra, Forst. Descr. An. p. 167 (1844).

Ptilonopus porphyracrus, Gray, Gen. B. ii. p. 466; id. List B. Br. Mus., *Columbæ*, p. 3 (1856); id. B. Trop. Is. p. 38 (1859).

Ptilinopus purpuratus, Hartl. Wiegm. Arch. 1852, p. 134.

Ptilopus purpuratus, Bp. Iconogr. Pig. pl. xix. fig. *b*, jr. (1857), *fide* Elliot.

Ptilopus porphyraceus, Bp. Consp. Av. ii. p. 21 (1857); Schl. Mus. P.-B., *Columbæ*, p. 8 (1873).

Ptilonopus porphyraceus, Reichb. Tauben, p. 95 (1862); Layard, P. Z. S. 1876, p. 502.

Ptilinopus porphyraceus, Finsch & Hartl. Orn. Centralpolyn. p. 119; iid. J. f. O. 1870, pp. 122, 131; Gräffe, t. c. pp. 402, 407; id. Journ. Mus. Godef. i. p. 49, pl. 7. fig. 3 (1873); Finsch, P. Z. S. 1877, pp. 725, 775, 783; id. Voy. Challenger, Birds, p. 38 (1881).

Ptilopus purpuratus, Elliot, P. Z. S. 1878, pp. 515, 525, pt.; Schmeltz, Verh. Ver. Hamb. 1877 (1879), p. 177; Tristr. Cat. Coll. B. p. 44 (1889), Tonga-tabu.

"Kurukuru" (*Forster*) or "Kulukulu" (*Gräffe, Hübner*) of the natives.

Hab. Tonga Islands: Tonga-tabu (*Forster, &c.*), Eua (*Hübner*), Lifuka (*Gräffe*), Habai (*Hübner*), Vavao (*Gräffe*), Niuafou (*Hübner*), Futuna Island (*Layard*).

I give a key to show the distinguishing points of this and the other allied Central-Polynesian species:—

a. Band across end of tail greenish, grey, or whitish.

a'. Head uniform green.

a''. Above green, with coppery gloss; beneath green, with yellow tips to all the

feathers; wing-feathers edged and tipped with yellowish or white..... *P. porphyraceus*, *P. clementinæ*, and *P. fasciatus* (very young).

b'. Crown of head magenta-purple.

c'. Abdomen green; under tail-coverts yellow.. *P. bonapartei* (=? *P. clementinæ*, jr.).

c''. A purplish-black patch in middle of abdomen.

c'''. Under tail-coverts bright yellow .... *P. clementinæ*, ad.

d'''. Under tail-coverts orange ..... *P. porphyraceus*, ad.

b. Band across end of tail yellow.

d'. Abdomen rufous; under tail-coverts orange.

1. Feathers of abdomen variegated with yellow ..... *P. apicalis*, Bp.* (=*P. fasciatus*, jr.).

2. A broad line of blackish separating abdomen from breast; secondaries with lilac tips ..... *P. pictiventris* (=*P. fasciatus*, jr.).

d''. A deep magenta patch in middle of abdomen ..... *P. fasciatus*, ad.

Although I have no corresponding series of specimens before me, it is not difficult, with the aid of various descriptions, to follow the development of *P. fasciatus* in its different stages of growth. The young bird is at first entirely green, with yellow-tipped feathers below, yellow under tail-coverts, and a grey (sometimes pale yellowish) band at the end of the tail. The magenta feathers of the cap first begin to sprout at the forehead; soon afterwards the yellow-tipped feathers upon the breast are lost, the orange under tail-coverts and yellow cross-band of the tail are assumed, and the chestnut-red of the abdomen begins to make its appearance, when the bird becomes *P. apicalis*, Bp. The remaining yellow-tipped feathers of the abdomen are now lost, and the purplish-black band separating abdomen and breast is produced, and the bird shows the plumage of *P. pictiventris*,

* Mr. Elliot appears to have overlooked the fact that J. Verreaux, in a letter to Drs. Finsch and Hartlaub, declared this bird to be without question the young of *P. fasciatus* (F. & H., Orn. Centralpolyn. p. 290; Finsch, J. f. O. 1870, p. 46), but he was aware that the type in the Paris Museum is not fully adult.

Elliot. With the final acquisition of the deep magenta abdominal patch the full dress of the adult *P. fasciatus* is seen. I may mention that Peale's description is taken from a specimen in the plumage of *P. pictiventris*, or still younger. The reference made by Hartlaub to a "purpurne Binde, welche nach hinten zu in das Gelb der Steissfedern verblasst," probably betokens that there were still yellow-tipped feathers on the abdomen.

10. Ptilopus fasciatus.

Ptilinopus fasciatus, Peale, U. S. Exp. p. 193, pl. 53 (1848); Hartl. Wiegm. Arch. 1852, p. 115; Cass. U. S. Exp. p. 271, pl. 31 (1858); Finsch & Hartl. Orn. Centralpolyn. p. 115, pt. (1867); Finsch, J. f. O. 1872, pp. 32, 45; Gräffe, Journ. Mus. Godef. i. p. 49, pl. 7. fig. 2 (1873); Whitmee, P. Z. S. 1873, p. 152; id. Ibis, 1875, p. 442.

Ptilonopus fasciatus, Gray, List B. Brit. Mus., *Columbæ*, p. 4 (1856); id. B. Trop. Is. p. 37 (1859); Reichb. Neuentd. Tauben, p. 117, Novit. t. iv. figs. 34, 35; Finsch, P. Z. S. 1877, p. 783; Ramsay, Pr. Linn. Soc. N. S. W. ii. p. 140 (1877).

Lamprotreron apicalis, Bp. C. R. 1854, p. 877.

Ptilopus apicalis, Bp. Consp. Av. ii. p. 23 (1857); Elliot, P. Z. S. 1878, p. 527; Tristr. Cat. Coll. B. p. 43 (1889).

Kurukuru de Clémentine, Des Murs & Prév. Voy. Vénus, Ois. p. 264 (1855).

Ptilopus clementinæ, Bp. Consp. Av. ii. p. 22, pt.; id. Iconogr. Pig. pl. xxii. fig. 1 (1857).

Ptilonopus clementinæ, Gray, B. Trop. Is. p. 38, pt. (1859); Reichb. Tauben, p. 96, pt. (1862).

Ptilinopus apicalis, Finsch & Hartl. Orn. Centralpolyn. p. 121 (1867).

Ptilonopus apicalis, Layard, Ibis, 1876, p. 506; id. P. Z. S. 1876, p. 495; id. op. cit. 1877, p. 464; id. Ibis, 1878, p. 261.

Ptilopus fasciatus, Schl. Mus. P.-B., *Columbæ*, p. 6 (1873); Layard, Ibis, 1878, p. 261; Elliot, P. Z. S. 1878, p. 535, pt.

Ptilopus pictiventris, Elliot, P. Z. S. 1878, p. 530, pl. xxxiii.;



J. G. Keulemans del. et lith.

PTILOPUS CLEMENTINÆ.

id. Ann. & Mag. N. H. ser. 5, i. p. 349 (1878); Schmeltz, Verh. Ver. Hamb. 1877 (1879), p. 178.

? *Ptilonopus whitmeei*, Ramsay, Pr. Linn. Soc. N. S. W. ii. p. 140 (1877).

"Manu-tagi" (*Peale*), "Manulua," juv. (*Gräffe*) of the natives of Samoa. "Nariga," natives of Uea (*Gräffe*).

Hab. All the Samoan Islands (*Whitmee, Layard, Gräffe, &c.*); ? Island of Uea (*Gräffe*).

Judging from the description in the 'Orn. Centralpolynesiens,' the island of Uea may possess a separate variety. It has the vinous-purple abdominal spot of the Samoan species, and the tail is faint yellowish, but the abdomen is grass-green, and no mention is made of a blackish band at the bottom of the breast. It thus presents a mean between *P. porphyraceus* and *P. fasciatus*, as might perhaps have been expected, since Uea is situated about midway between Samoa and the island of Futuna, where *P. porphyraceus* occurs. The bird described by Mr. Elliot as *P. fasciatus* has the yellow tail-band of *P. fasciatus*, but in the green abdomen, with its purplish-black spot, corresponds to a Tongan or Fijian specimen. Dr. Finsch also mentions a specimen from Upolu (J. f. O. 1872, p. 45) with a green abdomen, but a *vinous* spot in the middle. On the other hand we are assured by Herr Schmeltz, who had the opportunity of examining "hundreds" of *Ptilopus* skins from Samoa, that, besides *P. perousei*, the only form sent in by the collectors of the Museum Godeffroy was that named by Mr. Elliot *P. pectiventris*. I cannot reconcile these conflictory statements. The specimen described by Mr. Elliot is figured in the 'Voyage au Pôle Sud' by Hombron and Jacquinot as the *Ptilinope de Clémentine*; but as Jacquinot and Pucheran mention only the Fiji Islands as the home of their *P. clementinæ*, that name should stand for the Fijian species.

11. Ptilopus clementinæ. (Plate XI.)

thistle [illegible]*mentinæ*, Jacq. & Pucher. Voy. Pôle Sud, Zool. brown.

Dr. Hartlaub, [illegible]*tine*, Hombr. & Jacq. Voy. Pôle Sud, ?

Ptilopus clementinæ, Bp. Consp. Av. ii. p. 22, pt. (1857).
Ptilopus porphyraceus, Bp. Consp. Av. ii. p. 23, pt. (1857).
Ptilonopus clementinæ, Gray, B. Trop. Is. p. 38, pt. (1858); Reichb. Tauben, p. 96, pl. 240. fig. 2588, pt. (1862).
Ptilinopus fasciatus, Finsch & Hartl. (nec Peale) Orn. Centralpolyn. p. 115, pt. (1867); iid. J. f. O. 1870, p. 133, pt.; Finsch, P. Z. S. 1874, p. 94, pt.; Layard, ib. 1875, p. 436; id. Ibis, 1876, pp. 392, 506; id. P. Z. S. 1876, pp. 495, 502; id. op. cit. 1877, p. 464; Schmeltz, Verh. Ver. Hamb. 1877 (1879), p. 178; Schalow, J. f. O. 1887, p. 245.
? *Ptilopus purpuratus*, Bp. Iconogr. Pig. pl. xix. fig. *a* (1857).
? *Ptilopus bonapartei*, Gray, Hand-l. ii. p. 225 (1870); Elliot, P. Z. S. 1878, p. 524.
Ptilinopus porphyraceus?, Tristr. Ibis, 1878, p. 261.
Ptilopus purpuratus, Elliot, P. Z. S. 1878, p. 525, pt.; Tristr. Cat. Coll. B. p. 44, pt. (1889).
Hab. Fiji Islands: Balaou (*Hombron & Jacquinot*), Waikaia, Mokani, Loma-loma, and Mango (*Layard*). ? New Caledonia (*Schalow*). [May not this have been *P. greyi*, jr.?]

12. Ptilopus perousei.

Ptilinopus perousei, Peale, U. S. Exp. p. 195, pl. 54 (1848); Hartl. Wiegm. Arch. 1852, pp. 115, 134; Cassin, U. S. Exp. p. 274, pl. xxxiii. (1858); Finsch & Hartl. Orn. Centralpolyn. p. 110; iid. P. Z. S. 1869, p. 548; iid. J. f. O. 1870, pp. 122, 131; Gräffe, t. c. pp. 402, 408; Finsch, J. f. O. 1872, pp. 32, 44; Gräffe, Journ. Mus. Godef. i. p. 49 (1873); Layard, P. Z. S. 1875, p. 435; id. op. cit. 1876, pp. 495, 502; id. Ibis, 1876, pp. 392, 506; Whitmee, P. Z. S. 1873, p. 153; id. Ibis, 1875, p. 441; Nehrkorn, J. f. O. 1879, p. 407; Reichn. J. f. O. 1891, p. 127.
Columba kurukuru superba, Hombr. & Jacq. Ann. Sc. Nat. xvi. p. 316 (1841).
Ptilinope de Marie, Hombr. & Jacq. Voy. [illegible] pl. 29. fig. 2 (1853).
Ptinilopus mariæ, Jacq. & Pucher. [illegible] iii. p. 115 (1853).

Ptilopus mariæ, Bp. C. R. 1854, p. 887 ; id. Consp. Av. ii. p. 22 (1857) ; id. Iconogr. Pig. pl. 26 (1857).

Kurukuru samoensis, Des Murs & Prév. Voy. Vénus, Zool. p. 247 (1855).

Ptilonopus mariæ, Gray, List B. Br. Mus., *Columbæ*, p. 4 (1856) ; id. B. Trop. Is. p. 37 (1859) ; Reichb. Tauben, p. 96, Neuentd. Tauben, p. 178, Novit. t. lxi. fig. 2586, et t. v. figs. 49, 50 (1862).

Ptilinopus cæsarinus, Hartl. J. f. O. 1864, p. 413 (juv.).

Ptilopus perousei, Schl. Mus. P.-B., *Columbæ*, p. 10 (1873) ; Elliot, P. Z. S. 1878, pp. 515, 545 ; Schmeltz, Verh. Ver. Hamb. 1877 (1879), p. 179 ; Nehrkorn, J. f. O. 1879, p. 407 ; Tristr. Cat. Coll. B. p. 44 (1889).

"Manu-ma" ♂, "Manu-lua" ♀ (?), Samoa Islands (*Whitmee*). "Manu-ma'a," Tonga Islands (*Gräffe*). "Sanakulu" or "Kuluvotu" or "Bunesolove," Fiji Islands.

Hab. Samoa Islands (*Peale, Whitmee*—"not uncommon") : Upolu (*Gräffe, Layard*). Tonga Islands, Tonga-tabu (*Gräffe*). Fiji Islands : Balaou (*Hombr. & Jacq.*), Mathuata (*Peale*), N'gau (*Stair*), Viti Levu (*Gräffe, Layard*), Ovalou, Waikaia, Mokani, Vanua Levu, Loma-loma, Mango, Kandavu (*Layard*), Kanathia (*Gräffe*), Vatu Lele (*Schmeltz*).

13. Ptilopus tannensis.

Hook-billed Pigeon, var., Lath. Gen. Syn. ii. p. 632 (1783) (described from a picture in Sir Joseph Banks's collection) ; Bechst. Lath. Uebers. ii. p. 612 (1794).

Pigeon from Tanna, Lath. Gen. Syn. App. ; Bechst. Uebers. App. p. 641 (1794).

Columba curvirostra, var. β, Gm. S. N. i. p. 777 (1788).

Columba tannensis, Lath. Ind. Orn. ii. p. 600 ; Bechst. Uebers. iv. p. 380 (1811).

Columba vernans, pt., Wagl. Syst. Av. *Col.*, sp. 9.

Columba xanthura, Wagl. Isis, 1829, p. 739 ; Forster, Descr. An. p. 264 (1844).

thistle *[illegible]tica*, pt., Gray, Gen. B. ii. p. 467.

brown. *[illegible]ura*, id. op. cit. App. p. 23.

Dr. Hartlaub, id. op. cit. p. 467.

Osmotreron tannensis, Bp. Consp. Av. ii. p. 14 (1857); Reichb. Tauben, p. 104 (1862).

Treron curvirostra, pt., Reichb. Tauben, p. 108.

Ptilinopus corriei, Ramsay, Proc. Linn. Soc. N. S. W. i. p. 133 (1876).

Chrysœnas, sp. inc., Layard, Ibis, 1878, pp. 275, 280.

Ptilopus (*Chrysaena*) *corriei*, Ramsay, Proc. Linn. Soc. N. S. W. iii. p. 339; Schmeltz, Verh. Ver. Hamb. 1879, p. 78.

Ptilopus corriei, Elliot, P. Z. S. 1878, p. 566; Layard, Ibis, 1880, p. 291; Tristr. Ibis, 1879, p. 193; id. Cat. Coll. B. p. 44 (1889).

"Ponnûas" of the natives (*Forster*).

Hab. New Hebrides: Tanna (*Forster, Layard*), Mallicolo (*Corrie*), Erromango, Vaté, Ambrym (*Layard*).

In 'The Ibis,' 1882, p. 344, Mr. Ramsay states his belief that his *P. corriei* will prove to be Latham's *Columba tannensis*. The description given by Bonaparte (*l. c.*), to which he refers, is not so minute as that given by Wagler and Forster. The last corresponds in every detail with the original description of *P. corriei*, mentioning "remigum trium postremarum apicibus exterioribus, eisque respondentium tectricum flavis," as Wagler puts it,—a point which at once distintinguishes *P. corriei*. There can therefore be no doubt that Mr. Ramsay's supposition is correct.

14. Ptilopus greyi.

Ptilonopus greyi, Gray, List B. Br. Mus., *Columbæ*, p. 4 (1856); id. P. Z. S. 1859, p. 165; id. B. Trop. Is. p. 38 (1859); Bp. Iconogr. Pig. pl. xx. (1857); Verr. & Des Murs, Rev. Zool. 1860, p. 435 (*P. grayi*); Jouan, Mém. Soc. Cherb. 1863, pp. 95, 229; Tristr. Ibis, 1876, p. 264; Marie, Actes Soc. Linn. Bordeaux, xxvii. p. 328 (1869).

Ptilonipus greyi, Finsch & Hartl. Orn. Centralpolyn. p. 126 (1867); Finsch, P. Z. S. 1874, p. 94 (*P. grayi*).

Ptilopus purpuratus, Bp. (nec auct.) Consp. Av. ii. p. 19 (1857).

Ptilopus greyi, Schl. Mus. P.-B., *Colur*
Elliot, P. Z. S. 1878, p. 523; Layard, I'

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Tristr. Ibis, 1879, p. 193; Schmeltz, Verh. Ver. Hamb. 1877 (1879), p. 78; Layard, Ibis, 1880, p. 231; id. Ibis, 1881, p. 139; id. Ibis, 1882, pp. 527, 544; Tristr. Cat. Coll. B. p. 44 (1889).

Ptilopus apicalis, Ramsay, Proc. Linn. Soc. N. S. W. iii. p. 339 (1878).

"Pin," "Mare," or "Denné," natives of Lifu (*Layard*). "Ta-foikuku," Aniwa (*Tristram*).

Hab. New Caledonia (*Layard*)—Island of Pines (*Macgillivray, Layard*); Loyalty Islands (*Sir G. Grey*)—Lifu (*Layard*); New Hebrides—Erromango (*Gray, &c.*), Aniwa, Vaté, Mallicolo, and ? Api (*Layard, Tristram*); Santa Cruz Islands—Vanicoro (*Astrolabe Exp.*).

15. Ptilopus hernsheimi.

Ptilopus hernsheimi, Finsch, P. Z. S. 1880, p. 577; id. J. f. O. 1880, p. 303; id. Ibis, 1881, p. 106.

"Kwon" of the natives (*Finsch*).

Hab. Island of Kushai or Ualan in the East Carolines (*Finsch*).

16. Ptilopus ponapensis.

Ptilinopus fasciatus ?, Finsch, Journ. Mus. Godef. xii. p. 37 (1876).

Ptilonopus ponapensis, Finsch, P. Z. S. 1877, p. 779; Schmeltz, Ethnogr. Abth. Mus. Godef. p. 353 (1881).

Ptilopus fasciatus, Elliot, P. Z. S. 1878, p. 535; Tristr. Cat. Coll. B. p. 44 (1889).

Ptilopus ponapensis, Schmeltz, Verh. Ver. Hamb. 1877 (1879), p. 178; Finsch, P. Z. S. 1880, pp. 576, 578; id. J. f. O. 1880, p. 291; id. Ibis, 1881, pp. 111, 113.

Hab. Islands of Ponape and Ruk or Hogoleu in the Caroline Islands (*Kubary, Finsch*).

This species may be distinguished from *P. porphyraceus* and *P. fasciatus* by the straw-yellow tone of the head, neck, throat, [illegible] and by the dark green ventral spot, of which the thistle [illegible]rs appear violet in certain lights. The tail is brown. [illegible]ad band of yellow; that of *P. porphyraceus*

Dr. Hartlaub,

17. Ptilopus pelewensis.

Ptilinopus pelewensis, Hartl. & Finsch, P. Z. S. 1868, pp. 7, 118; iid. ib. 1872, p. 101; Gräffe, Journ. Mus. Godef. i. pl. 7. fig. 5 (1873); Finsch, op. cit. viii. p. 24 (1875); Schmeltz, Ethnogr. Abth. Mus. Godef. p. 407 (1881).

Ptilopus pelewensis, Elliot, P. Z. S. 1878, p. 531; Schmeltz, Verh. Ver. Hamb. 1877 (1879), p. 178; Tristr. Cat. Coll. B. p. 44 (1889).

"Abieb" of the natives (*Kubary*).

Hab. Pelew Islands (*Kubary*).

18. Ptilopus roseicapillus.

Columba roseicapilla, Less. Tr. d'Orn. p. 472 (1831).

Le Kurukuru des Mariannes, Less. Compl. Buff. iii. Ois. p. 33 (1837).

Columba purpurata, Kittl. Kupfert. iii. p. 25, pl. 33. fig. 2 (1833).

Ptilonopus purpureocinctus, Gray, P. Z. S. 1853, p. 48, pl. 55; id. Ann. & Mag. N. H. 2nd ser. xv. 1855, p. 159; id. List B. Br. Mus., *Columbæ*, p. 4 (1856).

Kurukuru roseicapilla, Des Murs & Prév. Voy. Vénus, Ois. p. 259 (1855).

Ptilopus roseicapillus, Bp. C. R. xl. 1855, p. 216; id. Rev. Zool. 1856, p. 536; id. Consp. Av. ii. p. 21; id. Iconogr. Pig. pl. xxii. (1857); Schl. Mus. P.-B., *Columbæ*, p. 8 (1873); Elliot, P. Z. S. 1878, pp. 516, 537; Oust. Le Nat. 1889, p. 261.

Ptilonopus roseicapillus, Gray, B. Trop. Is. p. 37 (1859); Reichb. Tauben, pp. 96, 177.

Ptilinopus roseicapillus, Finsch & Hartl. Orn. Centralpolyn. p. 127 (1867).

Hab. Marianne Islands (*Marche*): Guam (*Kittlitz*).

I take this opportunity of mentioning the many obligations under which I feel myself to Dr. A. B. Meyer for numerous valuable suggestions and for the free use of th[illegible] collections of the Zoological Museum accord[illegible] my recent residence in Dresden.

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MENTINÆ.

XLVI.—*On some Recent Additions to the List of Irish Birds.* By Henry Seebohm.

Sylvia nisoria.

The year 1884 was remarkable for the occurrence of four examples of the Barred Warbler in the British Isles. On the 16th of August one was shot in the Isle of Skye (Dresser, 'Ibis,' 1885, p. 453). Twelve days afterwards a second was shot on the Yorkshire coast (Slater, Proc. Zool. Soc. 1884, p. 477). Five days later a third example was shot on the 2nd of September in County Mayo (Ussher, 'Zoologist,' 1890, p. 310); and two days later still a fourth was shot at Blakeney in Norfolk (Dresser, Proc. Zool. Soc. 1884, p. 477).

The Irish example was sent to me for examination, and appeared to be a young bird in first plumage. Previous to the year 1884 the only claim of this species to be regarded as a British bird rested upon a single example which was shot near Cambridge about half a century ago.

Muscicapa parva.

The last ten years have added much to our knowledge of the Red-breasted Flycatcher as an occasional visitor to the British Islands. It was previously only known to have visited Cornwall and the Scilly Islands, whence three or four examples were recorded; but more recently it has occurred in other parts of Great Britain and in Ireland.

On the 5th of October, 1883, a young male was shot at Berwick-on-Tweed (Bolam, 'Naturalist,' 1884, p. 9). On the 23rd of October, 1887, an example was caught at the Arklow South Lightship, off the north-east coast of Co. Wexford (Barrington, 'Zoologist,' 1888, p. 391). On the 13th of September, 1890, an example was procured on the Norfolk coast (Ogilvie, Proc. Zool. Soc. 1890, p. 616); and on the 20th of October in the same year a second Irish thistle n[illegible]aught at the lighthouse on the Tearaght Rock, brown. Co. Kerry (Barrington, 'Zoologist,' 1891, Dr. Hartlaub,

The last example has been sent to me for examination, and proves to be a bird of the year.

The Red-breasted Flycatcher has twelve tail-feathers—four on each side with deep white bases, and four in the middle plain brown, with a narrow margin of white on the outer margin of the basal half of the two outer ones.

ALAUDA BRACHYDACTYLA.

Mr. Barrington has sent me for examination an example of the Short-toed Lark which was caught at the Black Rock Lighthouse, in Co. Mayo, on the 11th of October, 1890 (Barrington, 'Zoologist,' 1891, p. 186). It is the first example recorded from Ireland, though there are half a dozen English records which appear to be authentic.

The Irish example appears to be an adult bird, and has the long tertials reaching nearly as far as the primaries, which are so characteristic of the species, and serve to distinguish it from its ally *Alauda pispoletta*. It is possible that some of the English records may refer to the latter species, inasmuch as the woodcut in the various editions of Yarrell's 'British Birds' appears to have been made from an example of *Alauda pispoletta*. This is all the more curious as it is expressly stated in the text of the third edition that in the specimen described (which was caught in a net near Shrewsbury on the 25th of October, 1841) the tertials extend backwards as far as the end of the closed wing.

SYLVIA CURRUCA.

Although the Lesser Whitethroat has the most extensive range of any species of *Sylvia*, breeding in the Palæarctic Region from the Atlantic to the Pacific, subject to some slight variation in the wing-formula of the eastern race, there is no authentic record of its ever having bred in Ireland. The only evidence of its having visited the sister isle is an example which appears to be an adult bird, and which was caught at the lighthouse on the Tearaght Rock off the coast of Co. Kerry on the 1st of [illegible] (Barrington, 'Zoologist,' 1891, p. 186).

The Irish example belongs to the western

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MENTINÆ

66. ANTHUS [illegible]ntermediate between the fifth and sixth, and *Anthus rufu* the wing from the carpal joint being 2·5 Shelley [illegible]

FRINGILLA LINARIA. *

Although the Mealy Redpoll visits England in some numbers every autumn, it was only known to have occurred once in Ireland (in Co. Kildare) until a second example was caught on the 14th of September, 1890, at the lighthouse on the Tearaght Rock, off the coast of Co. Kerry (Barrington, 'Zoologist,' 1891, p. 186).

This example is a very interesting one. I take it to be an adult female. It has much crimson on the forehead, but none whatever on the breast. The upper and under tail-coverts and the flanks are very broadly streaked with brown —too much so for it to be regarded even as a young female of the Greenland race, which has been described as *Fringilla hornemanni*, or of the smaller arctic race *Fringilla exilipes*. It has a large bill, and is otherwise a large bird, measuring in length of wing 3·1, of tail 2·25, and of tarsus ·7 inch. It can scarcely be regarded as a typical *Fringilla linaria* (which varies in length of wing from 2·65 to 3·0 inches), but seems to be an intermediate form between the so-called *Fringilla holboelli* and *Fringilla rostrata*. It seems impossible to regard either of these forms as specifically distinct from *Fringilla linaria*, and the evidence of their being large local races is extremely unsatisfactory.

XLVII.—*On the Birds collected by Mr. F. J. Jackson, F.Z.S., during his recent Expedition to Uganda through the Territory of the Imperial British East-African Company.* By R. BOWDLER SHARPE, LL.D., F.L.S., &c. *With Notes by the Collector.*—Part II.*

(Plates XII., XIII.)

thistle [illegible] portion of my description of Mr. Jackson's brown. [illegible]ilies Motacillidæ, Certhiidæ, Nectariniidæ, Dr. Hartlaub, [illegible]

* Part I., see above, p. 233.

Zosteropidæ, Paridæ, and Laniidæ are trea- examination, my journey back from the Ornithological Con a few days in Berlin and Hamburg, and was -abled to compare many of Mr. Jackson's specimens with types collected by Dr. Fischer and Emin Pasha. I have to thank both Dr. Reichenow and Dr. Kraeppelin for their kindness on these occasions, in enabling me to make the necessary examinations.

Fam. Motacillidæ.

63. Motacilla melanope.

Motacilla melanope (Pall.); Sharpe, Cat. B. Brit. Mus. x. p. 497.

Motacilla sulphurea, Bechst.; Salvad. Ann. Mus. Genov. (2) i. p. 166 (1884; Shoa), vi. p. 263 (1888; Shoa).

Nos. 67, 68. ♂ ♀. Mau, Sept. 30, 1889.—Bill dusky; feet pale brown; irides brown.

No. 336. ♀. Mt. Elgon, Feb. 28, 1890.—Bill dusky olive-brown; legs flesh-colour; irides brown.

The specimens obtained by Mr. Jackson are all in winter plumage, though the Elgon bird shows slight traces of black on the throat. The localities above recorded extend the winter range of this Wagtail considerably to the south.

64. Anthus trivialis.

Anthus trivialis (L.); Sharpe, Cat. B. Brit. Mus. x. p. 543.

No. 265. ♀ ad. Mt. Elgon, 8000 feet, Feb. 14, 1890.—Feet whitish flesh-colour; irides brown.

This I believe to be the most southerly point in Africa at which the Tree-Pipit has as yet been found.

65. Anthus pyrrhonotus.

Anthus pyrrhonotus (V.); Sharpe, Cat. B. Brit. Mus. x. p. 555.

Anthus gouldi, Fras.; Fischer, Zeitschr. i. p. 307 (1884; Naiwascha Lake); id. J. f. O. 1885, p. 137.

An adult bird, procured in the Kikuyu [illegible] out exact particulars of capture. [illegible]ern

Mintern Bros. imp.

MENTINÆ.

66. Anthus rufulus.

Anthus rufulus (V.); Sharpe, Cat. B. Brit. Mus. x. p. 574; Shelley, Ibis, 1888, p. 301 (Manda Island).

Anthus raalteni, Fischer, Zeitschr. i. p. 307 (1884; Great Aruscha, Naiwascha); id. J. f. O. 1885, p. 137 (Lindi to Barawa, Wapokomoland); Reichen. J. f. O. 1887, p. 72 (Ungu).

Anthus caffer, Sund.; Salvad. Ann. Mus. Genov. (2) i. p. 168 (1884; Shoa).

No. 70. ♂ ad. Masai Land, July 26, 1890.—Irides brown; bill dusky above, yellow below; legs yellow. Very plentiful in the plains.

67. Macronyx wintoni.

Macronyx wintoni, Sharpe, above, p. 444.

M. similis *M. ameliæ*, sed minor et rostro valde minore distinguendus. Long. tot. 7·2, culmen 0·5, alæ 3·55, caudæ 2·9, tarsi 1·2.

No. 97. ♂ ad. Kavirondo, Oct. 22, 1889.—Irides brown; feet light brown.

This is an interesting discovery of Mr. Jackson's, considered along with the appearance of *Chera procne* and *Pyromelana taha* in Central East Africa. In the case of the two last-named birds I was unable to find any specific differences from South-African examples, but the present bird is quite recognizable from *M. ameliæ* by its smaller size and much smaller bill.

I have named the species after Sir Francis de Winton, one of the Directors of the Imperial British East-African Company.

68. Macronyx croceus.

Macronyx croceus (V.); Sharpe, Cat. B. Brit. Mus. x. p. 626; Fischer, Zeitschr. i. p. 308 (1884; Maeru Mts., Maúrui); id. J. f. O. 1885, p. 137 (Lindi, Bagamoyo, Usaramo, Lamu, &c.); Reichen. J. f. O. 1887, p. 73 (Ruthistle n

brown. ♀. Machako's, Feb. 20, 1889.

Dr. Hartlaub, ♂ ♀. Machako's, April 4, 1889.

The four specimens collected by Mr. Jackson are a little smaller than South-African examples, but otherwise appear to me inseparable. This confirms my identifications in the 'Catalogue' (*l. c.*); but I am nevertheless somewhat surprised at this conclusion, as I recently saw specimens of Reichenow's new *M. aurantiigula* from Pangani in the Berlin Museum, and they appeared to me to represent a distinguishable species.

Fam. Certhiidæ.

69. Salpornis salvadorii.

Salpornis emini, Hartl. P. Z. S. 1884, p. 415, pl. 37.

Salpornis salvadorii, Bocage; Shelley, P. Z. S. 1888, p. 37 (Tobbo).

No. 247. ♀ ad. Savé, Mt. Elgon, 6000 feet, Feb. 11, 1890.—Irides brown; legs fleshy brown. First seen.

No. 248. ♂ ad. Savé, Feb. 11, 1890.—Bill dusky, pale horn-blue on underside of lower mandible; irides brown. Both these birds were shot amongst the acacia trees.

I must agree with Captain Shelley that *Salpornis emini* is not to be separated from *S. salvadorii*.

Fam. Nectariniidæ.

70. Drepanorhynchus reichenowi.

Drepanorhynchus reichenowi, Fischer, Zeitschr. i. p. 338 (1884; Naiwascha Lake); id. J. f. O. 1885, p. 139.

Nectarinia reichenowi, Shelley, P. Z. S. 1889, p. 365 (Kilimanjaro).

No. 27. ♂ ad. Kikuyu, Aug. 28, 1889.

Compared with Kilimanjaro specimens, Mr. Jackson's bird from Kikuyu appears to be more of a golden-olive colour, and not so fiery metallic; but one of the Kilimanjaro skins seems to be intermediate, so that the species is doubtless the same from both the above-mentioned places.

71. Nectarinia æneigularis.

Nectarinia æneigularis, Sharpe, above, p. 4

Nectarinia famosa (nec L.); Shelley, P.

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ENTINÆ

No. 82. ♂. Sotik, Oct. 6, 1889.—Irides brown. First seen two days ago.

Nos. 91, 92. ♂ ad. et juv. Lumbwa, Oct. 6, 1889.

In addition to the smaller size and greatly curved bill, which inclines to that of *Drepanorhynchus*, the underparts of *N. æneigularis* distinguish it from *N. famosa*. In the latter there is no marked line of demarcation between the colour of the throat and that of the breast, whereas in *N. æneigularis* the bronzy colour of the throat is rather sharply defined from the bluish-green breast and abdomen.

I find that the single specimen collected on Kilimanjaro by Consul Johnston, and named by Shelley *N. famosa*, is identical with the Sotik birds.

72. Nectarinia tacazze.

Nectarinia tacazze (Stanley); Salvad. Ann. Mus. Genov. (2) i. p. 138 (1884; Shoa), vi. p. 244 (1888).

No. 45. ♀ ad. Kikuyu, Aug. 5, 1889.

Nos. 13, 14. ♂ ♀ ad. Kikuyu, Aug. 17, 1889.

Nos. 18, 19. ♂ ad. Kikuyu, Aug. 23, 1889.—Feet black; irides brown.

No. 26. ♀ ad. Kikuyu, Aug. 26, 1889.

73. Nectarinia kilimensis.

Nectarinia kilimensis, Shelley, P. Z. S. 1889, p. 365 (Kilimanjaro).

Nectarinia filiola, Hartl. J. f. O. 1890, p. 150; id. Abhandl. nat. Ver. Bremen, p. 27 (1891).

Nos. 106, 107. ♂ ad. Machako's, March 23, 1889.

No. 86. ♂ ad. Sotik, Oct. 7, 1889.

No. 241. ♂ ad. Savé, Mt. Elgon, 6000 feet.—Feet and bill black; irides brown. Very common, and the most plentiful of all the Sun-birds.

No. 62. Lake Nahuro, Masai Land, July 23, 1890.—Very plentiful in the bare, treeless, open plains near Lake Nahuro. Evidently attracted by a large species of thistle now in flower. Feet and bill black; irides brown.

Dr. Hartlaub, in describing his *N. filiola*, does not give an

idea of its nearest ally; but in Berlin I saw one of Hartlaub's types, which I was able to compare with one of Mr. Jackson's specimens, and of their identity with *N. kilimensis* there can be no question.

74. Nectarinia melanogastra.

Nectarinia melanogastra, Fischer & Reichen. J. f. O. 1884, p. 181; Fischer, Zeitschr. i. p. 337 (1884; Nguruman); id. J. f. O. 1885, p. 139; Shelley, P. Z. S. 1889, p. 364 (Ndara).

No. 50. ♂ ad. Ulu, Ukambani, Jan. 7, 1889.

75. Nectarinia pulchella.

Nectarinia pulchella (L.); Salvad. Ann. Mus. Genov. (2) i. p. 137 (1884; Shoa), vi. p. 244 (1888); Shelley, P. Z. S. 1888, p. 38 (Lado).

No. 41. ♂ ad. Njemps, Lake Baringo, July 15, 1890.—Feet and bill black; irides brown. Very plentiful among the "red-hot poker" plants.

No. 44. ♂ ad. Njemps, July 16, 1890.

76. Cinnyris hunteri.

Cinnyris hunteri, Shelley, P. Z. S. 1889, p. 365, pl. 41. fig. 2 (Useri River).

No. 7. River Voi, Teita, Dec. 5, 1888.

77. Cinnyris acik.

Cinnyris acik (Antin.), Shelley, P. Z. S. 1888, p. 38 (Tingasi).

[No numbers.] ♂ ad. et imm. Kikuyu.

Nos. 78, 79. ♂ ♀ ad. Busoga, June 12, 1890.—Irides brown; feet black. Very plentiful about the Katikiro's Shambas. Breeding.

78. Cinnyris kirki.

Cinnyris kirkii, Shelley; Fischer, Zeitschr. i. p. 339 (1884; Great Aruscha); id. J. f. O. 1885, p. 139 (Mombasa, Maúrui, Tschara); Shelley, Ibis, 1888, p. 300 (Manda Island).

No. 98. ♂ ad. Machako's, March 20, 1889.



J. G. Keulemans del. et lith. Mintern Bros. imp.

CINNYRIS REICHENOWI.
ZOSTEROPS KIKUYUENSIS.

79. Cinnyris osiris.

Cinnyris osiris (Finsch), Shelley, Monogr. Nect. p. 215, pl. 64. fig. 1 ♂; Salvad. Ann. Mus. Genov. (2) i. p. 140 (1884; Shoa); Reichen. J. f. O. 1885, p. 75 (Simiu River); Salvad. Ann. Mus. Genov. (2) vi. p. 245 (1888).

No. 109. ♂ ad. Machako's, March 23, 1889.

The specimen agrees better with Abyssinian examples of *C. osiris* than with those of the southern *C. mariquensis*. The latter is larger, with a longer bill, and seems always to have more golden bronze on the throat and crown, the forehead being like the crown, whereas in *C. osiris* the forehead is always greenish.

80. Cinnyris mediocris.

Cinnyris mediocris, Shelley, P. Z. S. 1889, p. 365 (Kilimanjaro; Useri River).

No. 17. ♂ ad. Sotik, Oct. 5, 1889.—Feet black; irides brown.

No. 43. ♂ ad. Kikuyu, Sept. 5, 1889.

81. Cinnyris microrhyncha.

Cinnyris microrhyncha, Shelley; Fischer, Zeitschr. i. p. 339 (1884; Pangani); id. J. f. O. 1885, p. 139 (Zanzibar, Mombasa); Shelley, P. Z. S. 1889, p. 360 (Teita).

No. 10. Collected on the first journey to Machako's.

82. Cinnyris cuprea.

Cinnyris cuprea (Shaw); Shelley, P. Z. S. 1888, p. 38 (Mundri).

No. 352. ♂ ad. Kitosh, March 3, 1890.

83. Cinnyris chloropygia.

Cinnyris chloropygia (Jard.); Shelley, P. Z. S. 1888, p. 38 (Tingasi).

No. 75. ♂ ad. Sotik, Oct. 3, 1889.—Irides brown.

84. Cinnyris reichenowi. (Plate XII. fig. 2.)

Cinnyris reichenowi, Sharpe, *antea*, p. 444.

Differs from *C. mediocris* in having the breast, abdomen, and under tail-coverts sooty olive-brown, therein resembling

C. chloropygia; but it differs from both these species in having the upper surface glossed with purple, and the upper tail-coverts and prepectoral band also purple.

85. Cinnyris falkensteini.

Cinnyris falkensteini, Fischer & Reichen.; Fischer, Zeitschr. i. p. 339 (1884; Naiwascha Lake); id. J. f. O. 1885, p. 139.

No. 89. ♀ ad. Machako's, March 2, 1889.

No. 75. ♂ ad. Sotik, Oct. 3, 1889.

No. 83. ♂ ad. Sotik, Oct. 6, 1889.

86. Anthothreptes longuemarii.

Anthothreptes orientalis, Hartl.; Fischer, Zeitschr. i. p. 339 (1884; Maúrui, Little Aruscha, Litema Mts.); id. J. f. O. 1885, p. 138 (Usegua, Pare, Wapokomoland, Barawa); Reichen. J. f. O. 1887, p. 75 (Loeru; Ussure).

Anthreptes longuemarii, Shelley, P. Z. S. 1889, p. 366, (Useri River).

No. 2. ♂ juv. Batasuma, Teita, Dec. 3, 1888.

Nos. 9, 10. ♂ ♀ ad. River Teita, Dec. 7, 1888.

No. 168. ♀ ad. Ngoboto, Sük, Jan. 12, 1890.—Irides brown; legs olive-black; bill dusky.

Fam. Zosteropidæ.

87. Zosterops kirki.

Zosterops kirki, Shelley; Sharpe, Cat. B. Brit. Mus. viii. p. 182; Shelley, Ibis, 1888, p. 300 (Manda Island).

No. 63. ♀ ad. Makarungu, Jan. 27, 1889.

Agrees with a male from Manda Island in Mr. Jackson's first collection, but is a little duller in colour.

88. Zosterops kikuyuensis. (Plate XII. fig. 1.)

Zosterops kikuyuensis, Sharpe, *anteà*, p. 444.

No. 7. ♀ ad. Kikuyu, Aug. 15, 1889.—Irides brown; feet horn-blue.

No. 276. ♂ ad. Mt. Elgon, 11,500 feet, Feb. 16, 1890.—Bill black; feet pale horn-blue; irides bright brown. Shot out of a small flock.

Owing to the abnormally developed ring of white round

the eye, I fully expected to find this new *Zosterops* to be very close to *Z. eurycrocotus* (Fischer & Reichen. Zeitschr. i. p. 337). The type of the latter species is in the Hamburg Museum, where I recently examined it; it is similar in general appearance, but is much darker below, so as to show less yellow on the throat and breast; but it chiefly differs in its blackish forehead and in having the fore part of the crown greenish, not yellow. With regard to *Z. virens*, which *Z. kikuyuensis* greatly resembles, the yellow forehead of the latter forms a very recognizable character.

Fam. Paridæ.

89. Parus leucomelas.

Parus leucomelas, Rüpp.; Heugl. Orn. N.O.-Afr. i. p. 407.
Melaniparus leucomelas, Salvad. Ann. Mus. Genov. (2) vi. p. 243 (Shoa).

No. 343. ♂ ad. Kitosh, March 1, 1890.—Irides bright yellow; bill black; legs olive-black. A pair first seen at the foot of Mt. Elgon.

90. Parus albiventris.

Parus albiventris, Shelley; Fischer, Zeitschr. i. p. 340 (1884; Naiwascha Lake); Reichen. J. f. O. 1887, p. 75 (Salanda, Kagehi).

No. 37. ♂ ad. Mbwinzao, Kikumbuliu, Dec. 28, 1888. Compared with the types of the species from Ugogo.

Fam. Laniidæ.

91. Lanius collyrio.

Lanius collurio, L.; Fischer, Zeitschr. i. p. 342 (1884; Maúrui).
Enneoctonus collurio, Fischer, J. f. O. 1885, p. 131 (Zanzibar).

No. 117. ♂ ad. Machako's, April 3, 1889.

92. Lanius dorsalis.

Lanius (*Fiscus*) *dorsalis*, Cab. J. f. O. 1878, pp. 205, 225.
Lanius dorsalis, Shelley, Ibis, 1885, p. 401 (Somali).

No. 200. ♂ ad. Turquel, Sük, Jan. 24, 1890.—Irides brown; egs black. Stomach contained part of a mouse and large caterpillars, spiders, &c.

I compared the specimen procured by Mr. Jackson with the type of *Lanius dorsalis* in the Berlin Museum, and found them absolutely identical. I give a full description of this fine Shrike.

Adult male. General colour above light grey, fading off paler on the rump; upper tail-coverts white; scapulars white; wing-coverts entirely black; quills also black, with no white tips to the secondaries; the primaries white at the base, forming a speculum, which is apparent on all but the first short primary, where the white is confined to the inner web; the secondaries also white at the base, but not apparent; four central tail-feathers black, the remainder tipped with white, which increases in extent towards the outermost feather, which is white along the outer web also; crown of head, nape, hind neck, and upper mantle glossy black; sides of face, ear-coverts, and sides of neck also black; cheeks and under surface of body pure white, including the thighs and under tail-coverts; sides of breast grey, concealed by the closed wing; under wing-coverts white, the lower primary-coverts black, forming a patch; axillaries black; quills black, white at the base. Total length 8·5 inches, culmen 0·7, wing 4·2, tail 3·65, tarsus 1·1.

93. Lanius mackinnoni. (Plate XIII.)

Lanius mackinnoni, Sharpe, *anteà*, p. 444.

No. 93. ♂ ad. Bugemaia, Oct. 14, 1889.

Adult female. General colour above french-grey; scapulars white, with grey bases; wing-coverts entirely black; quills blackish or blackish brown; upper tail-coverts grey, like the back; tail-feathers black, tipped with white on all but the central feathers, the white tips more extensive on the outer feathers; crown of head grey, like the back; forehead with a line of hoary white along the base, extending backwards above the eye, where it is continued as a white eyebrow extending above the ear-coverts; lores, eyelid, sides of face, and



culmen 1·12
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LANIUS MACKINNONI.

ear-coverts black; cheeks and under surface of body white; thighs grey, with white margins; under wing-coverts and axillaries ashy grey, with white edges; quills below dusky, ashy along the inner edge. Total length 8·4 inches, culmen 0·7, wing 3·4, tail 3·7, tarsus 0·9.

94. Lanius humeralis.

Lanius humeralis, Stanl.; Fischer, Zeitschr. i. p. 344 (1884; Great Aruscha and Naiwascha); Salvad. Ann. Mus. Genov. (2) i. p. 130 (1884; Shoa).

Fiscus humeralis, Fischer, J. f. O. 1885, p. 131; Salvad. Ann. Mus. Genov. (2) vi. p. 240 (1888).

No. 11. ♂ ad. Kikuyu, Aug. 17, 1889.—Common.

Nos. 250, 251. ♂ ♀ ad. Savé, Mt. Elgon, Feb. 11, 1890.—Irides brown; feet and bill black. Very common at an elevation of 6000 feet.

No. 17. ♂ ad. Elgeyo, July 6, 1890.—Bill and feet black; irides brown.

No. 18. ♀ ad. Elgeyo, July 6, 1890.—Legs pale horn-blue; bill black; irides brown. Very plentiful in Elgeyo.

95. Lanius excubitorius.

Lanius excubitorius (Prév. et Des Murs); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 130 (1884; Shoa); Reichen. J. f. O. 1887, p. 65 (Magala; Simiu River); Salvad. Ann. Mus. Genov. (2) v. p. 239 (1888).

No. 198. ♀ ad. Turquel, Sük, Jan. 23, 1890.—Irides brown; feet black. Fairly plentiful in Turquel.

No. 201. ♀ ad. Turquel, Jan. 24, 1890.—Irides brown.

96. Corvinella affinis.

Corvinella affinis, Heugl. Orn. N.O.-Afr. i. p. 488.

Corvinella corvina (nec Shaw); Reichen. J. f. O. 1887, p. 65 (Sigaigo).

No. 129. ♀ ad. Between Mt. Elgon and Chichevanau, Dec. 14, 1889.—Bill dull yellow; eyelids yellow; legs culmen 1·1[illegible] horn-blue; irides pale grey-brown.

20.3.90. Nequel, Sük, Jan. 27, 1890.—Irides bright yel- In this st[illegible] olive-brown. Plentiful in small flocks.

97. Dryoscopus albofasciatus, sp. n.

Laniarius æthiopicus (nec Gm.), Sharpe, Journ. Linn. Soc. xvii. p. 423 (1884).

D. similis *D. æthiopico*, sed secundariis interioribus late albo marginatis fasciam alarem longitudinalem formantibus distinguendus.

Nos. 255, 256. Mt. Elgon, 6000 feet, Feb. 12, 1890.—Irides crimson-brown; legs horn-blue; bill black.

No. 15. ♂ ad. Elgeyo, July 6, 1890.—Irides crimson-brown; legs pale horn-blue; bill black. Plentiful. Saw two family parties.

I find that the bird collected by Bohndorff at Semmio in the Niam-niam country, and recorded by me (*l. s. c.*), belongs to this species and not to *D. æthiopicus*.

98. Dryoscopus funebris.

Rhynchastatus funebris (Hartl.); Fischer, Zeitschr. i. p. 249 (1884; Pare, Little Aruscha Lake, Ronga River, Ngaruka); Fischer, J. f. O. 1885, p. 130 (Mombasa).

Laniarius funebris, Salvad. Ann. Mus. Genov. (2) i. p. 133 (1884; Shoa), vi. p. 241 (1888).

Dryoscopus funebris, Reichen. J. f. O. 1887, p. 63 (Wembaere, Ungu, Ussandawi, Nassa); Shelley, P. Z. S. 1889, p. 361 (Useri River).

Nos. 57, 58. ♂ ad. et imm. Nroni, Jan. 23, 1889.

99. Dryoscopus, sp. inc.

No. 228. ♂ juv. Savé, Mt. Elgon, 6000 feet, Feb. 6, 1890.—Bill dark horn-blue, upper mandible lighter; legs horn-blue; irides grey.

No. 1. ♀ ad. Mt. Elgon, May 16, 1890.—Irides orange, fading into yellow round the pupil; feet and lower mandible pale horn-blue; upper mandible dusky brown. Plentiful on Elgon at 6000 feet.

Two immature birds, which I have not been able to determine.

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te eyebrow ex-
des of face, and

100. Laniarius castaneiceps.

Laniarius castaneiceps, Sharpe, *anteà*, p. 44

No. 322. ♀ juv. Mt. Elgon, Feb. 25, 1890.—

brown; bill dark horn-blue; legs horn-blue. Saw several in dense underwood in thick forest.

Although this specimen is immature, it seems to belong to a species which is quite distinct from every other known *Laniarius*, and when adult it will have a chestnut head, so that its nearest ally will be *L. luhderi* of Reichenow. I could find nothing like it in any of the museums of the Continent, and Dr. Reichenow agrees with me as to its distinctness. The rufous tail is also a strong character.

I add a description of the type specimen:—

Immature female. General colour above olive-brown, the rump varied with concealed spots of white, which occur subterminally on the feathers; upper tail-coverts a little more ashy than the back; lesser wing-coverts ochreous brown; median coverts dusky, tipped with white, slightly tinged with yellow, and forming a band; greater coverts dusky blackish, edged with rufous ochre, the inner ones with white; bastard wing, primary-coverts, and quills blackish, margined with rufous ochre, the secondaries with olive, the inner ones blackish, margined with olive or yellowish white; tail-feathers rufous brown, mottled with dusky, with blackish shafts, and more or less dusky brown on the outer webs; crown of head dusky olive-brown, tinged with rufous; lores, feathers above the eye, sides of face, and ear-coverts black, washed and obscured with ashy brown; cheeks and throat pale tawny rufous, deepening on the fore neck, chest, and sides of body; the breast and abdomen whitish, washed with sulphur-yellow; flanks also slightly tinged with yellow; thighs light tawny; under tail-coverts white; under wing-coverts and axillaries whitish, tinged with yellow; quills below dusky, tawny buff along the inner edge. Total length 7·3 inches, culmen 0·9, wing 3·25, tail 2·8, tarsus 1·15.

101. Laniarius erythrogaster.

Laniarius erythrogaster (Cretzschm.); Reichen. J. f. O. culmen 1·14; Magchi).

20.3.90. Nhe f ♀ ad. et imm. Turquel, Sük, Jan 27, In this s[illegible]us es pale yellow; legs horn-blue. Plentiful iver.

102. Laniarius quadricolor.

Chlorophoneus quadricolor (Cass.); Fischer, Zeitschr. i. p. 350 (1884; Maúrui, Mkarano on the Pangani); id. J. f. O. 1885, p. 130 (Malindi).

Nos. 12, 13, 24. ♂ ad. River Voi, Teita, Dec. 10, 12, 14, 1888.

103. Laniarius chrysogaster.

Chlorophoneus sulfureipectus (Less.); Fischer, Zeitschr. i. p. 349 (1884; Pangani, Great and Little Aruscha); Salvad. Ann. Mus. Genov. (2) i. p. 135 (1884; Shoa); Fischer, J. f. O. 1885, p. 130 (Malindi, Wapokomoland, Maúrui, Mkaramo); Reichen. J. f. O. 1887, p. 63 (Simiu River, Kagehi, Nassa); Reichen. J. f. O. 1887, p. 63 (Ndutian, Soboro); Salvad. Ann. Mus. Genov. (2) vi. p. 242 (1888); Shelley, Ibis, 1888, p. 30 (Manda Island); id. P. Z. S. 1889, p. 362 (Taveta).

Nos. 93, 95. ♂ ♀ ad. Machako's, Ukambani, March 10, 1889.

104. Telephonus blanfordi.

Telephonus blanfordi, Sharpe; Salvad. Ann. Mus. Genov. (2) i. p. 134 (1884; Shoa), vi. p. 242 (1888).

No. 345. ♂ ad. Kitosh, March 2, 1890. Legs pale horn-blue; bill black; irides brown.

105. Telephonus minor.

Telephonus trivirgatus (nec Swinh.), Fischer, Zeitschr. i. p. 344 (1844; Susua, near the Naiwascha Lake); id. J. f. O. 1885, p. 130.

Telephonus minor, Reichen. J. f. O. 1887, p. 64 (Kagehi, Wembaere Steppes, Simiu River).

No. 20. ♂ ad. Elgeyo, July 7, 1890.—Irides brown; legs pale horn-blue; bill black. Plentiful in the bush.

This bird belongs to the "eastern race" mentioned by Dr. Gadow (Cat. B. viii. p. 122) from Tete te eyebrow ex- and Zanzibar. It seems to me to be qui. 44 des of face, and tinct from *T. trivirgatus*.

106. TELEPHONUS SENEGALUS.

Telephonus erythropterus (nec Shaw), Fischer, J. f. O. 1885, p. 130 (Bagamoyo to Lamu).

Telephonus senegalensis, Shelley, P. Z. S. 1889, p. 361 (Taveta, Teita).

No. 20. ♂ ad. Marasie, Teita, Dec. 13, 1888.

107. TELEPHONUS JAMESI.

Telephonus jamesi, Shelley, Ibis, 1888, p. 300 (Manda Island).

No. 184. ♀ ad. Turquel, Sük, Jan. 19, 1890.—Irides brown, one with six white specks on the edge of the pupil, the other with five; feet pale horn-blue. Very plentiful in the thin open bush.

108. PRIONOPS CRISTATUS.

Prionops poliocephalus (nec Stanl.), Fischer, J. f. O. 1885, p. 130 (Massa).

No. 170. ♀ ad. Turquel, Sük, Jan. 14, 1890.—Irides grey; eyelids bright lemon-colour; legs coral-red. Feeds on beetles, grasshoppers, &c. Shot on the top of the hill.

No. 171. ♂ juv. Turquel, Jan. 14, 1890.—Legs more orange.

No. 210. ♀ ad. Turquel, Jan. 23, 1890.—Irides grey; eyelids bright yellow; legs orange-yellow.

There seem to be two species of *Prionops* in Eastern and North-eastern Africa, which have been confounded by all writers on the genus. Mr. Jackson's specimens all have black wing-coverts, and only a slight edging of white on the secondaries, which are also tipped with white. This is the *P. cristatus* of Rüppell. Stanley's *Lanius poliocephalus*, with which *Prionops cristatus* is generally united, is an allied species with white on the median and greater coverts, which extends in a continuous white band down the secondaries.

The full distribution of the two forms is at present uncertain. culmen 1·12 in the British-Museum series and in the Shelley 20.3.90. The following localities are recorded :—

In this sense. Abyssinia (*Mus. Brit.*), Bogos (*Esler*: *Shelley*

Coll.), Teita (*H. C. V. Hunter*), Somali-Land (*E. Lort Phillips*).

P. poliocephalus. Abyssinia (*Shelley Coll.*), White Nile (*Mus. Brit.*), Wandi (*Emin Pasha*).

109. Bradyornis grisea.

Bradyornis grisea, Reichen.; Fischer, Zeitschr. i. p. 354 (Dongo Ngai, Great Aruscha).

No. 185. ♂ ad. Turquel, Sük, Jan. 19, 1890.—Irides brown; legs black.

I compared Mr. Jackson's specimen with authentic examples of *B. grisea* in the Berlin Museum.

110. Melænornis edoloides.

Melænornis edoloides (Swains.); Sharpe, Cat. B. Brit. Mus. iii. p. 315; Salvad. Ann. Mus. Genov. (2) i. p. 128 (1884; Shoa).

No. 2. Uganda, May 16, 1890.—Irides brown.

Dr. Cabanis (J. f. O. 1884, p. 241) separates the *Melænornis* from North-eastern Africa as *M. pammelæna* (Stanley), but I cannot find the least difference between Mr. Jackson's Uganda specimen and the West-African series of *M. edolioides* in the British Museum.

XLVIII.—*On* Pelagodroma marina, *a Petrel new to the British List*. By H. A. Macpherson, M.A.

I have great pleasure in adding to the British List a well-known Petrel, *Pelagodroma marina*, on the strength of a specimen obtained recently on the north-west coast of England. After a severe gale, in November 1890, a number of sea-birds which had been washed up dead on the outside of Walney Island were collected and taken to Williams, a working blacksmith, of Barrow-in-Furness. It was Williams who received the Spotted Eagle which was washed ashore at Walney in 1875 (*cf.* Mitchell, 'Birds of Lancashire'); backwards and I know that he has always been in the habit te eyebrow ex- a few of these birds; for example, when visiti des of face, and

November 1888, I found his house full of Guillemots and other birds that had just been brought to him from Walney. On the present occasion the birds brought to him were various, but being hardly convalescent from influenza, and out at his work all day, he only skinned two Petrels, a Little Auk, and one other bird*. He skinned these birds as well as he could, for they were not fresh, and put them by in a glass-topped box until I should call, which was not until the beginning of the following July. He then showed them to me, and offered to give them to me, as he considered that he could not mount such rough skins to his satisfaction. I had great difficulty in inducing him to accept half a sovereign for the birds, and he was then anxious to make me a present of a white *Turdus iliacus*, as he thought I was paying him too much. I at once recognized the smaller Petrel as *Oceanites oceanicus*; but not knowing the larger bird, I sent the two skins to Mr. Osbert Salvin, F.R.S., just as I received them, the *sand* of Walney still adhering to their feathers, especially to those of the smaller bird. Mr. Salvin, whose great kindness I specially desire to acknowledge, has not only identified the unknown bird as a typical example of *Pelagodroma marina*, which he thinks may perhaps breed in the Canary group, but has compared both skins with the British Museum series, and has further favoured me with some very valuable notes, of which I now avail myself.

Pelagodroma marina was first noticed during Captain Cook's first voyage, and a specimen obtained on the 23rd December, 1768, in lat. 37° S., off the east coast of South America, about opposite the mouth of the Rio de la Plata. It was sketched by Parkinson, one of the artists who accompanied Captain Cook and Sir Joseph Banks in the 'Endeavour.' This sketch is now in the British Museum, where it appears as "No. 13" under Solander's unpublished name *Procellaria æquorea*, in a MS. volume called 'Banks's Drawings.' It then became the Frigate Petrel of

culmen 1·1⅞

20.3.90. N[illegible]t part of the island where the Petrels were found is the In this sp[illegible]each, nearly opposite the windmill.

Latham's 'Synopsis,' and the *Procellaria marina* of the same author's 'Index Ornithologicus.'

The bird is now known to have a wide range in the southern hemisphere. Gould's collector Gilbert discovered it breeding on some of the small islands lying off Cape Leewin, South-western Australia, in December, where he procured numbers of its eggs as well as many examples of the adult birds. He also met with it on a small island about three miles south of East Wallaby Island in January, when the young birds were almost ready to leave their holes (Gould, B. Austr. vol. vii. pl. 61). The most northern locality where *P. marina* has been observed hitherto is the Canary Isles. Here it would appear to be not common, though many observers have either procured specimens or recognized it when flying over the sea. The bird from these islands was named *Procellaria hypoleuca* by Webb and Berthelot. Mr. Salvin concludes his notes by remarking that "the specimen from Walney Island agrees closely with examples from the South Seas and the Canary Islands now in the British Museum." I should be happy to submit the specimen to any brother member of the B. O. U. who may entertain any desire to see it. The other species, *Oceanites oceanicus*, had previously occurred in the N.W. of England (Macpherson & Duckworth, 'Birds of Cumberland,' p. 181).

XLIX.—*Notes on Woodpeckers.*—No. XVIII. *On two new Species from the Pilcomayo.* By Edward Hargitt, F.Z.S.

Mr. Sclater has been good enough to place in my hands some Woodpeckers collected by Mr. Graham Kerr, who accompanied the Pilcomayo Expedition, and whose researches in the highly interesting region explored, when fully made known to the world, will not only prove to be of great scientific value, but add much to his already well-earned reputation as an energetic and devoted naturalist. I must beg backwards reader to the extracts from Mr. Graham Kerr's ite eyebrow ex- lished in 'The Ibis' for January and April des of face, and

contain a graphic account of the peculiar wilderness or palm-desert traversed by the Expedition. The specimens entrusted to me consist of two males and one female *Celeus*, likewise two males and one female *Picumnus*, and Mr. Sclater has expressed his opinion that the *Celeus* is new, and wishes it to bear the name of its discoverer. I quite agree with Mr. Sclater in his determination of this bird, and, in compliance with his wish, name it *Celeus kerri*. The *Picumnus* is also new to science, and will bear the name of *pilcomayensis*, as suggested by Mr. Sclater.

Below will be found diagnoses of the two species.

1. Celeus kerri, sp. n.

Adult male. Resembles *C. lugubris*, but differs in having the upper part of the back, the scapulars, and the wing-coverts nearly black, with a brownish or slightly olivescent tinge, and the transverse markings narrower and fewer; the underparts blackish brown, nearly as dark as the back, and with less rufous on the under tail-coverts; the quills brownish black, and the exposed rufous bars on the secondaries very much narrower, being about one fifth the width of the interspaces (the rufous bars in *C. lugubris* being about one half the width of the darker interspaces). The wing, seen from below, is very different; the base of the inner webs of the primaries and the barring on these, as well as upon the inner webs of the secondaries (except close to the shaft), being white; the under wing-coverts and axillaries white, with scarcely any yellow tinge. The dimensions are also greater. Total length 10·0 inches, culmen 1·18, wing 5·9, tail 3·2, tarsus 1·0; toes (without claws)—outer anterior 0·9, outer posterior 0·83, inner anterior 0·62, inner posterior 0·38. Type, Rio Pilcomayo, 4.5.90. No. 95 on label.

Adult female. Differs from the adult male in the absence of red on the malar region, this being blackish brown, the feathers having buff margins. Total length 10·0 inches, culmen 1·12, wing 5·7, tail 3·3, tarsus 1·02. Rio Pilcomayo, 20.3.90. No. 25 on label.

In this specimen the upper back, scapulars, and wing-

coverts are more olive-brown, and the under surface of the body is devoid of rufous spots; but these differences are, no doubt, due to season or age, and are not sexual, as a second male from the same locality, dated March 31st, 1890 (No. 33 on label), has the underparts also without rufous spots.

I think there can be no doubt that the bird represented in Malherbe's monograph (plate liv. fig. 2) as the female of *C. lugubris* should be referred to the present species, the difference between it and the figure of the male on the same plate being very striking, and it would be interesting to know the locality whence Malherbe obtained this dark-coloured female.

Although confident of the specific value of *C. kerri*, I may remark that some of the species of the genus *Celeus* are subject to great variation, and that the paucity of skins of many of the rarer ones, combined with the often very imperfect record of their capture, renders it most difficult to determine the species. I am under the impression that certain specimens (not bearing any definite localities) which have proved a great puzzle to me, and have been placed under the species to which they have appeared to belong, will yet be found to be distinct and to occupy special areas. These points I shall be better able to pronounce upon when I again visit the Paris Museum and have an opportunity of studying some specimens contained therein.

2. Picumnus pilcomayensis, sp. n.

Adult male. This species is intermediate between *P. cirrhatus* and *P. orbignyanus*, possessing some of the characters of each. It differs from *P. cirrhatus* in wanting the brown auricular spot, and in having the back and scapulars of a greyer or more dusky brownish (not olivescent brown), crossed by smoky-white bars (*P. cirrhatus* has sometimes transverse bars, but they are of a different colour); the flanks and thighs without any buff tinge. The present species differs from *P. orbignyanus* in being clearly *barred* with black up the whole of the underparts, the upper parts being *barred*, more or less distinctly, with smoky or brownish white (not

spotted). Total length 3·5 inches, culmen 0·42, wing 2·0, tail 1·25, tarsus 0·5; toes (without claws)—outer anterior 0·33, outer posterior 0·33, inner anterior 0·25, inner posterior 0·2. Type, Rio Pilcomayo. Although this specimen has no label, I have selected it as the type on account of its being (apparently) more fully adult than the other male in the collection.

Adult female. Differs from the adult male in wanting the red on the sincipital feathers, these being black, with rounded spots of white, as upon the posterior part of the crown and the occiput. Total length 3·3 inches, culmen 0·4, wing 2·0, tail 1·25, tarsus 0·5. Rio Pilcomayo, 28.6.90. No. 125 on label.

A male from the island opposite Empedrado, February 9th, 1890 (No. 6 on label), having the wing shorter, but with the black barring below equally intense with the male described, and the top of the head apparently that of a fully adult bird, has, if anything, the back more regularly barred with smoky or brownish white; the quills and their coverts are abraded, and the light margins are consequently not so well marked; the under wing-coverts are more fluffy and have dusky spots, and the inner margins of the quills (below) are tinged with buff. In some respects only this specimen seems to be immature.

It is not surprising that the Pilcomayo should possess a species of *Picumnus* allied to both the Brazilian *P. cirrhatus* and *P. orbignyanus*, which latter I take to be the bird obtained by Mr. Durnford at Salta, and of which there are three females in the British Museum. Below I append a key, which may facilitate the recognition of the three species of *Picumnus* under consideration:—

A. With brown auricular spot; back olivescent brown .. *cirrhatus.*
B. Without any brown auricular spot.
  a'. Back with rounded whitish spots; underparts with transverse, squamate, and sagittate spots of black ..... *orbignyanus.*
  b'. Back barred with smoky or brownish white; underparts entirely and clearly barred with black ..... *pilcomayensis.*

L.—*On an apparently new Species of Pigmy Parrot of the Genus* Nasiterna. By H. B. Tristram, D.D., F.R.S.

I have lately received through my friend Dr. P. H. Metcalfe, of Norfolk Island, a small collection of birds, made by Dr. Welchman in the little island of Bugotu, just south of Isabel, in the Solomon group. Among them is a *Nasiterna*, which Dr. Sharpe and Mr. Ogilvie Grant agree with me in considering to be undescribed. It is certainly the smallest of this diminutive genus which has yet been brought to our notice. I propose therefore to describe it as

Nasiterna naniña, sp. nov.

♀. Viridis, nuchâ pallidiore, subtus lætè viridi-flavescens; fronte flavescente, genis et mento pallidè roseis; remigibus nigris viridi-marginatis; rectricibus mediis cæruleis, scapis nigris; cæteris nigris, in pogonio interno maculâ apicali flavâ, in externo maculâ viridi ornatis. Long. tot. poll. 2·8, alæ 1·9, caud. 0·7, tars. 0·2.

Hab. Bugotu, Ins. Solomonis.

Unfortunately the only specimen in the collection is a female. Its nearest ally appears to be *N. finschi*, Rams., from San Christoval, from which, however, it may be at once distinguished by its diminutive size.

LI.—*Descriptions of Five new Species of Birds discovered in Central America by W. B. Richardson.* By O. Salvin and F. D. Godman.

The following descriptions are taken from specimens collected for us by Mr. W. B. Richardson in the Mexican State of Chiapas, and thence southwards to Nicaragua. They form a portion of a large series of skins gathered at various places bordering the Pacific Ocean. Though novelties are comparatively few in these collections, the additions made by them to our knowledge of the distribution of the known forms are very considerable, and when fully worked out they will aid much in tracing the boundaries dividing bird-life in that portion of the globe. Mr. Richardson is still at work in Nicaragua, and has visited the eastern side

of the great lakes country, more rich and varied than that which lies between the lakes and the Pacific Ocean.

Though partially investigated by Belt, and more recently by Mr. C. C. Nutting, our knowledge of the ornithology of Nicaragua is far from complete; indeed, with Honduras, it is perhaps the least-known area of any portion of Central America.

1. Campylorhynchus chiapensis, sp. n.

Supra castaneus, capite summo et cervice postica cum stria postoculari nigris; alis nigricantibus, extrorsum castaneis, leviter nigro fasciatis, superciliis elongatis et corpore subtus albis, hypochondriis, tibiis, et crisso dilute isabellinis, subalaribus albis; cauda nigra, fascia subterminali alba ad medium decrescente; rectricibus quatuor mediis extus castaneis, nigro ad basin transfasciatis: rostro nigro, mandibula infra pallida, pedibus plumbeis. Long. tota 7·7 poll. Angl., alæ 3·4, caudæ 3·0, rostri a rictu 1·4, tarsi 1·15.

Hab. Tonala, State of Chiapas, Mexico (*W. B. Richardson*).

Obs. C. griseo affinis, sed minor; et dorso toto læte castaneo, alis extus castaneis, et fascia caudæ subterminali alba angustiore diversus.

Mr. Richardson has sent us a female of this species, which has no near allies in Central America, but resembles in many characters *Campylorhynchus griseus* of Northern Colombia and Venezuela, or the Guianan form identified by Dr. Sharpe with *C. bicolor*, Pelzeln. From these it differs in the bright colour of its chestnut back and wings, this colour coming quite over the interscapulium up to the base of the neck. The transverse subterminal white band of the outer rectrices appears to be considerably narrower, but the feathers are not in good condition.

From *C. capistratus*, a species found in the same district, the new bird is so different that comparison is unnecessary.

2. Salpinctes guttatus.

S. obsoleto affinis, sed supra paulo saturatior, abdomine toto distincte guttato, et rostro longiore distinguendus. Long. tota 5·5, alæ 2·7, caudæ 1·95, rostri a rictu 0·9, tarsi 0·85.

Hab. Volcan de San Miguel, Salvador (*W. B. Richardson*).

Mr. Richardson has sent us two specimens (male and female) of this Rock-Wren, which he shot in March of the present year on the rocky summit of the Volcano of San Miguel at an elevation of about 4000 feet. The bird seems to be clearly distinct from the well-known *S. obsoletus* of the Rocky Mountains and the high lands of Mexico and Guatemala. Of the latter we now have a large series, and no specimen has the under surface nearly so distinctly spotted as the San-Miguel birds. The latter are, however, intermediate between *S. obsoletus* and the bird next described, showing that on the isolated rocky summits of the volcanoes of Salvador and Nicaragua we may look for distinct forms of *Salpinctes* varying in the intensity and size of the spots of the under surface, in the length of the bill, and in the general tone of the colour of the plumage.

In our notes on *Salpinctes obsoletus* in the 'Biologia Centrali-Americana' (Aves, i. p. 71) we mentioned the fact of Salvin having seen examples of a *Salpinctes* on the summit of Conchagua in March 1863. He did not obtain a specimen, and they were supposed to belong to *S. obsoletus*. This point must now be re-examined, as it is more than probable that the Conchagua bird differs from *S. obsoletus*, and will prove to belong to *S. guttatus* or to *S. fasciatus*, or even to possess characters of its own.

3. Salpinctes fasciatus.

Præcedenti similis et corpore subtus dense, haud leviter maculatus sicut in *S. obsoleto*, plumis singulis fascia subapicali distincta nigra notatis, basi plumarum quoque nigra; rostro longo. Long. tota 5·5, alæ 2·6, caudæ 1·85, rostri a rictu 1·0, tarsi 0·95.

Hab. Volcan El Viejo, Nicaragua (*W. B. Richardson*).

This is again another race of *Salpinctes*, probably peculiar to the rocky summit of the Volcano El Viejo, which lies near Chinandega and the Lake of Managua. Mr. Richardson, who recently visited this mountain, obtained two specimens on 28th April of the present year at an elevation of 6500 feet.

The under surface of this form is very densely banded

with black, and is in strong contrast with the almost spotless under surface of *S. obsoletus*. *S. guttatus* is somewhat intermediate, but the three forms can be readily distinguished. The southern birds probably have very limited definite local habitats.

4. SPERMOPHILA RICHARDSONI, sp. n.

S. minutæ proxima, sed capite summo, genis, cervice postica, et dorso antico plumbeis, nec brunneis, facile distinguenda. Long. tota 3·8, alæ 2·0, caudæ 1·5, tarsi 0·6.

Hab. Tonala in the State of Chiapas, Mexico, and Retalhuleu in Guatemala (*W. B. Richardson*).

Mr. Richardson a few months ago sent us several males and a female of a *Spermophila* from the frontier States of Mexico and Guatemala bordering the Pacific Ocean. The bird is very different from any member of the genus hitherto met with in that part of Central America, and finds its nearest ally in *S. minuta*, a common species of South America, and occurring at Panama. But the slate-coloured plumage of the crown, cheeks, and upper back at once distinguishes it from *S. minuta*, and its slate-coloured (not chestnut) cheeks separate it from the Brazilian *S. hypoxantha*, another allied bird. The female is hardly to be distinguished from that sex of *S. minuta*; the bill, however, seems to be rather smaller.

On receiving these birds it at once occurred to us that they might belong to the species described by Mr. Lawrence from a single female specimen from Tehuantepec as *Spermophila parva*, but on sending a pair to Mr. Ridgway for comparison with the type, he kindly sent us the following note:—

"Comparing the ♀ *Spermophila* with the type of *S. parva*, Lawr., I find them much alike, but yet easily distinguishable, *S. parva* having a decidedly smaller bill, other dimensions being equal or greater (the wing being decidedly longer). The bill is also of a decidedly different colour, being, in *S. parva*, a pale reddish brown or cinnamon colour, very much as in *Spizella pusilla*. The plumage of the upper parts is much alike in the two birds, only deeper in the Tonala specimen; but that of the under surface is quite different,

being many shades paler in *S. parva*. I think there can be no question as to their specific distinctness."

5. Quiscalus nicaraguensis, sp. n.

Purpureus æneo micans, fere unicolor, alis minus nitidis, uropygio purpurascentiore, rostro et pedibus nigris. Long. tota 12·0, alæ 5·0, caudæ rectr. med. 5·5, rectr. lat. 3·3, rostri a rictu 1·4, tarsi 1·5.

♀. Supra brunnea, dorso, alis, et cauda saturatioribus et purpureo vix tinctis; superciliis obsoletis, quam regio parotica vix pallidioribus: subtus sordide albida, pectore paulo obscuriore, hypochondriis et tectricibus subcaudalibus brunneis: rostro et pedibus nigris. Long. tota 9·5, alæ 4·1, caudæ rectr. med. 4·0, rectr. lat. 2·5, rostri a rictu 1·15, tarsi 1·25.

Hab. Momotombo, Lake Managua (*W. B. Richardson*).

A very distinct species of *Quiscalus*, belonging to the same section as *Q. macrurus*, but of much smaller dimensions, the male less brilliant, and the female of a much paler dirty white colour beneath, instead of brown.

Mr. Richardson sends us several specimens, of both sexes, of this bird, all shot in May of the present year at Momotombo, on the shores of Lake Managua.

LII.—*Notices of recent Ornithological Publications.*

[Continued from p. 463.]

94. *Allen on a new* Mimocichla.

[Description of a new Species of *Mimocichla*, from the Island of Dominica, West Indies. By J. A. Allen. Auk, viii. p. 217.]

Mr. Allen proposes to separate the *Mimocichla* of Dominica from *M. ardesiaca* of San Domingo as *M. verillorum*. He has since discovered (*cf.* Auk, 1891, p. 317) that the same bird had previously been named *Mimocichla ardesiaca albiventris* (*cf.* Sclater, P. Z. S. 1889, p. 326), and accordingly alters the name to *Mimocichla albiventris*.

95. *Buttikofer's Sketches of Liberia.*

[Reisebilder aus Liberia. Resultate geographischer, naturwissenschaftlicher, und ethnographischer Untersuchungen während der Jahre 1879–1882 und 1886–1887. Von J. Büttikofer. 2 vols. 8vo. Leiden: 1890.]

Herr Büttikofer has devoted a chapter of his interesting work on Liberia, where, as is well known, his explorations have achieved excellent results in every branch of natural science, to its Birds—a subject on which he is our leading authority. The various forms characteristic of the Liberian ornis are shortly described, and their chief peculiarities are pointed out. Besides a series of pretty woodcuts of birds and nests, coloured plates are given of two species—*Accipiter büttikoferi* and *Bubo lettii*.

96. *Fiore on the Calabrian Avifauna.*

[Materiali per una Avifauna Calabra. Appunti di Ornitologia Calabra raccolti dal Bar. Carlo de Fiore. 8vo. Roma: 1890. Pp. 76.]

After describing the topography and physical features of the district, Dr. de Fiore gives a list of the 219 species of birds as yet recognized as found in Calabria, with remarks on the times and particulars of their occurrences. Tables of the sedentary and migrant species are subjoined. Seventy-six species are stated to breed in the district.

97. *Gätke on the Birds of Heligoland.*

[Die Vogelwarte Helgoland. Von Heinrich Gätke. Herausgegeben von Prof. Dr. Rudolf Blasius. 8vo. Braunschweig: 1891. Pp. 610.]

With the editorial assistance of Dr. R. Blasius, Herr Gätke has now got out his long-promised and most interesting volume on the birds of Heligoland, and, as announced in our last number, has favoured us with an early copy. Gätke's book contains three chapters, the first being a treatise on migration, as studied during the author's fifty years' residence in Heligoland, divided into nine sections; the second containing observations on the alterations effected in the plumage of birds by change of colour in the feathers without

moult; and the third being a systematic account of the 396 species of which specimens have as yet been obtained or observed on the island. Mr. Seebohm has kindly prepared a very full abstract of this third portion, which we shall give in our next number, so that we need say no more about it now.

As already mentioned (above, p. 299), it has now been definitely arranged that the Gätke Collection shall remain in the island, and form part of the Museum of the new Imperial Zoological Station shortly to be founded there, so that Heligoland will remain the Mecca of European ornithologists, to which every ardent devotee of our science should not fail to make a pilgrimage.

98. *Giglioli on the Results of the Ornithological Investigation of Italy.*

[Primo Resoconto dei Risultati della Inchiesta Ornitologica in Italia. Parte terza ed ultima. Notizie d' Indole generale, Migrazioni, Nidificazione, Alimentazione, ecc. Compilato dal Dottore Enrico Hillyer Giglioli. 8vo. Firenze: 1891. Pp. 518.]

The third and last volume of Dr. Giglioli's report (*cf.* Ibis, 1890, p. 114, and 1891, p. 131) is devoted to the information of a general nature supplied to him by his collaborators in the Ornithological Investigation of Italy. These observations are systematized under five heads:—(1) Those of a general character, such as the increase and diminution of certain species; (2) those concerning migration; (3) those about nidification; (4) those relating to the food of different species; and (5) statistics as to the number of individuals of different species shot or captured. In a final Appendix three new species are added to the previous list of the Italian avifauna, namely, *Budytes beema* (Sykes), *Cypselus affinis*, Hardw., and *Falco barbarus*, Linn., the last-named upon the authority of Mr. Dresser's specimen of this bird obtained at Malta in 1885 (see above, p. 363).

to have been the victors in this friendly contest, we shall all appreciate the increase in our knowledge of the avifauna of these most interesting island-groups thus attained. When, however, it comes to a comparison of dates of publication, it must be recollected that the numbers of our much-valued contemporary, the 'Journal für Ornithologie,' are habitually issued many months after date*!

After some preliminary remarks, Dr. Koenig gives us his field-notes taken during the voyage to Madeira and during his sojourn on the island. To this follows a list of the 32 breeding-birds of Madeira and notes on their habits. In his third chapter Dr. Koenig proceeds to Teneriffe, and commences this part of his essay with general remarks on the Canaries and their natural history. These are concluded with a list of the 139 species of birds as yet known to occur in the island of Teneriffe. The "Special Part," which follows next, contains the author's copious notes on the 76 species which he met with personally. On these we may remark that *Cypselus pallidus*, *Corvus tingitanus*, and *Phylloscopus fortunatus* are recognized as "good species." That *Glaucidium siju* of Cuba has ever occurred in Teneriffe we are hardly prepared to admit, even on the authority of Don Ramon Gomez, unless it was brought there by an onion-boat! As Dr. Koenig allows that the *Regulus* of Teneriffe was first

* Mr. Waterhouse furnishes me with the following list of the dates at which parts of the J. f. O. 1887–1890 were received at the Library of the Zoological Society of London:—

Vol. XXXV. (1887).		Vol. XXXVII. (1889).	
Part 1.	July 2, 1887.	Part 1.	May 13, 1889.
„ 2.	Sept. 19, 1887.	„ 2.	Aug. 7, 1889.
„ 3.	Mar. 5, 1888.	„ 3.	Jan. 14, 1890.
„ 4.	Mar. 20, 1888.	„ 4.	April 29, 1890.
Vol. XXXVI. (1888).		**Vol. XXXVIII. (1890).**	
Part 1.	July 13, 1888.	Part 1.	July 11, 1890.
„ 2.	Jan. 3, 1889.	„ 2.	Nov. 24, 1890.
„ 3.		„ 3.	Feb. 27, 1891.
„ 4.	Feb. 23, 1889.	„ 4.	

distinguished by Mr. Seebohm as *R. teneriffæ*, he should not prefix to it his own subsequently given name! *Erithacus superius*, it is still maintained, is an "ausgezeichnete gute Art" restricted (as is *Fringilla teydea*) to Teneriffe! How prior observers can have missed it Dr. Koenig cannot understand. It is quite evident, however, that Mr. Meade-Waldo (*cf.* Ibis, 1889, p. 2) was well acquainted with the Robin of Teneriffe, although he did not consider its slight variation in colour of great importance.

Dr. Koenig also visited the island of Palma, and concludes his essay with an account of his ornithological adventures on this island and a list of its birds. These he makes to be 38 in number. To his remarks on the priority of the discovery of *Fringilla palmæ* sive *cærulescens* we leave Canon Tristram to reply, nor do we care to notice the unfriendly footnote which the editor of the J. f. O. has thought fit to append to them.

Finally we should mention that Dr. Koenig's interesting essay is accompanied by well-executed figures of *Cerchneis tinnunculus canariensis, Dendrocopus major canariensis, Erithacus superbus* and *E. rubecula, Parus ultramarinus* and *P. teneriffæ, Regulus satelles* and *R. cristatus, Fringilla tintillon madeirensis, F. canariensis*, and *F. cærulescens*, and of a series of eggs of Madeiran and Canarian birds.

102. *List of Birds' Eggs in the Indian Museum, Calcutta.*

[List of Birds' Eggs in the Indian Museum, Calcutta. 2nd edition, revised up to March 1st, 1891. 8vo. Calcutta: 1891.]

The author of the new list of birds' eggs in the Indian Museum, Calcutta, has modestly withheld his name from this useful publication, with a copy of which we have been favoured. It gives a list of the species of which eggs are in the collection, arranged according to Mr. Oates's new edition of Hume's 'Nests and Eggs of Indian Birds,' with the exact localities and the donor's name appended to each set. A reference to the volume and page of Mr. Oates's work is added in each case.

103. *Meyer on some Pigeons from Borneo and the Philippines.*

[Ueber einige Tauben von Borneo und den Philippinen. Von A. B. Meyer. J. f. O. 1891, p. 69.]

Dr. Meyer describes as new *Ptilopus bangueyensis*, from Banguey Island, between Borneo and Palawan; *P. purpureinucha*, from Basilan; and *Treron fulvicollis baramensis* (subsp. nov.), from N.W. Borneo. These are all based on specimens in the Dresden Museum. Examples of *Leucotreron leclancheri* have been received from Cebu.

104. *Oustalet on the Breeding of Penguins.*

[Les Manchots du Cap de Bonne-Espérance au Jardin d'Acclimatation de Paris. La Nature, xix. p. 365 (May 9th, 1891).]

We are much pleased to find that M. Oustalet has recorded some of the principal facts relating to the breeding of the Penguins in the Jardin d'Acclimatation (*cf. suprà*, p. 476) in the article above cited. It appears that the date of the breeding of this bird, in captivity at least, is very variable. Incubation lasts five weeks, and the young are fed by degorgement of half-digested food from the digestive tube of the parents, as is the case with the Cormorants (*cf.* P. Z. S. 1882, p. 458).

We must, however, take exception to M. Oustalet's statement that *Spheniscus demersus* is also found in the Falkland Islands. The South-American bird, *Spheniscus magellanicus*, is closely allied, but quite distinct. See Zool. Voy. Chall. ii. p. 125, pls. xxvii., xxviii., where both species are described and figured.

105. *W. K. Parker on the Morphology of the Gallinaceæ.*

[On the Morphology of the Gallinaceæ. By W. Kitchen Parker, F.R.S. Trans. Linn. Soc., Zool. v. p. 213.]

This is another of Parker's series of memoirs on the "Common Fowl" and its allies, and is, we suppose, the last fragment we can ever expect to receive from his accumulated stores of knowledge on this subject. The Fowl was first dealt with in a well-known essay in the 'Philosophical Trans-

actions' for 1869, and the wing of the Phasianine division of the family was discussed in a second essay published in the same work in 1888. In the Ray Society's volume on "Shoulder-girdle and Sternum," Parker explained his views on these portions of the Fowl's structure. The present paper treats of the spine and hind-quarters of the same bird, and also enters upon the corresponding structures in some of its allies, "the most important of which is the Button-Quail or Hemipod, a type which is dying out, and is manifestly intermediate between the typical Fowls and the semi-struthious Tinamous."

Like all Parker's other works, the present memoir is splendidly illustrated by four plates, drawn by himself, and put upon the stone by Mr. M. P. Parker. It has been edited by Prof. W. N. Parker.

106. *T. J. Parker on the Apteryx.*

[Observations on the Anatomy and Development of *Apteryx*. By T. Jeffery Parker, B.Sc., F.R.S. Phil. Trans. vol. 182 (1891), B, p. 25.]

It is always pleasant to see sons following the good ways of their fathers, and Prof. Parker's memoir on *Apteryx* and its development will be well received on that account, as well as for its high intrinsic merits. In his position at Otago the author has had unrivalled opportunities for studying the subject selected for his work, and has manifestly turned these opportunities to excellent account.

The memoir extends to over 100 pages, and is illustrated by seventeen plates. Among the more important results arrived at are*:—(1) That in *Apteryx* the *pterylosis* is not uninterrupted, as was supposed by Nitzsch; (2) that the lateral apterial space has a definite function in connection with the attitude assumed by the bird when asleep; (3) the discovery of several more muscles in the wing than were known to Owen; and (4) that the pecten is present in the eye during embryonic life, though absent in the adult, as shown by Owen.

Prof. Parker makes the remiges of *Apteryx* to consist of

* *Cf.* Shufeldt, in 'Science' for June 5th, 1891.

9 or 10 cubitals, 2 or 3 metacarpals, and a single mid-digital. On the whole it appears to him that the structure of the wing lends support to the view that the Ratitæ are the descendants of birds that possessed the power of flight, and that both Ratitæ and Carinatæ have been derived from an early group of typical flying birds, or *Proto-carinatæ*.

107. *Pleske on some Hybrid Birds.*

[Beschreibung einiger Vogelbastarde. Von Theodor Pleske. Mém. Acad. Imp. Sci. St. Pétersb. sér. 7, xxxv. no. 5.]

Herr Pleske describes some hybrids from specimens in the Museum of the Academy of Sciences of St. Petersburg—*Tetrao tetrix* × *Bonasa betulina*, *Motacilla flava beema* × *M. melanocephala*, *Parus borealis* × *Lophophanes cristatus*, and *Emberiza citrinella* × *E. leucocephala*. These birds are also figured.

108. *Romita on Additions to the Puglian Avifauna.*

[Aggiunte alla Ornitologia Pugliese. Pel Dott. Vincenzo de Romita. Annuario R. Istit. Tecnico-Nautico. Bari: 1889.]

Prof. de Romita has recorded in his 'Avifauna Pugliese'* the occurrence of 265 species of birds in Puglia. He has sedulously continued his observations since 1884, when the first list was issued, and now publishes his remarks on some species additional to the list, about 15 in number. A coloured plate is given to illustrate the variations in the different forms of *Budytes flavus*.

109. *Salvadori on a Wagtail new to Italy.*

[Intorno ad una Cutrettola nuova per l' Italia. Nota di Tommaso Salvadori. Boll. Mus. Zool. ed Anat. comp. R. Univ. Torino, vi. no. 101.]

The oriental form of *Budytes flavus* (called *Budytes beema*, Sykes) has occurred on the south-eastern coast of Italy. Count Salvadori has recognized two specimens of it among some Wagtails submitted to his inspection by Prof. de Romita, of Bari, the author of the 'Avifauna Pugliese'*. These

* Avifauna Pugliese. Catalogo sistematico degli Uccelli osservati in Puglia pel Dott. Vincenzo de Romita. Bari: 1884.

specimens are two adult males, taken near Bari in April last. Count Salvadori adds to his paper a scheme of the eight recognizable forms of Italian Wagtails.

110. *Schalow on the Avifauna of the Cisatlantean Subregion.*

[Ueber unsere Kenntniss des Atlas-Gebietes. Vortrag, gehalten in der Jahresversammlung der Allgemeinen Deutschen Ornithologischen Gesellschaft am 11. Mai 1890. Von Herman Schalow. J. f. O. 1891, p. 47.]

In an address given to the General German Ornithological Society at its Anniversary Meeting in 1890, Herr Schalow calls attention to our still very imperfect knowledge of the birds of Algeria, Tunis, and Barbary, together with those of the Atlas Range. While we quite admit that further exploration in this quarter would be very desirable, and that a general account of the present state of our knowledge of its Ornis should be at once undertaken by some competent ornithologist, we think that Herr Schalow has perhaps overstated his case a little. We have certainly a good general knowledge of the whole avifauna of the Cisatlantean Subregion, and cannot expect that many (if any) more discoveries of new species remain to be made. But much remains to be done in working out the exact areas of the different species and the dates of transit of the migrants. There is also the Moroccan portion of the Atlas range to be visited, whenever that is possible.

Mr. Boulenger has lately read before the Zoological Society an excellent memoir on the Reptiles and Batrachians of this fauna*. A corresponding memoir on the Birds would be of great value to ornithologists.

111. *Sharpe on the Classification of Birds.*

[A Review of recent Attempts to Classify Birds: an Address delivered before the Second International Ornithological Congress on the 18th of May, 1891, by R. Bowdler Sharpe, LL.D., F.L.S., &c. Budapest: 1891.]

In our short notice of the Meeting of the Second Inter-

* "Catalogue of the Reptiles and Batrachians of Barbary (Morocco, Algeria, Tunisia), based chiefly upon the Notes and Collections made in 1880–84 by M. Fernand Lataste." By G. A. Boulenger. Trans. Zool. Soc. xiii. p. 93.

national Ornithological Congress (above, p. 479) we have already alluded to the delivery of Dr. Sharpe's address on the Classification of Birds, of which the author favoured us with an early copy. This we have read with great interest, and do not doubt that all ornithologists will agree with us in fully appreciating the clear exposition of the views of recent systematists which it sets before us. Dr. Sharpe divides our progress in the classification of birds into three epochs—the Linnean (1735–1800), the Cuvierian (1800–1860), and the Darwinian. He confines his account of modern classifications to the last period, because up to that date Professor Newton's well-known article in the 'Encyclopædia Britannica' has already fully gone into the subject, and cannot, in Dr. Sharpe's opinion, be improved upon.

Beginning, therefore, with Huxley's celebrated scheme of classification promulgated in 1867, Dr. Sharpe discusses that and the systems put forward by Garrod (1874), Forbes (1884), the Editor of this Journal (1880), Newton (1884), Reichenow (1882), Coues (1884), Stejneger (1885), Fürbringer (1888), and Seebohm (1890), introducing allusions to other authorities who have devoted themselves to certain portions of the same subject. He then proceeds with his own views on the classification of Birds, and, after a preliminary discussion, gives us a list of the 34 Orders and 78 Suborders into which he proposes to divide them, commencing with the Saururæ and ending with the Passeriformes. Three Subclasses are primarily recognized—Saururæ, Ratitæ, and Carinatæ. Short accounts of the leading characters of the divisions of the Carinatæ are added in footnotes, and a series of plates illustrates the phylogeny. With the aid of these and the explanatory letterpress, the author's present views as to the "Systema Avium" may be readily understood.

112. *Thompson on the Birds of Manitoba.*

[The Birds of Manitoba. By Ernest E. Thompson, of Toronto, Canada. Proc. U.S. Nat. Mus. xiii. pp. 457–643.]

From personal experience during three years spent in the province, and with the aid of some observant fellow-workers,

Mr. Thompson seems to have succeeded in producing an excellent memoir on the birds of Manitoba—a district concerning which our previous knowledge of its ornithology was but fragmentary. After describing the physical features of the country, which are further illustrated by a convenient map, the author takes the 266 species as yet known to belong to its avifauna in the systematic order of the A. O. U. List, and gives us his notes on each of them. A list of the principal authorities consulted and an alphabetical index of the species are subjoined. The only thing that we miss is some sort of a general account of the Manitoban avifauna, which would certainly have been a convenient addition to the work. We observe that the Passeres are 122 in number—rather less than the usual amount in an ordinary avifauna. The occasional occurrence of *Milvulus forficatus* so far north as York Factory, on Hudson's Bay, is a curious fact, which has, however, been previously recorded.

113. *Vorderman on the Birds of Billiton.*

[The Birds of Billiton. By A. G. Vorderman. Notes Leyd. Mus. xiii. p. 121.]

Herr Büttikofer translates and reprints from the Nat. Tijdschr. v. Ned. Ind. (1890) a paper by A. G. Vorderman on the birds of Billiton, which lies between Sumatra, Java, and Borneo. The island was visited in June 1888, and examples of 93 species (all known) were obtained or observed. Of these 32 are not found in Java, 10 are not found in Borneo, 8 are not known from Malacca, and 5 only not found in Sumatra. Thus Billiton is most nearly allied in its ornithology to Sumatra.

LIII.—*Letters, Extracts, Notices, &c.*

The following letters have been received, addressed to the Editor of 'The Ibis':—

Binny, Uphall, Linlithgowshire,
April 29th, 1891.

Sir,—At my ranche in Montana, on Powder River, on April 21st, 1890, about 2 P.M., I witnessed an extraordinary

flight of Buzzards (*Buteo swainsoni*). They came up from the east, about one thousand of them (on a rough estimate), and settled in the cotton-wood trees of our fenced horse-pasture, some of the larger trees containing fifty or more. I watched them through my binoculars, and, observing that most of them went to sleep immediately after alighting, I took my Holland ejector rook-rifle and killed six; but only one of these appeared to be an adult.

I continued shooting for a bit in the hope of securing another adult, but without success. Some of the birds, presumably the old ones, were much more wary than the others and, flying from tree to tree, kept out of shot, while their less suspicious companions offered a tempting target at a range of about fifty yards. One bird, which had a broken wing, savagely went for my hand, and fixing its talons in my right thumb held on like grim death until I managed to give it the "coup de grâce." Upon going outside the horse-pasture I was astonished to see large numbers of the Buzzards on the prairie sitting amongst the cattle; but being unable to approach them on foot on account of the steers, I returned for my horse; and noticing as I passed that the trees in the enclosure were now considerably thinned of their occupants, I concluded that many of those in the trees had gone to recruit the ranks of those on the ground. When the flock took wing off the prairie, they alighted in the heavy timber on the river-bank, and I still continued my attempt to obtain another specimen with white breast and chin-spot; but the birds so coloured were very wild, and, so far as I could make out with the binoculars, there were very few of them. I killed twelve altogether, and picked out six which showed variations in plumage, the remainder being duplicates of one or other of the six selected.

I may add that on the same afternoon I killed a Red-tailed Buzzard (*B. borealis*), which was sitting in a cotton-wood tree. At this time there were at least three or four pairs of this species in the vicinity of the ranche.

It struck me as a remarkable fact that so many Buzzards should be gathered in one place, and I do not think the

occurrence is satisfactorily explained by a prairie fire, which was the reason assigned by the cowboys for this strange invasion of "Hawks," as they call the Common Buzzards. I was glad anyway to note on the following morning that the Buzzard-host had disappeared as completely as the Assyrian army, since nothing but my presence restrained the cattlemen from utilizing the occasion for a general practice with their Winchesters.

Yours &c.,

E. S. Cameron.

[Mr. Cameron has, at my suggestion, liberally presented a series of Buzzards which were sent to illustrate this letter to the British Museum.—Ed.]

Nuneham Park, Oxon,
July 16th, 1891.

Sir,—I have been much interested in reading Mr. Ogilvie Grant's letter in your last number (above, p. 469). It brings back to my mind many a pleasant day of the olden time; for, although more than forty years have passed since I visited Madeira, that beauteous land,

> "Where simply to feel that we breathe, that we live,
> Is worth the best joy that earth elsewhere can give,"

yet I entertain a lively recollection of the time I spent with Lowe, Wollaston, and Asseveido in studying the natural products of the island.

I indeed regret if anything I ever wrote has led Mr. Ogilvie Grant or anyone else into error. I suppose Mr. Grant is alluding in his letter to a communication made in years gone by to the 'Annals and Magazine of Natural History.'

I never set up for being a scientific ornithologist, although geographical ornithology has always had a great charm for me. By this term I mean the comparison of similar species of birds coming from various parts of the world. Of course ornithologists have their crazes like all other denominations. I remember procuring for Gould a number of specimens of Hoopoes from various quarters for the purpose of investigating the truth of his notion that the white spot on the

bastard wing of that bird had no existence beyond the 25th degree of east longitude. Again, I collected Pigeons for Darwin when he was investigating the question of the development of difference in species at various ages, from which it appeared that the Booz Pigeon from Tunis was hatched with an abnormally small beak, contrary to his favourite theory.

I hold that all such observations, apart from any fanciful deductions which may be drawn from them, are substantially useful, as affording materials for the ratiocination of future ornithologists. I have lived long enough to see former bright lights of science eclipsed by the still brighter lights of more modern times; but still it behoves those brighter lights to acknowledge that they are largely indebted to the honest work of their predecessors for the more exact results that they have perhaps been able to obtain. The systems of Linnæus and of Yarrell may be superseded, but, at any rate, they were the means by which their successors were led to better things.

Mr. Grant alludes to the "Gould Collection." I had the pleasure of presenting John Gould with very many specimens from Madeira, a few from India, and several from Spain and North Africa. It is therefore quite possible that the Petrel alluded to may have come from me.

And now for a word or two respecting the points which Mr. Grant refers to in his letter.

Firstly, as to the "Canario," as the Portuguese call it—that is to say, the green or wild Canary of Madeira. I had in the first instance actually written the specific name as "*canaria*." I was corrected by that eminent botanist and conchologist the Rev. R. T. Lowe, who was for so many years British Chaplain in Madeira, and who has written so many valuable books in his own departments of natural history. He told me that I was quite wrong, and that "*butyracea*" was the proper term. My respect for Mr. Lowe, and my faith in his knowledge—for, indeed, he was also a very competent ornithologist—induced me to correct my supposed error. I am now re-corrected by Mr. Grant,

and, as I am an "old-world" ornithologist, I am quite willing to bow to the more modern lights.

And now in respect to Mr. Ogilvie Grant's second point—namely, the Petrels.

As Mr. Grant is aware, in April 1844 Mr. Gould described ten new species of the family "Procellariidæ." In this paper reference is made to *Puffinus assimilis*, which he describes as "breeding on the eastern coast of Australia and on Norfolk Island." This I imagine to be the bird which is exercising Mr. Grant's lucubrations. The local names of the native Petrels in Madeira are the Cagarra, the Boeiro, the Pintainho, the Anginho, and the Roque de Castro. Dr. Heineken, Sir W. Jardine, and others have variously described them. The unravelling of synonyms is a puzzling task entailed upon successive ornithologists by their predecessors. Blessed is the man who lacks the scribendi-cacoethic bump, and whose ambition does not run after the fatal adjunct of "mihi" to an indefinite number of species which he holds to be "new to science"!

I was as much puzzled as well could be by the nomenclature of the Madeiran Petrels, but I had the advantage of being able to resort to my good old friend Mr. Yarrell, who abhorred, like the honest naturalist that he was, any useless or self-seeking multiplication of synonyms.

I may perhaps be allowed to remind Mr. Grant of Yarrell's judgment upon the point he is at present raising.

In writing to Mr. Edward Newman in 'The Zoologist' (June 14th, 1853), Mr. Yarrell says:—"Having carefully examined specimens of this bird from Australia, others from Madeira, and compared these with the recently-acquired example from Valentia Harbour, I am induced to consider them but as one species; and that the *Puffinus obscurus* of Mr. Gould's 'Birds of Europe' and the *Puffinus assimilis* of his 'Birds of Australia' are accordingly identical."

I have only to add my apologies for the length of this letter, and am,

Yours &c.,

E. W. Harcourt.

Kilmory, Loch-Gilp-Head, N.B.,
July 27th, 1891.

Sir,—It may be of interest to some of the readers of 'The Ibis' to hear of the nesting of the Woodcock in the Outer Hebrides. My gamekeeper reports to me having found two nests this spring. I am not aware that any such have been previously recorded from the "Long Island," and, from the entire absence of both plantations and natural wood, few would expect such a district to be selected.

The only explanation that suggests itself to me is the occurrence of such exceptionally cold weather about the 8th and following days of March.

I have no record of temperature from Uist, but here in Argyllshire the thermometer was down to 16°, 17°, and 18° several nights.

Yours &c.,

John Campbell Orde, of North Uist.

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74 Jermyn Street, London,
August 18, 1891.

Sir,—I have long wished to ascertain what is the species of *Corvus* that inhabits Somali-land. Mr. Lort Phillips tells me that he found a large Crow very common there, and describes it as entirely black in colour, and of about the size of *Corvus corone*. He has also told me that the Great Spotted Cuckoo (*Coccystes glandarius*) lays its eggs in the nests of this Crow, and has shown me several eggs of the Cuckoo which had been taken together with the eggs of the Crow. These latter were smaller than eggs of *Corvus umbrinus* and very blue in colour. I suppose that the Crow must be *Corvus affinis*, in which case it would be rather a novel circumstance that a *Raven* should be utilized by a Cuckoo to act as foster-parent to its offspring. But I should much like to know for certain what species of Crow inhabits Somali-land.

Yours &c.,

E. Cavendish Taylor.

[We have invited the special attention of our correspondent, Capt. Swayne, R.E., now resident at Berbera, to this inter-

esting point, and asked him to favour us with specimens of the Crow of that district.—Editor.]

The Progress of the B. M. Catalogue of Birds.—The 16th volume of the Catalogue of Birds is already partly printed. It will contain the Upupidæ and Trochilidæ, by Mr. Salvin, and the Cypselidæ, Caprimulgidæ, Podargidæ, and Steatornithidæ, by Herr E. Hartert, who is now in London hard at work on these groups. The 17th volume, by Dr. Bowdler Sharpe and Mr. Grant, is also making rapid progress. Mr. Grant has catalogued the Trogonidæ and Bucerotidæ, Dr. Sharpe the Meropidæ, Coraciidæ, Alcedinidæ, and remaining families of Anisodactylous Picariæ. Vols. XVIII. and XIX. (as noticed, Ibis, 1890, p. 450, and 1891, p. 461) are already published. Vol. XX. is devoted to Count Salvadori's Catalogue of Parrots, which is now passing through the press. We believe that Count Salvadori will also undertake the Pigeons, which will occupy Vol. XXI. The whole work will be completed in 24 or 25 volumes; the estimate made in a previous notice (Ibis, 1886, p. 375) was too high.

Additions to the National Collection of Birds.—In the "Return" presented to Parliament on the progress of the British Museum in the year 1890, we find recorded amongst "the most important acquisitions" in the Department of Zoology in 1890:—

(1). The sixth instalment of the Godman-Salvin Collection of Birds, consisting of 4044 specimens, amongst which are 1 type and examples of 19 species new to the Collection; presented by Messrs. Salvin and Godman.

(2). The final instalment of the Sclater Collection of South American Birds, containing 834 specimens, of which 19 are types and 11 representatives of species new to the Collection.

(3). A series of 405 specimens of Alaudidæ, Upupidæ, and Alcedinidæ, chiefly from the Swinhoe Collection, amongst which are 8 types and examples of 3 species new to the Collection; presented by Mr. Seebohm.

(4). The second instalment of the Shelley Collection of African birds, containing 743 specimens, amongst which are 4 types and 5 representatives of species new to the Collection.

(5). A series of 530 specimens from South Africa, collected by Mr. T. Ayres, being the originals alluded to by him and the late J. H. Gurney in their papers on African Birds; presented by Mr. J. H. Gurney.

Under the head of "Birds" we find it recorded that, in 1890, 8337 additions were made to this class. In addition to the collections already mentioned, the following are stated to be the most important acquisitions:—

One hundred and thirty-six eggs from Spain and other parts of the Mediterranean region; presented by Lord Lilford.

Two hundred and sixteen eggs of birds from Fao, Persian Gulf; presented by W. D. Cumming, Esq.

Seventeen eggs from the islands of N.W. Australia; presented by Lieutenant Gerald Oliver, R.N.

One hundred and sixty birds and eggs from various localities visited by the Antarctic Expedition; bequeathed by the late Dr. M'Cormick.

Three British birds, including the only specimen of *Turdus sibiricus* as yet killed in England; bequeathed by the late Frederick Bond, Esq.

Nest, with eggs and adult birds, of the Crested Tit, from Scotland; presented by Lieutenant-Colonel Irby.

Nest, with eggs and adult birds, of the Bearded Tit, from Norfolk; presented by R. W. Chase, Esq.

A hundred and one specimens of birds from Piedmont; presented by the Turin Museum.

Three specimens of Holboell's Falcon (*Hierofalco holboelli*) from Iceland; presented by J. C. Millais, Esq.

Forty-seven birds from the Altai Mountains; presented by St. George Littledale, Esq.

One hundred and sixty-eight specimens of birds from the collection made by the late Dr. Severtzoff in various parts of Central Asia; purchased.

99. *Hartert on* Ammomanes lusitanica parvirostris.

[Berichtigende Bemerkung zu *Ammomanes lusitanica parvirostris*, nov. subsp. Von Ernst Hartert. J. f. O. 1891, p. 110.]

Herr Hartert now admits that his *Ammomanes lusitanica parvirostris* (above, p. 452) is identical with *Ammomanes phœnicuroides* (Blyth) of the Catalogue of Birds (xiii. p. 647). See also his Catalogue (p. 41), mentioned below.

100. *Hartert's Catalogue of the Birds of the Senckenberg Museum.*

[Katalog der Vogelsammlung im Museum der Senckenbergischen Naturforschenden Gesellschaft in Frankfurt am Main. Von Ernst Hartert. 8vo. Frankfurt a. M.: 1891.]

Herr Hartert has done a good work in preparing a catalogue of the birds of the famous Museum Senckenbergianum of Frankfurt. His list gives the names of 3612 species, with the localities of the specimens and the modes in which they were obtained. Many pertinent footnotes are added. Trinomials are freely used, e. g., *Ruticilla phœnicurus mesoleuca* and *Turdus viscivorus bonapartei*, perhaps in such cases not without reason. The systematic arrangement adopted has much to commend it, although we could not follow the author in making *Steatornis* a genus of the family Podargidæ, or in recognizing as a family "Didunculidæ." The Order "Crypturi" is queerly placed between the Herons and the Sand-Grouse; it should go either with the Gallinæ, or better at the end of the Carinatæ, next to the Ratitæ.

101. *Koenig on the Birds of Madeira and the Canaries.*

[Ornithologische Forschungsergebnisse einer Reise nach Madeira und den canarischen Inseln von Dr. A. Koenig. 8vo. Naumburg a/S. (Sonderabdruck d. J. f. O., Juli-Oct. Heft, 1890.]

Dr. A. Koenig has favoured us with a separate copy of his account of his ornithological excursion to Madeira and the Canaries, in which, as we all know, he ran a race with two ornithologists of the B. O. U. for the discovery of certain "new species." Whichever of the rivals may be ultimately decided

Forty-two specimens of birds from China; presented by F. W. Styan, Esq.

Eleven birds from Java and Billiton, including examples of three species new to the Collection, one being the type of *Siphia everetti* and *S. nigrogularis*; purchased.

Eighty-two specimens of birds from Madeira and the Desertas, including the type of *Accipiter granti*; presented by W. R. Ogilvie Grant, Esq.

Eggs and young, with the adult birds, of the Cream-coloured Courser; also four specimens of birds from the Canary Islands, three of them being of species new to the Collection; presented by E. G. Meade-Waldo, Esq.

Sixteen birds collected on the Aruwhimi River, by the late Mr. J. S. Jameson, including examples of six species new to the Collection, and the types of *Cossypha barttelotti, Diaphorophyia jamesoni*, and *Pholidornis jamesoni*; presented by Mrs. Jameson.

Twenty birds from the river Niger; presented by Captain Mochler Ferryman.

Specimens of two species of Bustard from Somali-land, *Otis heuglini* and *O. guidiana*, both new to the Collection; presented by C. Chevalier, Esq.

Nineteen birds from the Sandwich Islands, collected by Mr. Knudsen, and containing examples of eight species new to the Collection; received in exchange from the Christiania Museum.

The type of *Pyrrhulopsis koroensis*, Layard; presented by Henry Seebohm, Esq.

Thirty-eight specimens collected on the Bellenden Ker range, in Queensland, including examples of four species new to the Collection; received in exchange from the Australian Museum, Sydney.

The National Collection of Birds' Eggs.—The Collection of Birds' Eggs in the British Museum of Natural History is now being rearranged under the superintendence of Mr. Seebohm, and when this has been done will no doubt prove to be the finest and most nearly complete of its kind in existence. It

is believed to contain nearly 50,000 specimens, of which the great Hume Collection contributed 18,500. Other notable collections recently added to the series are that of Messrs. Salvin and Godman (4000–5000 specimens) and that of Mr. Seebohm himself (14,000 specimens), both of which are being amalgamated with the general series. We are much pleased to hear that the opportunity will be taken of picking out a complete set of the eggs of the (so-called) "British Birds," and placing them in the British Gallery. They are to be arranged in a cabinet similar to that used for Lord Walsingham's series of British Lepidoptera, so that they will remain easily accessible to the inquiring public without suffering injury from the light.

The Gurney Collection of Raptorial Birds.—The Collections of the Norwich and Norfolk Museum will shortly be removed from their present situation into the new buildings that are being prepared for their reception in Norwich Castle. The Committee to whom the difficult task of the removal and rearrangement of the Collections has been entrusted wisely propose to devote one of the best and largest of the new rooms to the exhibition of the Gurney Collection of Raptorial Birds, formed by the late John Henry Gurney, so well known to many of us, and presented by him to the Museum. The Gurney Collection consists of 3259 mounted and 1345 unmounted specimens of the Orders Accipitres and Striges, and, with the exception of the series in the British Museum, is probably the finest and most nearly complete collection of its kind at present existing.

Publications of the Second International Ornithological Congress.—Through the kindness of Dr. O. Herman, M.P., we have received from Budapest a complete set of the publications of the Second International Ornithological Congress in connection with their recent meeting. They are numerous and important. Besides Dr. Bowdler Sharpe's Address on Classification (of which a notice is given above), and the Editor's Address on recent progress in Geographical Ornithology (above, pp. 514–557), there are in this series—(1) "Aves

Hungariæ," a list of Hungarian birds, by J. Frivaldszky; (2) a memoir on the birds in the Museum of Sarajevo, by O. Reiser; (3) an explanation of the Exhibition of Hungarian Birds, prepared specially for the Congress by Dr. J. v. Madarász; (4) a report on the present state of our knowledge of Bird-migration, by Dr. Palmén; (5) a report upon Bird-protection, by Dr. Th. Liebe and v. Wangelin; (6) a report on the International Protection of useful Birds, by T. Maday; (7) a memoir on the first arrivals of summer-migrants in Hungary, by O. Herman; (8) a set of Rules for Zoological Nomenclature, put before the Congress by Dr. Anton Reichenow; (9) a report on the Anatomy of Birds, by Dr. Max Fürbringer; (10) an Address on Fossil Birds, prepared by Prof. Alfred Newton; (11) a biographical memoir of the late J. S. Petényi, prepared by Dr. Herman; (12) a Plan for the organization of a permanent Intern. Orn. Committee, prepared by Dr. A. B. Meyer, and (13) a Plan for the regulations of such a Committee; and (14) a report on the answers sent by Ornithologists to certain questions submitted to them, both by Dr. R. Blasius, President of the Intern. Orn. Committee. We hope to be able to notice some of these in our next number.

The Great Skua in Unst.—Mr. Tho. Edmondston writes as follows in 'The Times' (of Aug. 1st, 1891) respecting the preservation of the Great Skua (*Stercorarius catarrhactes*) in the Shetland Islands:—

"At the beginning of May I engaged a special keeper to live for three months on Hermanness, and keep watch and ward by night and day over the Skuas' home. Notices were published and extensively posted in the island, intimating that any person or persons found trespassing within the enclosure of Hermanness during the months of May, June, and July would be prosecuted; but I am glad to say that no proceedings of this nature have been necessary. Early in May nine pairs of Skuas returned to the neighbourhood of their ancient nesting-place. One pair established themselves—an interesting fact—upon the hill at Saxavord,

a promontory opposite Hermanness, and a former but long-abandoned station of the Skua. Another pair selected as a domicile the heights of Sneuga, some distance to the south of Hermanness, and not on our land. Seven pairs sought again asylum within the territory of their old protectors. I grieve to say that both of the outlying nests were harried by egg-stealers, and that neither of the pairs succeeded in hatching their young. The Hermanness birds had a different fate; for, thanks to zealous and careful watching, the eggs in every one of the seven nests were hatched out, and the young birds were safely on the wing some weeks ago. This gratifying result is greatly owing to the personal supervision and unwearied care of my nephew, Mr. Laurence Edmondston, of Halligarth, from whose report to me I take the foregoing particulars.

"I may here repeat, what I had the honour of stating before the Zoological Society last April, that in my opinion the Skuas on Hermanness cannot be expected to increase much beyond the number now attained. In years gone by, when the colony reached 30 or 40 pairs, the two species of Gulls on which the Skuas chiefly depend for their piratical system of living, the Lesser Black Back and Herring Gull, were far more numerous in and around Hermanness than they are now. Protection for the Skuas implies some measure of protection also for the Gulls, but unless the latter greatly increase, the former cannot be expected to do so. In existing conditions, and pending a possible large increase in the number of Gulls, it is nearly certain that the Skua colony can only be increased by enlarging the area of ground protected."

Birds extinct or becoming so in North America.—In the last-issued Report of the U.S. National Museum attention is drawn to the fact that seven species of birds in the North-American list are either already extinct or are rapidly becoming so. These are—the Great Auk (*Plautus impinnis*), the Labrador Duck (*Camptolaimus labradorius*), the Heath Hen (*Tympanuchus cupido*), the Passenger Pigeon (*Ecto-*

pistes migratorius), the Californian Vulture (*Pseudogryphus californianus*), the Carolina Paroquet (*Conurus carolinensis*), and the Ivory-billed Woodpecker (*Campephilus principalis*). The first two of these birds are undoubtedly already extinct, and the Heath Hen, formerly so abundant, is nearly so. The Passenger Pigeon is still found in small numbers in the north-west, but will not last many years. The Californian Vulture is often destroyed by eating poisoned meat intended for other animals, and will soon perish. The Carolina Paroquet is persecuted for the sake of its plumage, and few specimens are now left, and the Ivory-billed Woodpecker is "rapidly diminishing in numbers." To this list an eighth species must be added—Pallas's Cormorant (*Phalacrocorax perspicillatus*), which, as has been previously stated (see Ibis, 1890, p. 382), is believed to have become extinct some years ago.

Occurrence of Grus leucogeranus *in the Hebrides.*—Mr. W. Eagle Clarke writes to us to announce that he has "just examined and identified a fine female of *Grus leucogeranus*, Pallas, which was shot at Barra, in the Outer Hebrides, on the 27th of August last. The bird was not killed outright, but survived for a few days in the possession of Dr. MacRury.

"This Asiatic species is not only new to Britain and to Western Europe, but has not, I believe, occurred west of St. Petersburg, where, however, and in Eastern Europe generally, it appears to be a rare casual visitant."

We hope to be able to give further particulars about this interesting occurrence in our next number.

Obituary. Sir O. B. C. St. John.—The death from pneumonia at Quetta of Col. Sir O. B. St. John, R.E., K.C.S.I., who has been a member of the B. O. U. since 1873, cannot be allowed to pass without a somewhat fuller notice than it was possible to give in the last number of 'The Ibis,' when the telegraphic report of the sad event had just reached this country. Although Sir O. B. St. John's only contribution

to the pages of this Journal is an account of the birds of Southern Afghanistan and Kelat, published in 1889, he has for many years, amidst arduous official work of various kinds, done much by collections and notes to improve our knowledge of Persian and Indian ornithology, and it is to him, directly or indirectly, that we are indebted for a very large part of our present acquaintance with the birds of Persia and Baluchistan. Nor has his attention been confined to birds; it was by his aid, and chiefly by his personal efforts, that the fine collection of Persian reptiles was made which was described by Dr. J. Anderson in the 'Proceedings' of the Zoological Society for 1872, and it was to him that the association of the present writer with the Survey of the Perso-Kelat frontier was due, whilst the resulting accounts of the mammals, birds, and reptiles of the country in the second volume of 'Eastern Persia' owed much of their value to his collections and notes on habits and distribution.

Oliver Beauchamp Coventry St. John was a member of a family that has long held a distinguished place in English history. His father, the late Captain St. John, of the Madras Army, was a grandson of the tenth Baron St. John. Sir O. St. John was born at Ryde, in the Isle of Wight, on March 21st, 1837, and was consequently at the time of his death in his 55th year. He received a military education at Addiscombe, and entered the Bengal Engineers in 1856, obtaining his lieutenant's commission in 1858. After four years' service in the N.W. Provinces of India and Oudh, he was appointed to the Persian telegraph service under Captain Patrick Stewart, R.E., and took a leading part, first in establishing and subsequently in maintaining telegraphic communication between India and Europe through Persia. He was thus engaged till 1871, with the exception of about a year in 1867–68, when he was placed in charge of the telegraph in Abyssinia during the British expedition to that country. This service he performed with great success, and for it, on his promotion to a captaincy, he received a brevet majority. In 1871 he was despatched on a special mission to survey the Perso-Kelat frontier, and for some time after

his return to England in 1872 was occupied in preparing maps of Persia at the India Office, a considerable part of the data having been derived from his own observations. He returned to India in 1875, and filled in succession a number of important posts, amongst them being those of Principal of Mayo College, Ajmere, Chief Political Officer to the Kandahar Field Force and Resident in Kandahar, Officiating Agent to the Governor-General in Baluchistan, Acting Resident at Hyderabad in the Deccan, Resident in Kashmir, Baroda, and Mysore, and finally again Agent to the Governor-General in Baluchistan. For his services he was made Companion of the Star of India in 1879, and Knight Commander in 1882.

The mere record of the posts held by Sir O. St. John is sufficient to show the value attached to his services by the Government of India, and his success, both in the high diplomatic appointments he filled during the last fifteen years of his life and in his earlier career in Persia, was partly due to his remarkable knowledge of Persian, the diplomatic language of so large a part of Asia, but still more to the esteem in which he was held, both by Asiatics and Europeans. He possessed in an eminent degree firmness and tact.

Few men have led a more active life, and few have passed unscathed through a greater variety of adventures. At Kandahar he escaped unhurt from the attack of a fanatical Afghan, who fired a pistol at him at so close quarters that his horse's hair was singed by the explosion. He owed his safety on the disastrous day of Maiwand to good horsemanship and a good horse, for he had to make his way through a cloud of the enemy's cavalry to the protection of the British artillery. Even more remarkable was the fact of his being engaged, at different times, but at equally close quarters, with a lion and a tiger, and escaping without a scratch. In the one case a lion leaped on his horse as he was riding, unattended, in the dusk of the evening, through the oak forest near Shiraz, in Southern Persia. The encounter with the tiger took place in the N.W. Provinces of India. The animal had been attacked and desperately wounded by St. John and

a companion of the same corps, now General Brownlow, both on foot, and had seized the latter, when St. John, who had discharged both barrels of his rifle, clubbed his weapon, came to the rescue of his friend, and fortunately succeeded in driving off the tiger and thereby in all probability saved his comrade's life. Even those who have not seen a tiger charge can appreciate the gallantry of such an action.

W. T. B.

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